
REPORT
OF THE
INDIAN CATTLE PLAGUE COMMISSION,
WITH APPENDICES.



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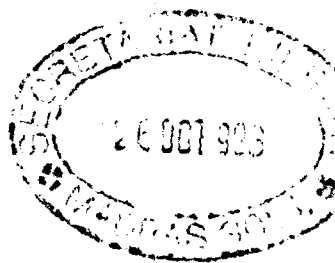
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REPORT
OF THE
INDIAN CATTLE PLAGUE COMMISSION.

I.—INTRODUCTORY.

THE instructions originally communicated to us assigned the Provinces of Lower Bengal, the North-Western Provinces, and Oudh as a field of labor, and directed that the investigation should consist of a study of recorded outbreaks of cattle disease, and of local observation and inquiry in selected districts. The objects which were particularly to govern the conduct of the investigation and the drawing up of a report thereon were—

- (1) to determine the nature of the diseases prevalent;
- (2) the contagious character of these;
- (3) their connection with, and analogy to, rinderpest; and
- (4) the preventive and curative measures which might check the ravages of murrains among cattle.

Objects of the Commission.

2. These instructions and objects have been steadily held in view during the protracted and laborious inquiry which commenced on the 21st of December 1869 and terminated on the 31st of January 1871. It was realized at a very early stage of the proceedings, that, to study the question of prevention in an exhaustive manner, the conditions under which horned stock exist in India must be ascertained in detail, and that very numerous collateral questions bearing more or less directly on the question of prevention of disease must be made a subject of consideration. The whole scope of the investigation thus extended is summarily exhibited in the form printed at page 28 of the Appendix, which has served as a guide in eliciting oral testimony and a means of obtaining written information. As this form, which was most carefully considered at starting, embodies the whole spirit of the inquiry, it will be convenient also to adopt it as the groundwork of this general report.

Mode of inquiry.

3. At first, the limitations imposed by the original instructions were carefully observed, but it was found that an expansion of both the field and subject of study would be attended with advantageous results. It became apparent, in the first place, that very serious events were occurring in the Punjab, involving the destruction of cattle by thousands, and, from the descriptions of the murrains causing this havoc which were received, it was impossible to predicate their nature or advise as to their treatment. A local investigation in this province was accordingly suggested, and authority was readily obtained from the Government of India to extend operations thither (Appendix, p. 451). It was next found that important information was available from other provinces and parts of India, which might materially affect conclusions which it was sought to place on the widest possible basis. More particularly,

Extension of sphere of inquiry.

The Punjab.

Other provinces.

Madras.

the proceedings of the Madras Government in the matter of cattle murrain were fraught with peculiar interest and material instruction. Some reports had been received from places beyond the limits of the Bengal Presidency, and it was considered desirable to obtain a copy of all that had transpired elsewhere and initiate inquiry where none had been made. With this view a letter was addressed to Government moving for all the information which existed or could be got (Appendix, p. 542), and much valuable matter from Madras, Bombay, the Central Provinces, Burmah, and the Andaman Islands was thus obtained. The present inquiry has thus become imperial in its scope, though the Bengal Presidency is necessarily more prominently and elaborately represented. Through the courtesy of the Colonial Government of Ceylon, the very admirable report, dated October 1869, of the Commission which had been appointed in March 1868 to investigate cattle plague was obtained and became another element in the subject-matter of consideration. Again, in some districts much of the mortality among cattle was attributed to the system of cattle-poisoning alleged to be perpetrated by dealers in hides, and it was considered necessary to work out this question in detail. A considerable body of evidence was procured, tending to place the facts of this question in a true and proper light (Appendix No. IV).

Bombay, Central Provinces, and Islands, Burmah, and Andaman Islands, Ceylon.

Cattle-poisoning.

Proceedings of the Commission.

4. While the objects of our Commission were those above indicated, the principles upon which the work has been carried on have been as follows:—

Local observation.

(1) local investigation and actual observation have been held as the most important means of arriving at accurate results;

Personal investigation.

(2) personal inquiry on the spot, in the locality where the events had occurred or were occurring, and from the persons best informed regarding, or most concerned in, the matter, was considered as second in importance; and

Written reports.

(3) when neither of these means were available, written reports were sought from the most skilled and competent persons likely to give the most reliable information.

Arrangement of the report.

5. The result of these endeavours has been the accumulation from every part of India of a large mass of material of very various value. When the time arrived to arrange this material so as to place it in that shape in which it should be most useful for information and aid with regard to future action, the question of its arrangement became rather an embarrassing one. It was finally resolved, as the best of many possible alternatives, to pursue a strictly local principle of classifying and arranging the matter. This plan was adopted as the most simple and convenient, and likely to be the most useful, because, whatever action may in future be adopted in regard to this question, the details must vary according to local circumstances and requirements; and while the general facts and principles common to all places are set forth here, and the general indications of action may be embodied in one set of rules or one enactment, the application of such rules or enactment must depend upon, and vary with, local conditions. These, as far as they have been ascertained, are set down under each province, division, or district, and local inquiry anywhere may be carried on in continuation of, and with the light afforded by, the local data furnished in this report. Indeed, we contemplate as the perfection of possible energy in this matter strictly local investigation—guided and corrected by the facts generalized from many local inquiries, and strictly local action—directed and modified by principles founded on these general truths; and the more particular such inquiry and action become, the lower they descend—to townships, villages, hamlets, and households—it is obvious that the greater good will accrue in the end. We have thus striven, in the mode of our inquiry, in the construction of our report, and now in emphatic suggestion, to impress the futility of mere reports to a central and remote office or individual, and the necessity and efficacy of careful, continued, patient and practical local inquiry and effort.

Our aim has been to render this report available for intelligent inquiry and action all over India, and to furnish as much general information and as many local data as may enable district officers or their subordinates to inquire and act to best

advantage. Much yet remains to be known, and nearly all to be done. This report contains or refers to all that is known up to the end of 1870, and prescribes what ought to be done. There should be no necessity for again working out the subject generally as far as the past is concerned, but there remains the necessity of continuing the inquiry in every district of India, and these developments ought to be an expansion of the general, and in most cases imperfect, data contained in this record. Local attention, investigation, and action, by one skilled agent or by a committee of persons locally interested, is the first and principal recommendation we have to offer, and we would very strongly urge that mere reporting is a very small part of what ought to be done, and that reporting prompt action adopted with success in staying mortality is the only sort of report which should in future be made. Catalogues of unintelligible names, the heterogeneous stringing together of hearsay symptoms and tabular exhibitions of unreliable figures, have hitherto represented, save in a few exceptional cases, the summit of energy. In future, names and symptoms should be reduced to the minimum, a few familiar names should represent well-known symptoms, and figures and tabular statements should exhibit work done, sickness and mortality reduced, and disease stayed by the prompt adoption of rational measures. These remarks have been made *in limine* under the conviction that, hitherto, there has been little or no practical observation attempted in this matter, and that the serious subject of cattle murrain has, in common with too many other matters, come to be treated in offices upon folios of foolscap, instead of in the village, the pasture field, the pen or the byre. Reporting, registering facts, comparing them, and drawing up general reports are of course necessary, and we trust that year by year, commencing with 1871, the progress of this important matter will be duly chronicled; but unless the local action is such as we have above indicated, reports, however careful, can never advance the question one single step, or contribute to the saving of one single life.

Inquiry complete up to the end of 1870.

Need of further inquiry.

According to locality.

Importance of local observation.

6. In order to place the Government in possession of the means and manner by and in which our facts and conclusions have been attained, we have thought it proper to place on permanent record a short journal of proceedings (Appendix No. 1). The localities which we have visited and the work we have done are there briefly indicated and described. Our earliest experience was gained in Assam, where a severe and widespread murrain existed, and here, by careful observation and systematic questioning, we became familiar with at least one form and phase of the murrains devastating the districts of Bengal. Next, in the Nuddea District of the Presidency Division, a considerable amount of fatal murrain was found to prevail, and an equally searching investigation was made as to its nature, extent, and effects. Furnished with the teachings acquired in these places as a standard of comparison, our stay in districts subsequently visited was shorter, our progress more rapid, and proceedings less elaborate. Some interesting information was collected in Calcutta, and in several places on the west of the Hooghly—in the districts of Midnapore, Hooghly, and Burdwan. On the 22nd of April we proceeded to the North-Western Provinces, and until the 5th of June were engaged in making inquiries throughout the districts of the North-West and Oudh. From this time to the 22nd of June various districts of Bengal, south and north of the Ganges, were visited, and on the 5th of July another tour to the North-West and Punjab was undertaken. This tour was completed on the 15th of September. From this date to the 10th of December inquiries were made in and around Calcutta, Diamond Harbour, Darjeeling, Serampore, Bood-Bood, and Culna, and during the remainder of December and the whole of January cattle were treated and experiments conducted at Culna in the Burdwan District. The localities visited by us are exhibited in the map at the commencement of the report, from which it will be seen that the field of actual observation has been an extensive one.

Journal of proceedings.

Assam.

Nuddea.

Calcutta, Hooghly, &c.

N. W. Provinces.

Oudh.

Punjab.

Darjeeling, &c.

Hospital at Culna.

7. In the construction of this report, it will be observed that all details have been thrown into the Appendix; that all the information which has been already published is epitomised, the reference being given, and in the event of the

Construction of report.

Plan of report.

book or document being out of print, or difficult to get, an extract reprinted; that a historical sketch has been given for each division of Bengal and for all the remaining political divisions of India under British rule, showing the years in which murrains prevailed and the main incidents of these; and that, by means of careful preces, summaries, &c., this general resumé has been relieved of all but the leading conclusions and the principles of future action. These we shall now set forth in the order already indicated, namely, according to the form at page 28 of the Appendix. The several subjects preceding the consideration of the murrains themselves will be shortly touched upon, as they affect the prevalence or spread of rinderpest, whose existence, nature, and contagiousness must be taken for granted; practical hints as to improvements of stock will be given as occasion arises.

II.—CONDITIONS AFFECTING THE PREVALENCE OF MURRAINS.

Topography.

8. Topography has been found to have an important bearing on the prevalence of murrain.

Insulation.

(a). If an absolute conclusion can be drawn from one example, the history of cattle plague in the Andaman Islands (Appendix, p. 595) disproves the allegation of spontaneous origin, and proves that importation is the main, if not only, cause of outbreak of rinderpest and foot and mouth disease even in tropical malarious localities where endemic diseases are rife among men and even sheep. The lesson to be drawn from the experience of this settlement is, that if we would preserve the stock of an area free from disease, what the physical conditions of an island impose as regards outside stock must be imitated artificially—that is, localities must be, in respect of importation of disease, insulated.

Hills.

(b). Hills oppose another physical obstacle to cattle association, and provide for a certain amount of isolation of stock (see Appendix, p. 275). We have accordingly found that, as far as our information of hills and hill stations permit a general statement, disease is not so frequently met with upon them, and, when it does occur, its importation is always traceable (see Appendix, pp. 253, 534, 433, and 607), and there is never any suspicion of spontaneous origin, as is often the case in the plains.

Rivers.

(c). Large rivers oppose a physical obstacle to the spread of murrain, and this should be taken advantage of in endeavouring to cope with them. The best illustration of this fact is the outbreak of disease in North Luckimpore in March 1869, while it did not make its appearance in the portion of the Luckimpore District south of the Burumpootra till June 1869, and it was then derived from the south (see Appendix, pp. 58, 269, 289). The importance of guarding ferries, which are a means of rendering futile the protection which rivers afford, is obvious (see Appendix, p. 290).

Grazing-grounds.

(d). The influence of luxuriant pasture tracts where cattle are herded and grazed, drawn from many points, mix together, and are then dispersed to their villages, in providing an abode and nursery of contagious diseases among stock, is frequently pointed out in the Appendix (see pp. 225, 219, 386, 419, and 505). The whole tract of the Himalaya Terai, the Orissa Gurjāts, the Rajmehal Hills illustrate the truth of the general assertion, and this widespread and necessary practice furnishes a kind and magnitude of conditions eminently calculated to maintain and spread contagious disease that it is difficult to meet by any general suggestion or rule. The problem of prevention and limitation must here be worked out locally, as, while the general practice and its tendencies and dangers are similar, there are local circumstances and variations which must govern the thought and action to be taken.

Roads.

(e). The influence of roads in spreading disease is well known and illustrated in the case of Ceylon, Darjeeling, &c.

Civilization and clearing.

(f). Increasing civilization, which means in India clearing of jungle, making of roads, extended agriculture, more communication with other parts, buying and selling, &c., provides greater facilities for the spread of contagious diseases of stock. This is illustrated in the case of Burmah.

(g). Our observations have been mainly conducted on the plains and upon an alluvial formation, but nothing that appears in these papers tends in any respect to establish a relation between any kind of country and soil and murrain except in as far as variations of this sort modify the other life conditions of stock, namely, number, association, &c. In other words, there is no evidence to show that cattle disease may and does not prevail on any area, whatever its geology, soil, altitude, &c.

These considerations go to establish the general statement that there is nothing in the geology or topography of India to render these diseases inevitable or irradicable, and place their causation on less difficult and insuperable conditions, thus giving a greater promise to repressive effort.

(h). The geographical distribution of murrains may be appropriately considered here, and with regard to the two principal forms of them, rinderpest and foot and mouth disease, suffice it to say that, wherever observation or inquiry has reached, they have been found to prevail or to have recently prevailed. The maps at the end of this report show the localities where murrains were reported to exist during each of the 11 years 1860—70, but it was found impossible to indicate the affected areas otherwise than by a dot, because the extent of country affected could not be accurately portrayed, and it is certain that the reported murrain has formed but a small share of what really existed. We cannot suggest a spot in India in which we believe that both forms have never occurred; but while this is true, it is true also that in any one year the geographical distribution of murrains will show large blanks of murrain-free divisions and districts, or smaller areas. Were inquiry more minute, these blanks would probably be smaller and fewer than they are believed to be, and in places such as Calcutta, where cattle are massed, an annual murrain map would show an annual murrain tint; but it is these blanks which give cause and room for action. If they did not exist, action would be impossible, and the aim of action must be to preserve from year to year the blanks which exist, and extend them. In a district checkered, as many, or most, will be found to be, with murrain patches, action must be correspondingly detailed and difficult. It is hardly necessary to suggest that an annual murrain map for India, showing accurately the areas affected, would be of itself a very interesting and important record.

9. The number of cattle in a certain area has in no instance been precisely estimated, nor can any reliable general statement be made with regard to the effect of crowding on the prevalence of murrain. The general rule may be accepted as true, that a sparsely scattered stock affords an unfavorable condition for the spread of disease, and a crowded stock the reverse; but the universal practice of herding invariably provides for more or less massing, and even in cases when an estimate of stock to area would show a low figure, this practice provides for all the conditions of dense crowding and its necessary concomitant of incessant intercourse. The state of the byres and oilmen's sheds of Calcutta, detailed at pages 69—75 of the Appendix, affords the best illustration possible of the evil effect of crowding. When disease enters these byres or sheds, it does not leave a single susceptible animal unattacked. One very important fact regarding the proportion of stock to owners and land was elicited at Chooadangah in the Nuddea District, namely, that owing to the increased relative proportion of land brought under cultivation, the consequent decrease of pasture land and the increased number of persons engaged in agriculture, the number of cattle which each owner possesses has been reduced to the minimum; whereas in former years ryots always owned a surplus of cattle (see Appendix, p. 100, evidence of Godle Joardar and others), and, as the people of Assam now do, held cattle as a representative of means or wealth; now their value consists in their work as agents for agricultural production. The same is true of dairy stock which, in the presidency division, is held as a means of producing milk, ghee, &c., which are the source of gain. The effect of increased demand of animals for slaughter, on both number and value, is testified by many witnesses (see Appendix, p. 102), and is no doubt important and true. As the surplus and unproductive stock of the country becomes less, as cattle become less a

representative of wealth, and more an agency of wealth, the subject of losses by murrain will assume a greater importance and attract a closer attention and interest, and the necessity for repressive measures becomes more declared and pressing.

Breeds.

10. A consideration of the breeds of cattle does not form part of our instructions or purpose, but a great deal of information on this subject is scattered through the appended evidence. While, with very few exceptions, all the cattle which passed under our observation belonged to the humped or Zebu kind, the quality varied greatly, from the puny degenerate Assam bullock to the magnificent Hissar, Hansi, and Goozerat animal. It is curious to note that while the Assam cattle are the worst in India, the Assam buffaloes are undoubtedly the finest. This results from an intermixture of the Bengal breed with the wild buffalo, and shows what judicious breeding may accomplish. We commend the subject of systematic improvement of breed to the notice of those interested in stock; but we would strongly endorse the opinion of Mr. John Stalkartt (Appendix, p. 79), who speaks with the authority of practical experience, that the introduction of foreign breed into India is a mistake. In truth, some of the Indian breeds cannot be improved on, leaving adaptation to the country and its wants out of sight. We would also draw attention to the evidence of the Revd. E. H. Higgs (Appendix, p. 315), who experimented successfully in improving native breeds. On the other hand, Baboo Joy Kissen Mookerjee, an influential and intelligent Zemindar of Hooghly, states (Appendix, p. 174) that his experiments in breeding have not been successful. This is therefore a question for careful trial. The results of systematic breeding, as observed by us in the Hissar Stud Farm, show that fine animals for all purposes may be obtained by the judicious crossing and feeding of native stock.

Improvement of breed.

Mr. J. Stalkartt's evidence.

Revd. Mr. Higgs' experience.

Baboo Joy Kissen Mookerjee's opinion.

Value of cattle.

Prices increased.

Causes.

11. The value of cattle has a more intimate relation to the subject of cattle plague. It will be observed that the universal testimony obtained everywhere is to the effect that within the last ten years the price of stock has risen. The rise is variously estimated at 10, 20, 25, 50, or even 100 per cent. (see Appendix, *passim*). This result has in some cases been attributed to mortality from disease,—and a temporary local rise in price does no doubt take place occasionally from this cause,—but the universal rise of the price of horned stock has by all our most intelligent informers been attributed to other causes of wider and deeper influence than loss of cattle by disease, which is local and transient. Stock has become more valuable and money cheaper. The greater demand for produce, the keener cultivation, the increase of cultivated area, and the consequent enhanced demand for cattle are truer reasons, and in some places the influence in this direction of an increased agricultural activity is most marked (see evidence recorded at Chooadangah, Appendix, pp. 97—117). The effect of the tea enterprise in Assam is an excellent illustration, because the people have, even after severe murrain, a surplus of cattle (see Appendix, p. 312 and elsewhere). From this it follows:—

1st.—That the loss of cattle is a more serious matter now than it was to all agriculturists.

2nd.—That the need of adopting measures to protect against loss is more urgent now, and yearly becoming still more so.

A māntuar bullock.

A striking, and no doubt true, observation on this subject is made by the Commissioner of Kumaon (Appendix, p. 433), who remarks that a māntuar bullock or buffalo, that is an animal that has recovered from an attack of mān (rinderpest), is more valuable than one which has not had the disease. The same fact is mentioned in an official report on cattle disease in the Netherlands (1st Report of the English Cattle Plague Commission, Appendix, page 187).

While the principal value of this observation is the practical demonstration it affords of the circumstance that one attack protects against a subsequent one, and of the value of a rightly devised and executed system of inoculation, it also shows that the existence of murrain has in some places had a palpable influence on the price of stock. It may reasonably be expected that, as agriculture

spreads, and the value of stock becomes still greater, the effect of murrain on price will become more striking, and that the circumstances of numbers diminished in relation to demand, use, and need, with the inevitable enhancement of price, will combine to urge the subject of murrain more and more strongly and closely on the attention of Government.

12. The problems suggested by the preceding paragraphs are capable only of complete solution locally from local study, but the conditions of their study are incomplete without a periodical census and correct registration of other data involved relating to the agriculture of the country. It would be a most important matter to ascertain accurately the price of cattle of different kinds at the principal fairs and local markets, and publish it periodically in the provincial Gazettes. The necessity of this is obvious, and its absence an evidence of the backward and primitive condition of matters relating to agriculture and stock in India. We accordingly submit this as a recommendation to which we attach very considerable importance, and which is capable of easy accomplishment at once, while the enumeration of cattle, though we feel it our duty to urge this also, is a matter of much greater difficulty, and its results subject to much greater doubt.

Census of cattle.

Market prices.

13. The uses for which cattle are employed form an important part of the consideration of the conditions of their existence, which render them more or less obnoxious to attack by epizootic or contagious disease. This subject has been so amply discussed in the paper printed at page 799 of the Appendix that we need only refer to it here, and remark that all our inquiries, in which we held the facilities for the spread of disease depending on the circumstances, life, and employment of stock constantly in view, have amply confirmed every word that is written there. These circumstances may be briefly recapitulated as follows:—

Uses for which cattle are employed.

1st.—Cattle associate freely on roads, paths, and fields during the cultivating season in working hours. Association at work.

2nd.—They associate on the pastures fields (where there are pasture fields) during non-working hours, generally in the afternoon. Association at pasture.

3rd.—They are housed together in confined sheds. Housing.

4th.—During non-working seasons they are herded. The stubble fields are then available for pasture, and the cattle of different villages meet and associate indiscriminately. This was particularly noticed in Assam, where a circle of villages surrounds a large rice tract (*pittar*) in which, when the rice is cut, hundreds of cattle roam at will. Herding.

5th.—During the same season, when not wanted in other places, they are driven in droves to more fertile tracts (see Appendix, pp. 227, 512, 451, 493, and 513.) They contract disease there, and bring it back to their villages when they are wanted for cultivation. Herding and droving.

6th.—As beasts of draught and burden, they travel long distances (see Appendix, p. 179, villages of Katgora and Palapooker) along roads, resting in bazaars or serais (see Appendix, p. 219), and, meeting other cattle there, contract or disseminate disease. Draught and burden.

7th.—As dairy cattle, they are pent closely up in confined sheds and the stock is periodically renewed; and if a new purchase brings disease, it spreads unfaillingly among the rest (see Appendix, p. 73). Dairy.

8th.—For slaughtering purposes cattle are droved and driven on roads, and may contract and scatter disease without limit (see Appendix, pp. 66, 92, and elsewhere). Slaughter.

9th.—There is a complete absence of any system of fencing in India, or that artificial boundary of property or farm which elsewhere supplies one of the main conditions and most essential postulates of a system of segregation. Absence of fencing.

In a word, the facilities for the spread of a disease are infinite, and in considering the question of local remedial measures, these facilities must be studied

Local inquiry necessary. in elaborate detail. While, generally, similar practices prevail over the whole country, which may be described in a few words, our observations exhibit a diversity of local peculiarities which must be carefully inquired into as a preliminary to any action. Such a practice, for instance, as that described by the villagers of Kamnara near Burdwan (see Appendix, p. 181)—driving milch cattle to Howrah during the cold weather—would have a most powerful influence in spreading disease, and must be known in order to have this influence obviated. Much of this kind of information is given in our report, but the local conditions governing the problem of prevention must be exhaustively studied in each locality before effectual preventive measures can be devised.

Housing of cattle.

14. The housing of cattle is an almost universal practice, and, as a rule, we have found the sheds used well adapted for their purpose. On this head we have no suggestion to offer, except that, in some instances, they are manifestly overcrowded. The Calcutta cattle dairies, for instance, are as crowded as they can be, and the arrangements for removing filth are exceedingly defective (see p. 71).

Feeding and watering.

15. The system of feeding and watering cattle has invariably been inquired into, and the Appendix contains abundant details upon the subject. It is evident that there is room for reformation here. In some places feeding is well understood and is reduced to a system, as in the Calcutta dairies and oil sheds, where the kind, cost, and effect on milk of various plans of feeding are well known (see Appendix, pp. 70, 75.) Again, in the district of Nuddea the feeding of plough and dairy cattle, in relation to work and produce, is well understood (see Appendix, pp. 102, &c.); but, as a rule, feeding and watering are left very much to the will of the animals. The evidence of Mr. Farrell upon this point (see Appendix, p. 294) is of more extended application than merely to the localities visited by him. There are several specific results of this want of care and system.

Effects of improper feeding.

1st.—During the cultivating season, when much land is under crop, pasturage is reduced to a minimum, and work is severe; unless fodder is systematically stored and cattle are stall fed, they fall off in condition. In Nuddea the cultivators had, owing to the want of pasture, learnt to store and stall feed; but this is by no means the case ^{invariably}.

2nd.—During the dry months, in many places, the herbage is so scanty and dry that innutrition, wasting, and indigestion (Fardel-bound) are the consequences. A good illustration of this was observed at Mohunneah in the district of Shabad (see Appendix, p. 220), where, during the two days we stayed there, two fatal ^{became} cases of this sort occurred, and were examined.

3rd.—The effect of bad pasturage in causing serious mortality is exemplified in the *bhooknee* of the Gujranwallah and Jhung bar in the Punjab. This subject has been treated at pages 445 and 448, and is frequently illustrated in the evidence recorded in the Punjab.

4th.—In 1869 an absolute scarcity of fodder caused, in some districts of the North-Western Provinces, a great loss of cattle by starvation; this resulted from simple improvidence.

5th.—After the first shower of the rains a delicate rich growth of young shoots takes place. The cattle, previously starved and accustomed to the driest pasture, browse eagerly on this sweet succulent herbage, and the consequence is a fatal attack of hoven. This is a universal observation, and many cases of the mysterious *puschima* of Lower Bengal would appear to consist simply of this condition thus caused.

6th.—The effect of a too rich pasture after a dry season in causing "quarter-ill" is well known and clearly brought out in Mr. Dawson's reports on the Hissar murrain of 1864 (see Appendix, p. 453). The rational remedy of exercise and change of pasture has been adopted there as a standing rule (see Appendix, p. 456, evidence of Hansari).

7th.—The evil effect of eating grass which has been submerged is very frequently alluded to in the evidence and reports (see Appendix, pp. 39, 117), but

no opportunity occurred of studying practically the effects of this kind of pasture. It is a subject worthy of attention.

8th.—In many places particular kinds of grasses and herbs have been credited with causing disease (see Appendix, pp. 386, 497, 498). The only observation on this head which we had an opportunity of making was at Chooadangah, where two cases of death from eating castor-oil seeds and leaves were seen and examined *post-mortem* (see Appendix, p. 9). These considerations are sufficient to prove that the study of the food of cattle and the storing of fodder is a desideratum. On this subject much information has been collected, and it is one worthy of practical attention. The various kinds of grass available for cattle food in different places have been carefully enumerated, but, for practical purposes, this kind of information must be more local and exact. The serious question of pasture land is one which we would particularly bring to notice. The old religious rule which prescribed the reservation of a certain proportion of the surface for pasturing cattle (see Appendix, p. 815) has in many places been forgotten in the struggle of increased remunerative cultivation (see Appendix, pp. 78, 103, 174). This matter demands special inquiry and treatment, and is foreign to the subject in hand, but we allude to it in order to record our belief that it is a most important one, and deserving of careful and practical attention.

The watering of cattle is conducted on the same hap-hazard principle as their feeding. Watering-places afford a means of spreading disease (see Appendix, p. 260), and it is highly probable water itself may. In the centre of a village of Etawah—Fukeerpore—we saw a small pond containing gruelly-green fluid in which cattle wallowed at will, and on whose banks cases labouring under rinderpest were seen. A place of this sort is nothing else than a pit in which healthy cattle bathe in diluted rinderpest discharges. It was an extreme case, but by no means an uncommon one. The single case of rinderpest which had occurred in a village of Burdwan—Gungpore (Appendix, p. 180)—had not only been housed and fed separately, but watered in a separate pond. This matter of common watering-places must not be lost sight of in any scheme of segregation. Enough is not known of the contagium to say that it does or may act through or by water, but the necessity of the precaution is obvious. Cattle labouring under rinderpest have an abnormal thirst and make for ponds and watering-places, and the observation has frequently been made that their carcasses are information must be kept tanks, ponds, &c. (see Appendix, pp. 260, 275, &c.) monstrosity & general ster which cattle have to drink is in some cases very bad, as in the instance of the Calcutta dairies (see Appendix, p. 71). A filthy fluid containing all kinds of abominations is plainly improper.

16. The subject of herding is undoubtedly one of the most important in considering the spread of contagious disease and its prevention. The following are the principal kinds of herding practised in Bengal:—

1st.—Herding for pasture, when the cattle of different homesteads or ^{are} collected and driven to a fallow field or tract where they mix

2nd.—Herding for pasture, when the cattle of different homesteads or

3rd.—Herding for pasture when cattle are driven to other and distant places (see Appendix, pp. 219, 225, 242).

4th.—Herding for pasture, when the cattle of different homesteads or

5th.—Herding on breeding tracts (see Appendix, pp. 419, 421, 422, 512, &c.)

6th.—Herding and droving for market (see Appendix, pp. 115, 387, &c.)

7th.—Herding and droving for sale amongst villages (see Appendix, pp. 384, 366, &c.)

All of these varieties of herding, which have been made a part of the local inquiry and are carefully described in the Appendix, are simply so many agencies of the spread of infectious diseases, and in any plan of preventive effort they must, as such, be minutely taken count of.

Supply of stock.

17. The necessities of replenishing stock furnish another channel of spreading disease, and the modes of replacing losses by age, injury, or disease must be studied with a view to preventive action.

Local breeding.

Local breeding is a universal thing in Indian villages, but it does not serve to supply the demand of populous districts where agriculture is briskly carried on (*e. g.*, 24-Pergunnahs and Nuddea), while in other places (*e. g.*, Palamow, the Terai, and Orissa) where pasture land is abundant, breeding exceeds the local demand, and thus a definite system of cattle movement and trade has arisen.

Streams of cattle movement.

The streams of cattle movement do not, however, depend solely on agricultural demand, but, where cattle are used for their meat or milk, an additional demand arises. These causes determine certain constant routes of cattle droving which are liable to little variation.

Many of these have been studied and displayed in the Appendix, but these streams must be accurately defined in each district. We need only here refer very generally to the wide radii of cattle movement which the wants of Calcutta have created, to the constant stream of cattle from the breeding grounds of the Terai to the central districts, and to the stream of buffaloes proceeding from Bengal to Assam every cold weather (see Appendix, pp. 261, 333), to illustrate this point. In times of impending murrain these streams must be studied, watched, and, so to speak, temporarily dammed up. The principal circumstance connected with breeding which tends to spread disease is the hap-hazard way in which it is conducted. Bulls, whether Brahmini bulls or village bulls, are allowed to roam at will, and may carry disease about with them without hindrance.

Markets.

18. The subject of markets has been held prominently in view, and much information regarding cattle fairs will be found throughout the Appendix. Their influence in spreading disease need not be urged here; it is too well known: but the private bargain system, or village-to-village or person-to-person dealing, is not without its dangers. Mr. Farrell in his evidence (p. 297) gives two good examples of disease spread in this way. We had, at Puddobelah, in the Nuddea district, a good opportunity of observing what a local market may do in the way of disseminating rinderpest (p. 111). Cattle actually labouring under the disease were seen at this fair in association with healthy animals brought from a wide circle and destined to travel to widely separated places. We also saw cases of foot and mouth disease at the Oolooheriah fair (p. 188). The outbreak of the same disease—rinderpest—in Benares and Dinah in the district of Shah traced to the same fair, Kāt Berhampore in the Shahays we saw there, two also evidence regarding Umritsur fair, p. 468).

Calcutta markets.

The important markets around Calcutta were made a subject of special and careful attention, and much information regarding them will be found at pages 64, 65, and 189. In any scheme of preventive action, it is obvious that cattle markets must be considered, and the importance of skilled inspection and exclusion of diseased cattle need not be urged.

Hide trade.

19. Much information regarding the trade in hides will be found resorted throughout the evidence recorded in the sequel. It is quite certain hides of cattle dead of rinderpest are, all over India, with the ex of young Assam and the Soonderbuns, removed and carried throughout the driest after being sun-dried or imperfectly cured. This is a very la consequence and any unnecessary interference with it would be a hardship any cases of hundreds; but, though no specific instance of conveyance imply of this the agency of hides has come under our notice, there is eve think that it may be thus conveyed (see Mr. Farrell's paper, p. "quarter-disinfection of hites. We would recommend the adoption of the le the Hissar Efficient soaking in lime or salt and water, as is done in many cases, is known to render the hide innocuous, as far as conveyance of disease is concerned (see Appendix, p. 383), but at least 3 or 4 seers of lime or salt must be used for each piece, and the thing must be done thoroughly and systematically on the spot. If this cannot be attained, then the scoring and burial of skins, or their destruction in

any other way, is imperative. No hesitation should exist when the alternatives are a few hides and many living cattle. The subject of cattle poisoning and its relation to the hide trade have been carefully studied, and the results of investigation summed up in Appendix No. IV, to which we would refer, merely stating that the allegation that all, or most, of the murrains of Bengal are cattle poisoning has been proved groundless by the extended investigations we have made, and the fact that in Assam and the Soonderbuns, where no trade in hides exists, disease is as rife as elsewhere.

20. Having thus lightly touched upon the conditions under which cattle exist, as regulating the origin or spread of murrain,—and the analytical index we have prepared will provide a key to a more elaborate study of all the information which has been amassed on each subject,—we now proceed to set forth the principal conclusions at which we have arrived regarding—

III.—DISEASES OF STOCK.

21. As regards the history of murrains, little need be said here. All the information gathered under this head has been given in the "historical sketches" prefixed to every division, in which all the recorded outbreaks in each district have been shortly described in chronological order. The amount of past disease of cattle everywhere, which these sketches reveal, will excite surprise, but it is small in proportion to what might have been given, had attention been continuously directed to the subject. Only in case, of the Andaman Islands, have we been able to obtain the date of the first outbreak; everywhere else there are mere glimpses of periodical prevalence stretching back towards or into the last century. We made every endeavour to trace any tradition or allusion in old Hindoo chronicles to the subject of murrain, but without success. All the information on this head which could be obtained is given at page 814 of the Appendix. The series of maps which we have prepared from the records at our disposal show a gradual increase of disease, but this, we are convinced, is more apparent than real, and is evidence of increased knowledge rather than increased disease. It is to be earnestly hoped that every outbreak which occurs will now be carefully studied and properly recorded, and that some correct idea may be furnished continuously, not only of the chronology of murrains, but of their area of distribution. This must depend entirely upon local effort, and we have had sufficient experience to convince us that local effort must be stimulated in this direction. Unless there is some department which will furnish this stimulus and record results, valuable information must be lost; and if events are not recorded as they occur, the demonstrated general prevalence of 1870 will be succeeded by an apparent absence of murrain in 1871. Thus, the teachings of the past will be of no avail with regard to precautions against the future, and no more definite truths than that murrains prevail periodically in particular places, and always somewhere, will be available for guidance. With regard to the first appearance or origin of murrains in India, we are and shall remain in complete ignorance.

22. The most important diseases of horned stock of which we have obtained experience or authentic information are:—

- 1st.—RINDERPEST.
- 2nd.—FOOT AND MOUTH DISEASE.
- 3rd.—HOVEN.
- 4th.—QUARTER-ILL.
- 5th.—PLEURO-PNEUMONIA.
- 6th.—BHOOKNEE OR PURGING.
- 7th.—CYSTIC DISEASE.
- 8th.—THROAT SWELLING.

Reserving rinderpest for special consideration, we shall shortly state the conclusions at which we have arrived regarding the others.

23. *Foot and mouth disease* is a universal disease of cattle in India, causing a considerable amount of sickness yearly, much disabling of cattle, consi-

Cattle poisoning.

History of murrains.

Narratives of outbreaks wanted.

Diseases of horned cattle.

Foot and mouth disease.

derable inconvenience, but no great mortality. It appears to be even more common and frequent than any other form of cattle disease, and if we may judge from the experience of the Andaman Islands (see Appendix, p. 595), more penetrating and persisting. It generally appears in the hot season, but may prevail at other times. Villagers everywhere in India—Bengal, Madras, Bombay, &c.—and Ceylon are familiar with it, and have eagerly attested its existence even where the severer disease was denied or concealed. Allusions to it will be found scattered through every part of the Appendix, and occur almost on every page. Cases of this disease were seen at Chooadangah (see Appendix, p. 112) and Oolooberiah (see Appendix, p. 188), and a regular epizootic studied at Darjeeling in October (see Appendix, p. 255). In this case the infectious nature of the malady and its disastrous consequences under some circumstances were very apparent. The circumstances causing exceptional severity in this instance were,—working the animals after the disease had commenced, and, apparently, a colder climate. A case exactly parallel is described by Mr. Thacker in his Madras reports (see Appendix, p. 535).

Prevalence.

Names.

Treatment.

The vernacular names by which this disease is known are very various, but generally derived from words signifying mouth and foot separately or in combination,—*mohpuccah*, *khurpuccah*, *muhkhur*, &c., &c. The symptoms of this malady need not be detailed here; they are well known and frequently described in Appendix No. II. The most frequent cause of death is inability to feed, owing to disease of the mouth, or severe ulceration of the feet, owing to the development of maggots. The native methods of treatment are various. The most common plan is keeping the cattle standing in muddy water; this prevents the access of flies. Various astringent barks, babool, &c., are also applied in some places. The undoubtedly infectious nature of this disease suggests the propriety of isolating the sick and segregating the healthy, destruction of litter, and disinfection; and, during the cultivating season, it is obvious that precautions must be re-doubled, in order to prevent the interference with work which this disease causes; but, considering the mild nature of the disease under a proper system of treatment, it is questionable whether greater inconvenience and loss of time and money would not be entailed by elaborate preventive measures than by any sickness which might prevail, notwithstanding cleanliness, disinfection, and simple precautions. As regards medical treatment, nothing can be better than carbolic acid and oil (1 part to 40), or camphor and oil (1 oz. to a pint), as an application to the feet and to prevent access of flies, and a watery solution of alum (10 grs. to 1 oz.) as a wash for the mouth. A mild laxative might be administered at the outset, and it is of the utmost importance to sustain the strength with soft mash, rice gruel, &c. Keeping the affected parts clean is of great importance, and a poultice may occasionally be useful. Detached portions of the hoofs should be removed. If this plan is adopted the loss from foot and mouth disease will be very trifling. The question of the power of one attack to protect against a second was constantly held in view, but we were unable to arrive at any definite solution of it. The general testimony of the people was to the effect that one attack was not protective; in this we concur, and it is all the more remarkable in contrast with the almost unanimous belief they expressed in the protective power of one attack of rinderpest.

Hoven.

24. *Hoven* is an exceedingly common form of fatal disease among Indian cattle, and vivid descriptions of it met us at every turn. It is dependent upon errors of diet, and consists of suffocation from over-distention of the rumen with food or flatus. It is known by a great variety of names, and is most common in the early rains. There can be no doubt that much of the *puschima* of which we heard so much in the Presidency and Burdwan divisions is hoven, and this is brought out more clearly in the evidence of Kombar Alli (see Appendix, p. 92)—a very intelligent witness—than elsewhere. In general, it has a more expressive name; *pet bhagi* (swollen stomach) is a very common term, or some equivalent. After a smart shower of the early rains, when succulent shoots spring up as if by magic, cattle which have been nearly starved for weeks are apt to over-

feed themselves. Several animals of a herd, or among a village stock, may thus be seized with hoven, and the affection may almost appear epizootic. It is obvious that, as long as no care and system are pursued in regulating cattle feeding, they will be liable to this disease as often as a cause arises, and there can be little doubt that cases of this sort are often mistaken for murrain or poisoning. A case examined near Benares (No. 47 *post-mortem* examination) gives a good illustration of the rapidity with which death ensues. Another condition, which also proceeds from improper feeding, is impacted stomach, caused by animals in the dry weather having to subsist on withered stems or dry roots of grass. Two cases of this sort were seen at Bhubooah in Shahabad (see Appendix, p. 220), and they are no doubt very common. The treatment of cases of this description need not be entered upon here; it is matter of common veterinary practice. We are convinced that a large aggregate body of stock yearly falls victims to this preventible and curable form of disease, and its widespread existence constitutes one of the best possible arguments for the diffusion of veterinary knowledge and skill. The simple and successful operation of tapping the rumen is not even known to the people, and in many parts of the country the disease is thought to be incurable.

Fardel-bound.

Diffusion of veterinary knowledge.

25. The existence of *quarter-ill* has been more clearly proved in the Punjab than elsewhere. Mr. Dawson's valuable reports, given at pages 452—454, leave no doubt as to the state of the case at Hissar, and the testimony of the inhabitants of the Punjab in many instances showed that the disease was not confined to Hissar (see evidence of Pema Goalla, p. 455; Hansari, p. 456; Mahadoor Shamooz, p. 492; Shaik Mahomed, p. 493; Rehena and Mohadah, p. 495; villagers of Baharalla, p. 496; and Fatheh Shaha, p. 497). Mr. Farrell met with the disease in the Soonderbuns (p. 123), and from the evidence of the villagers of Dowlut Dyar (p. 98) it is evident that the term *puschima* covers cases of this kind also. This class of diseases is well known, as regards causes, pathology, and treatment, and, as they owe their origin to causes which may affect the members of a herd in common, they may assume the aspect of an epizootic; indeed, it will be observed that Mr. Dawson gives advice for the sanitary treatment of the Hissar murrain on the theory of its contagiousness, for which, in this country, there is every ground of belief. Whether this is true of this disease or class of diseases or not, it is very plain that precautionary measures are those which give the only prospect of success, and the measures recommended by Mr. Dawson, which need not be recapitulated here, are very excellent. Care in dieting, change of pasture, and intelligent watching are the measures most promising of success, and this class of diseases, which in many cases almost amount to a murrain, and do, we believe, cause much destruction of stock, supply another argument for the spread of sound views regarding the sanitary and medical treatment of stock throughout rural India.

Pleuro-pneumonia.

26. *Pleuro-pneumonia* is undoubtedly met with in some parts of India, and convincing evidence of the existence of this disease was obtained in the Punjab, where cases were seen and examined *post-mortem* (see pp. 478—480).

The people of the Punjab were very familiar with the disease and described its symptoms accurately (see Appendix, pp. 456, 479, &c.) It is called *pheepree*; 172.9 deaths from this cause is the yearly average of the Hissar return at p. 457, or nearly 2 per cent. of stock. The disease would also appear to be common in Sind (p. 555); it is possible that it may have been originally introduced into the stud farm at Hissar, and thence disseminated throughout the Punjab and Sind. The evidence collected in the Punjab would go to show that the disease is, and has been, a common and destructive one, but not so general or destructive as rinderpest or *bhooknee* when it occurs. It appears, as a rule, in this country, to be more sporadic than epizootic. The general opinion seems to be that it is not contagious (see Appendix, p. 494); but, in the face of the evidence on this point which has accrued from Australia, South Africa, and the United Kingdom, the theory of contagiousness should be the guide to action, and segregation and disinfection should be scrupulously practised. The disease has not acquired that prominence or importance as a cause of sickness

and loss of stock which would suggest a trial of inoculation—at best an expedient of very doubtful advantage, as has been proved in Great Britain and Australia. More careful inquiry than we had time or opportunity to make is evidently highly desirable, but, as far as our inquiry has gone, we cannot conclude that pleuro-pneumonia has anywhere attained the dimensions of a murrain, or need occasion general alarm. Any investigation on this subject should be local, as circumstantial as possible, and the work of a skilled agent.

Bhooknee or purging.

27. *Bhooknee* or purging we have no hesitation in pronouncing an endemic, strictly confined to certain parts of the Punjab, viz., the bar of the districts of Gujranwalla and Jhung. This disease is described at pages 448—473 by many native witnesses, and Dr. Quinnell's report at page 473 gives an excellent account of the nature, symptoms, and *post-mortem* appearances of the disease. From all the evidence recorded upon the subject, there can be little doubt that it is a disease of improper diet and watering, occurring to an exceptionally severe extent in an exceptionally dry year, and its remedy is plain—good pasture or fodder and good water. How to obtain this in years of drought, such as 1869, is no easy question, but one to be solved locally. The witnesses examined on the subject were very clear as to the difference between this disease and rinderpest (see Appendix, p. 495), and, from a comparison of the symptoms, no reasonable doubt can exist on this point. Some of the men examined thought the disease contagious; but this is a natural but erroneous inference from the circumstance of a disease affecting many cattle simultaneously, and apparently from association because in association, while they are subject to a common cause of disease. The Tehsildar of Jhung (see Appendix, p. 498) found that the disease ceased everywhere when rain fell.

Cyst disease.

28. The infection of cattle by *cysts* is a very important subject, because one form of the disease is so universal in India, and the relation of the malady to some human diseases is so well known and so serious a matter.

The hydatid cysts or the immature *tænia echinococcus*, which in its mature condition is harboured by dogs, and probably wolves and jackals, are found all over India affecting the liver, lungs, and spleens of cattle. The extent to which these cysts exist among cattle in Calcutta is shown by the observations made at the slaughter-houses (pp. 66 & 67), and the state of the case in Lahore is shown at page 480. Public attention has been more particularly drawn to this subject in the Punjab than elsewhere, on account of the difficulties which these cysts occasioned in the matter of meat-supply. The whole subject is elaborately discussed in two papers printed in the Appendix, one by Surgeon Major Ross, F. R. C. S., who confines his remarks to the beef tapeworm (*tænia mediocanellata*) (see Appendix, p. 482), and the other by Staff Assistant Surgeon J. Fleming, M. D., who discusses both kinds of tapeworm and the very common parasites called flukes (see Appendix, p. 486). Dr. Fleming enters upon the question of preventive sanitary measures, which, as far as the beef tapeworm is concerned, we entirely endorse; but the question of preventing the other variety of cysts is a much more difficult matter, and one on which we cannot offer any suggestion which would prove practicable as regards the cattle of the country at large, as the disease is probably disseminated by dogs, jackals, &c. No doubt stall-feeding and scrupulous cleanliness and care would exclude the ova of the tapeworm, but this is, as regards agricultural and village cattle, simply impossible. It does not enter into the scope of our instructions to discuss this subject elaborately, which is the less possible, as the facts on which any discussion might be founded are very far from exhaustive. We believe that it might be usefully worked out, as far as opportunities offer, by the Veterinary Department and the Officers of the British and Indian Medical Services, and we accordingly commend it to notice for investigation. Late public reports on the subject would apparently show that these cysts are not so common now as when attention was first drawn to the subject in 1866; but that this is not the case, the observations recorded at page 480 will suffice to show, and although rejections of meat by the Commissariat have, we believe, in accordance with the views of Dr. Muir, C. B., Inspector General of Hospitals, British Forces (see Appendix, p. 481), been much fewer,

there is no reason to believe that the number of carcasses in which cysts of one sort or other, are found is smaller than it was. The figures quoted in public records upon this subject are founded on the records of *rejections*, and do not therefore represent the true state of the case. We are convinced that cyst disease is universal among Indian cattle; and that this is a subject worthy of extended investigation by the medical and veterinary officers scattered over India. The results of individual inquiry might be collated by the heads of these departments for the information of Government.

29. *Throat disease* will be found frequently alluded to in the reports of district officers, and very few schemes of cattle disease submitted do not contain, under some name or other, an allusion to this affection. We have not been so fortunate as to see a single case of this swelling of the throat, and are inclined to believe that it is either a symptom of some other disease—rinderpest or quarter-ill—caused by swelling of the parotid and submaxillary glands or effusion of blood into the subcutaneous tissue of the neck and dewlap, or a kind of mumps—a disease which is not uncommon as an epidemic among communities in India. The disease is epizootic and fatal among cattle. A good illustration of it will be found at page 204, but descriptions and references are scattered throughout the Appendix (see pp. 102, 115, 148, 220, 440, &c.) The native treatment is firing externally, and this seems to be successful in many cases.

30. The foregoing are some of the most prominent diseases causing sickness and death among cattle in India. They have been briefly treated of, and the catalogue of affections to which cattle are liable is no doubt as long in India as elsewhere, though with the exception of Dr. Gilchrist's "Practical Treatise," which contains a description of many forms of cattle disease drawn from his own experience, no other systematic record of Indian origin exists. This book has hitherto been the only guide available for officers in charge of commissariat and artillery cattle, and as the directions for treatment which it contains are antiquated and inconsistent with the advanced pathology of the present day, it should not be so generally and infallibly relied upon as it apparently is. Indeed, there is every reason that Government cattle as well as horses should obtain the best veterinary advice when that is available. We understand that such is not the case now, and would urge strongly that in whatever station a Veterinary Surgeon's services are available in the Bengal Presidency, they should, as in Bombay, be employed for the treatment of sick Government cattle. A large mass of valuable experience is moreover thus available which is lost upon the unskilled men who undertake the treatment of ailing cattle, and which might be fixed for scientific purposes or utilization, as far as the cattle of the country are concerned. Any effort to apply veterinary knowledge or skill in India must in the first instance be made through the Veterinary Surgeons of the public service, and it is unfortunate that they are debarred from the only source of information and experience which is available for them, and sound advice on such subjects is now expected of them, while the special experience on which it should be founded is denied. Valuable experience is also available at the Government cattle farm at Hissar and Hoonsoor, which is not fixed or utilized. The table at page 457 shows the nature and extent of the available field of study, and it is matter of regret that this large field of observation is lost for purposes of systematic examination and record of the diseases of cattle.

Other diseases of stock.
Government cattle should be placed in medical charge of Veterinary Surgeons.

IV.—RINDERPEST.

31. We now come to the main and central object and subject of our labors,—the murrain to which a far greater share of mortality among cattle is due than to all other causes put together,—namely, that to which we have applied the term *rinderpest*. That this term has been appropriately applied, the evidence which we have collected and sifted leaves no reasonable doubt. After a careful study of the features of the disease in Europe, as recorded in the reports of the English Cattle Plague Commission and Veterinary Department of the Privy Council, and in systematic works; an exhaustive consideration of all

Rinderpest.

that has been written on the subject in India and Ceylon; an extended and minute inquiry, oral and documentary; a very large experience of the disease as manifested by living animals in a great many parts of the Presidency of Bengal, and an elaborate practical study of the post-mortem and microscopic appearances of the organs and tissues of subjects which have died of the disease,—we have, without any prejudice or pre-conceived opinion to misguide us, deliberately and decidedly arrived at the conclusion that this Indian murrain is identical with the Steppe plague or murrain of Europe and Russia in Asia, and is essentially the same disease as that which devastated the flocks of England in 1865-66. It is impossible to compare diseases which vary with varying circumstances of breed, country, climate, and other life conditions, so accurately as to exhibit exact identities spreading in every case into every detail; but taking a broad view of the nature and behaviour of this murrain, as displayed so copiously, and in many cases elaborately, by numerous independent witnesses in the succeeding pages, the resemblance is complete, whether we take the whole history of an outbreak, the whole *ensemble* of the phenomena of cases, or particular symptoms or pathological features.

Identity of Indian and European rinderpest.

Opinions of Medical and Veterinary authorities.

This opinion has invariably been arrived at by medical men and veterinarians who have made the disease a special study. Dr. Gilchrist in 1848 pronounced the *burra azar* of Madras to be the same as the "murrain of Europe" (p. 539). Dr. C. Palmer had, in 1864, no hesitation in calling the Calcutta epizootic *rinderpest* (Selections, Bengal Government, p. 74). Mr. Gudgin, V. S., after carefully studying the epizootic in Burmah in 1866, arrived at the same conclusion.

Mr. Thacker, V. S., from a large practical experience in Madras, extending over many years, has unreservedly adopted the same view. Mr. Barrow, V. S., who had been a Government Inspector in the County of Cambridge during the outbreak of *rinderpest* in England, concluded that the epizootic which he studied in Benares in 1869 was "analogous to the Steppe murrain, rinderpest, or cattle plague that ravaged the herds in various parts of England during the years 1864, 1865, and 1866" (see Appendix, p. 360). Mr. Stanley, V. S., acknowledges that this same Benares disease "somewhat resembles the rinderpest of Europe," though he doubted its identity, owing to its milder character and the absence of some characteristic phenomena. Mr. Stanley had only seen seven cases of the disease, and remarks very justly that the Steppe murrain is far less fatal in the Steppes than elsewhere (see Appendix, p. 360). Mr. Farrell, V. S., who gained a wide experience in Bengal and Assam, has no doubt or hesitation on the subject (p. 296). And, lastly, the Ceylon Cattle Disease Commission pronounce the following judgment upon the Ceylon murrain:—"It is identical in its leading features with the rinderpest of Europe and India, differing only to such an extent and in such a manner as might be reasonably expected under the varying circumstances in which cattle are placed in this country" (p. x of their report). We would not build too strongly on opinions, although their unanimity and the independent manner in which they have been arrived at are weighty points. The variations which may be noted between the English plague and our descriptions are no greater than we have ourselves noted in different forms of the disease in this country, and no greater than may be observed in the case of foot and mouth disease, human small-pox, and cholera. The comparison between the English and Indian disease is indeed not a fair one, because circumstances and climate are so different. A more reasonable parallel is afforded by the plague as it exists in Asiatic Russia, and, as far as the records to which we have had access inform us, the Russian disease is in Russia exactly the same in every respect as the Indian disease in India.

The only certain test of identity.

We do not propose to enter into an elaborate analysis of both diseases for the purpose of proving or fortifying our position. After the experience we have gained, and consideration we have given the subject, we have formed the opinion which we have above recorded, and we have furnished materials of every kind in this report by which its validity may be judged, and the specimens we have collected, and drawings which we have had executed, the catalogues of which are

given at p. 951, afford still further tests. If anything further is wanted, the matter may finally be set at rest by inoculation, under proper precautions, of cattle in England by material derived from the Indian plague. We do not undertake the responsibility of initiating or advising this crucial test, for we are too assured of the nature of the Indian plague to doubt its danger and impropriety; but it is incumbent on those who do not accept our conclusions, and cannot demonstrate their futility from the evidence on which they have been founded, to adopt the only means by which any doubt may be for ever removed.

32. Whatever doubt may exist regarding pathological identities, there can be no doubt regarding those features of the disease on which preventive action depends, namely, contagiousness and importability; so that, for practical purposes, varieties of type are of little concern while we have to do with a febrile or exanthematous disease killing more than half the cattle it attacks, and eminently infectious. On this subject of contagiousness the evidence recorded has been almost unanimous, and this unanimity is so strong, clear, and universal, that it would almost appear superfluous to illustrate or discuss the matter. Reporters and witnesses have expressed themselves without hesitation on the subject, and in many cases have given striking instances in support. The introduction of cattle plague into the cantonment of Debrooghur on two separate occasions, in 1854 and 1869, in exactly the same manner, namely, by sepoys rejoining the head quarters of their regiment from Golaghaut, is a remarkable instance of infectiousness and importability (see Appendix, pp. 297, 311, and 315). Other very well marked illustrations will be found in the papers relating to the Assam Division.* A curious instance of importation of disease into a sound village will be found at page 184. Some of the cattle of the healthy village were impounded for trespass on an affected village, and carried back the disease with them. Villagers almost invariably told us whence the disease came, and, as a rule, attributed its origin to previous prevalence in an adjoining village and association of cattle on the pasture field. When the origin could not be explained, the cause was most probably want of power of accurate and intelligent observation. The progress of the disease in a village was generally traceable. The first two or three houses in which it appeared were, as a rule, contiguous; and then, as the amount of contagium was multiplied, it became general, and its spread dependent on the numerous accidents of unrestrained intercourse. In some cases, as in that of the village of Mordaha (see Appendix, p. 366), the villagers pointed to the purchase of a diseased animal, and the introduction of the murrain from the grazing tracts of the Terai and elsewhere into the villages of the adjoining districts is illustrated frequently (see Appendix, pp. 227, 253).

Contagiousness and importability.

Opinions.

Instances.

Whether, then, the broad features of the movement of this disease across the country, or the circumstances of its progression in a village, or facts regarding the infection of particular animals or of a single shed or byre, be considered, they all point in one direction, indicating that diseased animals are the principal agency of the propagation of this disease. Negative evidence regarding the salutary effects of a cordon (p. 290), or segregation (p. 168) or removal of healthy cattle, (pp. 202, 302), points in the same direction; but in order to place the matter beyond a doubt, healthy animals bought from healthy villages were experimentally associated with those labouring under disease, with the invariable result of unfailing infection. Satisfied of the communicability of the disease from animal to animal, an attempt was made to determine up to what distance the disease was capable of conveyance. These trials will be found recorded at pages 892, 893, and the general result warrants the conclusion that, with proper precautions, a distance of 30 yards is sufficient of itself to secure

Proved experimentally.

Infecting distance.

* Much information regarding the importation of Bengalee buffaloes, and the probable importation of disease with them into Assam, will be found at p. 333; but the evidence is not so clear and conclusive as to warrant any final opinion. The following extract from a letter written by Captain L. Blathwayt, Assistant Commissioner, Golaghaut, dated 20th February 1871, is interesting, as bearing on this subject:—

"On the 28th December 1870, a herd of buffaloes brought up from Bengal passed through the Namlighur Tea Factory, and about two days after a disease broke out among the pigs belonging to the coolies, who possessed altogether about 40, and of these every one died. It spread rapidly among the factory cattle, and up to the 28th January 137 died; but since that date there have been no deaths, and it has now entirely disappeared."

immunity; but, as the contagium is portable, it is obvious that safety at any distance must depend upon the strictness with which possible conveyance is guarded against. The infecting material is contained in all the discharges which so abundantly issue from the mucous orifices of the animal and in the scales shed from the skin; and it is more than probable that, in a dried condition, it may be capable of conveyance by a strong wind to a considerable distance. The results obtained artificially are not therefore to be adopted as safe ground of action, unless the precautions against conveyance are carefully imitated. The salutary results of careful isolation in the midst of a severe murrain exhibited in the village of Akna (p. 168) are confirmatory of these conclusions.

Conclusions.

As far as our observation has gone, we believe,—(1) that this murrain is a highly infectious one; (2) that its propagation is due mainly or entirely to that circumstance; (3) that all the incidents of particular outbreaks, if properly investigated, and with a due consideration of all possible contingencies, will be found to support this conclusion; and (4) that all preventive action must be founded on this theory. We are not prepared to affirm that the disease has not originated, and may not now originate, from conditions and causes other than infection, but we consider the evidence in favor of communicability conclusive, as far as practical effort is concerned. A strong point has been made by some reporters (p. 392) of the escape of some cattle in a village herd or flock, while others, or the majority, were attacked; but the analogy of all communicable diseases proves that liability to attack is by no means universal, and that among numbers exposed there is always an unsusceptible residue: in this disease testimony and experiment prove that animals once attacked are not, as a general rule, again attacked; and, seeing that the disease is so frequent a periodical visitant of all the districts of India, the proportional number of animals thus protected must be considerable. The conditions under which infection operates still remain to be studied. We do not pretend to be able, from the cursory glance we have been compelled to take over an immense field, to indicate all these conditions: this must be subject of future observation; but the influence of conditions, such as crowding, cleanliness, season, &c., &c., can only introduce modifications or qualifications of the general law of communicability, which is both fundamental and of primary place and importance.

Season.

One of the most potent of these conditions is, no doubt, season, and on this point the evidence indicates the rainless and hot months as being those in which this murrain most frequently occurs. It follows in this particular human small-pox and cholera, and is amenable, like them, to the repressing effect of heavy and sustained rain. As regards the predisposing effect of breed, age, sex, and condition, the general impression obtained was, that none of these conditions possessed much power in determining or deterring. What the so-called "epidemic constitution or influence" is which provides that in one year or season epidemics or epizootics shall prevail, and in another not so, we are quite unable to say, and, for purposes of action, we are of opinion that communicability and importability should occupy the place of axioms.

Names, symptoms, post-mortem appearances, and nature of disease.

33. Passing over the names by which this disease is known, which will be found in the appended glossary; the symptoms, which are abundantly illustrated throughout Appendix No. II and carefully detailed in Appendix No. VI; the post-mortem appearances, which are summarised in Appendix No. VII, where details of cases are given; the nature of the disease, which may shortly be characterised as an infectious fever of exanthematous character,—subjects which we do not consider it desirable to enlarge upon here,—we would offer a few remarks on statistics before passing on to the subject of treatment.

34. Numerous figured statements will be found scattered throughout Appendix No. II, and the more reliable tables have been thrown together in a special Appendix (No. III), where their legitimate conclusions, as regards the effect of the disease on stock and attacked, have been indicated (p. 615–635). Most of the tables given have been drawn up rather with a view to exhibit the

distribution of murrain, than from any belief in their statistical value. It is, however, convenient, even if exact results cannot be obtained, to express sickness and mortality in terms of figures, and for a single return informing of a complete outbreak, or a first report giving intimation of a new invasion, the form shown on page 27 (entries 3 to 8) is sufficiently convenient; but where a series of reports—weekly, monthly, &c.—have to be submitted, there is always a doubt as to how the "still ill" have been disposed of, and for this purpose a form such as that shown at page 568 is best adapted; indeed, it could not be improved on, but if different species of disease can be clearly distinguished, they should be shown on separate forms, or as separate entries in one form. It is obvious that exact results obtained in one or a few villages are more valuable for statistical purposes than unreliable data referring to a large area; but, for purposes of general information, figures, even if approximate, give a better idea of how the case stands than records.

As regards the losses of stock incurred through this plague, while exact information is very much wanted, it is evident that the yearly loss, both absolute and relative to number of living stock all over the country, is very serious, and to be counted by hundreds of thousands. Hitherto the actual hardship and inconvenience entailed by it, as regards agricultural operations, have not been anywhere generally felt over a large area, but individuals, or even villages, have often been hampered in agriculture. This was notably the case in Diamond Harbour in 1868 (see p. 56). Cattle are still plentiful, cheap, and easily replaced, but as the demand becomes greater, the price still more enhanced, and the number of cattle relative to owners and requirements fewer, serious hindrance to agricultural operations may be apprehended.

Loss by murrain.

35. The treatment of rinderpest may be considered under the usual heads of curative and preventive. Medical treatment commends itself to the favor of the natives of this country by its facility of application and the absence of interference with their liberty of action; and there is such an inveterate habit with them of taking things as they come, and such a decided aversion to initiating any new course of action, that, though they know the contagious character of the disease, and admit the propriety of segregation, we have found that this measure is seldom or never adopted. Attention to animals which exhibit the results of infection is the first thought in a scheme of relief, as the phenomena are patent and excite direct notice; but the conduct dependent on the inferred impalpable phenomena which precede the seizure is not so urgently aroused in the ignorant and unthinking, and is neglected. Thus it happens that the least valuable measure of relief is held in most esteem, and that while men strive to save one life, hundreds are exposed to danger and contract disease. Still, as long as repressive measures are wanting, or imperfect, or ineffective, and while there is ground for believing that a certain line of treatment gives a better chance of saving life than doing nothing, efforts to cure will hold an important place in popular estimation with the natives of this country, and cannot be laid aside.

Treatment.

36. The natives in most places confess their powerlessness to treat this disease, and the statement "there is no medicine for *matak*" will be found to be a frequent village confession. When they do attempt any treatment, it is often fanciful or absurd (see Appendix, pp. 116, 411). Feeding with rice gruel or other soft food is the most rational measure they adopt, but even this plan is by no means a general one, and cattle are in most cases left to recover or die with perhaps a few embers smouldering near them, or some absurdity inserted in their nostrils or ears. Fumigation with resin is practised in some places (see Appendix, p. 168), but this is rare. Worship of the goddess *Shitolah* and sacrifices at her shrine are much more approved remedial measures than drugs or applications, and in some cases the aid of the village *chamar* is invoked to repel some demoniacal influence.

Medical treatment.

Medical treatment has, however, been largely tried by European cattle owners and veterinary surgeons, and many plans are detailed throughout Appendix No. II (pp. 77, 299, &c.) It is unnecessary to recapitulate them here.

The plan adopted by Mr. Thacker in Madras, and which has in many cases given good results, is at once the simplest and most rational. It is described by him at page 544.

Trials.

The subject of medical treatment has undergone extensive trial at our hands, and the cases recorded in Appendix No. VI show in detail what was done, and with what result. Many of the cases were hopeless before they were admitted for treatment—moribund, or so emaciated, old, worn-out, and neglected that they soon became so. Such were nearly all the cases brought to us in Assam. The general result of our hospital trials—52.1 per cent. of recoveries and 43.5 per cent. of deaths—is not very encouraging, but taking the circumstances and condition in which our patients were received, and looking at the course of particular cases which were manifestly aided in the progress towards restoration by the means adopted, we are of opinion that the judicious exhibition of medicine and support will save a considerable proportion of animals which would otherwise succumb to the disease. Our conclusions on this subject may be summed up as follows:—

Conclusions.

No specific.

I.—No specific has been discovered for this disease, and it is difficult, looking at the nature and severity of the lesions discovered after death, to conceive the possibility of doing so. Whether any plan of treatment would avail in the very early stages, in the way of aborting or averting the sequence of future events, is very doubtful. The disease has commenced before it is manifested by symptoms easily apprehended. The early rise in temperature shown by many of our experimental cases proves this, and there is no analogical proved fact to countenance the hope. Besides, practically, few animals can be brought under treatment at an early stage, and there is no warrant for prophylactic treatment of a herd otherwise than by disinfectants, even if such a measure were possible.

Laxatives.

II.—Mild saline laxatives in the early stages are undoubtedly advantageous, but we have found severe purgation positively harmful.

Astringents.

III.—Astringents to control excessive action of the bowels are valuable in the eliminative stage of the disease.

Stimulants.

IV.—Stimulants, judiciously given, when exhaustion threatens, often turn the scale in the direction of recovery (see Appendix, p. 299, letter of Mr. J. Lyell).

Drenches.

V.—Support by liquid food is essential all through the course of the disease. Thin rice-water (*congee*) is laxative, and it should be mixed with boiled rice, so as to acquire the consistence of gruel. Pease gruel (*kalai*) is more astringent and stimulating, and has been found of great value in cases with a tendency to excessive purging.

Water.

VI.—Water should be sparingly given, and there is sufficient evidence to show that excessive draughts to quench an urgent thirst are a cause of rapid death (see Appendix, p. 299).

Saving of stock.

VII.—If these measures are adopted with judgment, perseverance, and care, we believe that at least 20 per cent. of animals which would otherwise die may be saved.

Preventive treatment.

37. The subject of preventive treatment is, for obvious reasons, a far more important one than medical treatment, and has always had a principal place in the thoughts of those, whether individuals or commissions, who have given the subject attention. On this topic the paper printed at page 799 of the Appendix treats so exhaustively, that we consider it unnecessary to do more in this place than indicate how far the experience we have gained confirms the conclusions there laid down as regards preventive effort. The same Appendix (No. VII) contains a most valuable correspondence, in which the main items in a scheme of preventive action are reviewed practically by Commissioners of Divisions and Magistrates of Districts, and the applicability of these to the

circumstances of Lower Bengal discussed. These papers may be instructively read in relation to the more systematic study of the question furnished by the paper above alluded to. A more practical comment upon the whole subject is, however, afforded by the conclusions arrived at by the Government of Madras, where a repressive law was passed in 1866, which was never brought into use, and is now declared to be neither expedient nor necessary (see Appendix, pp. 538 and 813.)

38. There are two main alternatives on which it is necessary to decide before entering on a consideration of particular measures, namely, *protection* or *repression*. A scheme of protection rests on the well-ascertained fact that one attack of the disease confers immunity from a second, and its aim is naturally or artificially to provide that cattle shall be so protected. A scheme of repression rests on the contagiousness of the disease, and its aim is to prevent healthy stock being infected by unhealthy,—to stamp out the disease. These ends are entirely opposite, and involve a completely different species of effort and arrangement. It is therefore necessary to decide on one or the other at starting; the only escape from this necessity being a do-nothing policy, or leaving things as they are to abide by the vicissitudes of events.

There can be no doubt of the protective power of one attack of rinderpest. It is the universal belief of the natives everywhere, though exceptions have been pointed out (see Appendix, pp. 299, 381, &c.) This is, however, only what obtains in other diseases of the kind, and the exceptions in this case prove the rule. A practical proof of it is shown by the enhanced value of *māntuar* bullocks in Kumaon (see Appendix, p. 433). It is also indicated by the circumstance mentioned there and elsewhere, that a delay in the recurrence of the disease is a cause of its more virulent manifestation when it does occur. This point was made a subject of experiment at Culna. Animals known to have had one attack of the disease were subjected to the most severe expedients to re-induce it without effect (Nos. 11—15, p. 883). The protectiveness of one attack may therefore be accepted as an undoubted fact. But the mortality of the disease is equally indubitable, and, even under the most careful treatment, it is doubtful if it can be reduced below 20 per cent. The question comes to be, then—Is at least 20 per cent. of the entire stock of the country to be voluntarily sacrificed in order to secure protection? Here the absence of statistics regarding the effect of the disease on the stock of the country imports hesitation and doubt into the question. It is probable that the mortality among stock from this cause alone does not exceed 5 per cent., if a sufficiently large area be taken. The statistics of particular small murrain-stricken areas during a murrain season cannot be accepted as data in considering this question; and there can be very little doubt that, as far as absolute loss of stock goes, matters are best left as they are, though, were a system of universal induction of disease initiated, the occurrence of the disease would be brought under command, and it would not interfere with the use of cattle, because agriculturists would know what to expect, and would not be embarrassed by unexpected loss of cattle during the agricultural season. This consideration is a small one, however, compared with the certain loss of stock. But the question has arisen—Can protection be conferred in any other way? Can the practice of vaccination be imitated, and a trivial non-fatal disease be induced protecting against the serious and fatal one? To this we must reply emphatically in the negative. There can be no doubt regarding the inoculability of the disease. We have verified this fact by many cases, but the disease produced by this plan was quite as severe as that caused by natural infection. A large amount of experience has been gained on this point in Russia and elsewhere, and careful and repeated efforts have been made to mitigate the severity of the disease so communicated. A careful summary of all that has been done is given in the "Report on the Cattle Plague in Great Britain during the years 1865, 1866, and 1867," issued by the Veterinary Department of the Privy Council (Appendix II, p. 326). It is evident that this plan has little to recommend it beside that of voluntarily inducing the disease by exposing animals to infection,

except its greater certainty and the result being better in hand. No method of mitigating the disease has hitherto been found, and our experiments (No. 44, p. 895) would go to show that transmission through sheep does not do so. The Russian Commission found that 15 transmissions through cattle did not mitigate the disease, and the result of their careful inquiries and experiments was that they could not recommend the general introduction of inoculation, but would permit its practice by private individuals under proper precautions and scientific supervision.

Conclusion.

That inoculation, if practised, must be either scrupulously isolated and circumscribed or universally adopted, is evident from the inoculated disease possessing the same power of propagation that the naturally caused disease has. In truth, inoculating is merely multiplying perils, and the mortality is confessedly never below 5 per cent. in the most favorable circumstances. Apart from the enormous establishment which would be necessary to carry out a universal system, whose cost would far exceed the losses of stock now accruing from rinderpest, it is highly probable that, on the whole, the mortality and inconvenience under a do-nothing system are much less than they would be under a system of general inoculation. A partial system of inoculation, even if the most stringent precautions against propagation of the disease are attempted, must be unhesitatingly condemned, as the necessary establishments and agency would entail greater expenditure than the present loss. Other methods of protection have been tried,—vaccination and the internal administration of disinfectants,—but neither method has been found of any use. The only protective plan of any promise is surrounding sound animals by an atmosphere of antiseptics—sulphurous or carbolic acid. Mr. Crookes' experience indicates that this plan possesses some power in securing cattle against infection, and one of our experiments (No. 41) goes to confirm the truth of this; but while advocating it as a good practice, and an easily employed adjunct to other methods, it is by itself entitled to little reliance, and should not supplant other methods more approved by reason and experience.

Repression.

39. On the whole, a policy of protecting cattle against disease has nothing in its favor in this country, and all effort must be devoted to repressing the disease and limiting the area of its prevalence and numbers attacked. This is not only the plan recommended by instinct and imperfect knowledge, but that approved by the most careful consideration of the circumstances of the case. All the methods by which a scheme of repression is put in force are passed in careful review in the paper already referred to, and while the "stamping out" of the disease should be the constant ultimate aim, its limitation, as regards area and numbers, should be attempted even if "stamping out" is not attainable. The experience which has been gained in Madras would go to show that the simple means adopted in that presidency have been invariably successful in preventing the spread of cattle epizootic disease (see Appendix, p. 543). Examples of the benefit of measures of this kind are not wanting in this presidency. Many cattle owners of Assam saved their buffaloes by sending them beyond the sphere of prevalence of the murrain (see Appendix, pp. 318, 322, and 331). The precautions adopted against the spread of disease in the Andaman Islands (see Appendix, p. 595) clearly saved the stock of the Settlement. The measures adopted on a large scale at Nalla in the Sonthal Pergunnahs (see Appendix, p. 232) evidently quenched the disease. Illustrations might be multiplied and instances adduced of the natives spontaneously adopting measures to isolate and segregate, but the one truth which has everywhere met us is, that precautions of this sort are absolutely neglected, or so imperfectly carried out as to be futile. Murrains are spread through the circumstances of daily life and occupation, and these must be altered or hindered in order to carry out a plan of isolation. Thus, measures intended for a good purpose become a present sacrifice and evil, and it is not strange that a people so shortsighted and little prone to study the future as the natives of India should over-estimate the palpable evils and under-estimate the possible advantages of restrictions. Little can be expected from the people in the way of aid, but

much in the way of passive obstruction and neglect of the simplest precautionary rules. This has necessitated a recourse to law and the police, and persons in authority have had to take forethought for those whose interests are most concerned, and compel them to action in accordance therewith.

40. The question—Is recourse to law necessary?—has been amply discussed in the papers placed together in Appendix V. The general impression is that without special legislation nothing effective can be done; and this coincides with the experience of Europe, where this belief is emphatically declared by every country in an elaborate and minute code of laws or rules. It is true that though an Act was passed in Madras in 1866, recourse to law was considered, in 1870, neither expedient nor necessary; still the law is there, and though in this country, from the paternal character of the Government and the personal influence which district officers possess, written law is not so necessary as in Europe, the law has a moral force, and sets forth moreover the principles and methods which are to guide action. We are of opinion that a law of a permissive kind, applicable, as circumstances arise, to particular towns, districts, or divisions, by a notification in the Provincial Gazette, and setting forth what in certain circumstances ought to be done, and may legally be done, should be enacted. It would secure uniformity of action, and would, moreover, arm the Magistrate with a power which, whether actually applied in full force or not, would invest his instructions and efforts with greater influence and effect.

41. Taking for granted the need of legal provision, the next question is—What form shall it assume? On this subject the Appendix in question contains much information. The particular points on which we would place the greatest emphasis are,—

I.—The duty of giving early notice. Unless immediate notice of an outbreak is given, all future action is rendered less efficient. This matter involves the question of what agency is to be responsible for initiating action, whether the owner, the village headman, a special agency—pound-keeper, &c., or the ordinary police. There is a universal feeling that the existing and convenient agency of the police should not be utilized. The village headman and punchayat or his council have been recognized as a sort of village municipality, and if any degree of self-government is possible, this would seem to be the proper village authority in a social matter of this kind; but action embraces an area wider than the village, and the question arises whether the zemindar or his analogue or representative should be the Magistrate's intermediate agent in this matter, or the inspector or sub-inspector of police; or whether a special agency consisting of special district veterinary inspectors and a staff of salootries or pound-keepers shall be entertained, competent to arrange sanitary measures and treat cattle laboring under disease. Whatever may be the ultimate scheme of agency, it is probable that at first existing agency must be utilized, and it would appear to be more reasonable to place on zemindars, their agents and representatives—those paying Government for the rent of their land—the onus of carrying out means to save their own and their neighbour's cattle from disease. Such a scheme would involve an immediate notice of outbreak by owners to the village headman or zemindar's representative in the village or town. In places with municipalities, the municipality and its agents would be the responsible agency.

II.—The duty of prompt segregation would naturally attach in the first place to owners, who should be compelled to isolate their own sick and segregate their healthy. How this is to be done is a problem not easy to solve. The reason universally alleged for failing to segregate was want of suitable arrangements, and in the more densely peopled and largely cultivated districts the question is not an easy one. The stock of an owner might be isolated for the time in his house, but this in seasons of cultivation would impose on him hardship and loss, and without possessing a separate special cow-house he could not segregate; besides, his compound would be too small to provide sufficient distance, his healthy stock would be exposed to the contamination which had already taken place in his byre, and, moreover, he would have still to tend them all, and would

convey infection from the sick to the healthy. Special village arrangements are therefore clearly indicated—a plot of ground, held in common, available for strict and absolute segregation of sick under a special cowherd, where a temporary shed might be erected, and to carry out with any effect a system of sanitary treatment, the cow-house would have to be abandoned and thoroughly disinfected, and the healthy stock, containing perhaps infected animals, placed in isolation elsewhere. This would involve some permanent well known rule, common interest, a certain amount of common action and sacrifice, an agency responsible for its adoption, and a common penalty for neglect. The village would have to be isolated and proclaimed, all intermixture of cattle with those of other places interdicted, and the precautions initiated maintained until some weeks after the last case. The power of modifying this rule during the agricultural season, in strict consistency with rigid segregation, would rest with the local authority. The difficulty of the problem increases as the affected area is wider, and when a large area is infected, general stoppages of movements, regulation of fairs, &c., would have to be ordered by the Magistrate on a large scale, and in such a case the services of the general police must be brought into requisition. It is thus imperative that, for economy of effort, and with a view to minimise irksome restrictions, the earliest notice of outbreaks, and the adoption of proper measures when the disease presents the smallest proportions, should be one of the principal objects. To ensure this, the people must be practically taught segregation, and the plan most approved by experience installed as a village habit.

Early action.

Removal of healthy.

III.—When circumstances admit of it, there can be no doubt of the superiority of the plan of removing the healthy and isolating the sick, rather than simply removing the sick for isolation. The Madras system of kraaling is undoubtedly the best possible in the country (see Appendix, p. 541), but it demands space. In some districts and parts of districts it is possible, but in others not so, and the possibility of it should be made matter of distinct investigation and provision in every district and locality.

Treatment of sick.

IV.—The treatment of the isolated sick should be carefully carried out, and either the people instructed in simple methods of doing so, or special agents made available for the purpose.

Burial of carcasses.

V.—All things considered, the burial of carcasses is the best method of their disposal, and this might be done by the chamars, who might in consideration be permitted to take the hide, provided they soaked it thoroughly, and at once, in lime water, or salt and water, under supervision, and *on the spot*; otherwise it should be scored and buried with the carcass. The exhumation of the carcasses by dogs and jackals or wolves, or by chamars, might be provided against by sufficiently deep burial in the one case, and scoring the hide in the other; the responsibility of this measure would rest with the village headman, aided by the chowkeedar.

Disinfection.

VI.—Disinfection, in the full sense of the term, would have to be carefully carried out all through. The methods of disinfecting are carefully put down at page 810, but fire is obviously the most effective and suitable.

Killing.

VII.—The more serious, though efficient, expedient of killing is so antagonistic to the feelings of the people of India that we do not recommend its adoption in any case, even if the circumstances of the disease, as it prevails in this country—so common, so frequent, and so scattered—did not preclude its adoption.

Proposed scheme.

42. Though we feel that the subject is hedged round with practical difficulties, we deem it our duty to submit a particular plan, and we accordingly recommend that one or more skilled agents be attached to each Collectorate for employment for the suppression of cattle plague; that a rinderpest quarantine plot be definitely assigned to every village or a group of villages, where the sick may be promptly segregated. It might be used for pasture during plague-free times, but on the appearance of plague should be fenced in and employed as a hospital, and kept fenced in and vacant for some time after cessation of plague. Such temporary hospitals, constructed of bamboo and

grass, might be put up by the villagers at short notice, and would be burnt when no longer required. It would be the duty of the owner, under penalty, to report to the village headman the outbreak of disease; his duty, with the chowkeedar's aid, to insist on isolation and the construction of the temporary hospital, and to adopt preliminary measures as above sketched. If the disease spread beyond one or two cases, it would be his duty to report to the zemindar or his agent, who would immediately see that the required measures have been adopted, and would report to the Magistrate, who would despatch his veterinary inspector or other agent to direct the carrying out of effective measures and treat the sick. The general ideas of segregation and destruction of contagium must govern every particular measure devised. Simpler plans would have to be adopted at first, and when their advantage became evident and the system familiar, there would be less difficulty in insisting on more stringent measures. We would advocate the legalising of the most extensive, severe, and stringent measures for adoption when the necessity arises, but as the kind and extent of measures used must depend on the circumstances and needs of the case, we would bar the adoption of any but the most simple measures of a preliminary kind until, on full cause and occasion being shown, the local Government authorized publicly their adoption.

43. There is one subject, however, which we would press upon the early attention of Government, namely, veterinary education. Our pages show what a lamentable yearly loss of stock there is throughout India; how much of that is owing to neglect and ignorance; how crude and erroneous are the notions generally entertained regarding the hygienic treatment of stock, their diseases, and their treatment, hygienic and medical; and there is a real and pressing demand for the diffusion of sound knowledge on all these points.

Veterinary education.

Circulars and simple manuals translated into the vernacular are very good as far as they go, but it is doubtful whether they command much attention practically, or penetrate, to any material extent, beneath the crust of apathy which surrounds the average cattle owner. What is wanted is a skilled agency, and this can only be attained by means of systematic instruction imparted in an organized school where precept is illustrated and impressed by practice. It is not too much to anticipate that the wealthier among a people, whose lives depend on their cattle, and who entertain such extravagant ideas regarding their care, nay, their sanctity, will rejoice to have an opportunity of coming forward and associating their names with so congenial and pious a scheme by endowing an institution of this kind.

Properly organized, it would be available for the instruction as well of all persons who may have the care of public stock—horses and cattle; of a native agency by which epizootic and other diseases might be properly investigated and treated, and of a class who might devote themselves to the private practice of the veterinary art.

44. The relation of rinderpest to human disease was a subject of constant inquiry, but we were unable to recognise any specific relation between either diseases or epidemics. No single fact favoring the idea of its being either received or imparted by way of infection came under our notice. A considerable body of evidence exists bearing on the effect on man of inoculation from this distemper (see Appendix, pp. 137, 239), and, as far as this evidence goes, it appears that the result is the development of a varioloid disease. Rinderpest and small-pox have prevailed simultaneously (see Appendix, pp. 37, 42, 197, 597) among cattle and men, but these diseases have more frequently occurred dissociated than associated. Cholera has been observed to precede and succeed (see Appendix, pp. 276, 591) rinderpest; but the same remark applies, and rinderpest occurs as frequently without as with cholera, existing either before or during, or after it. The truth seems to be that these three maladies are hot weather diseases; that they do occur simultaneously, but not invariably, necessarily, or even very frequently; and that the causes that determine the prevalence or excessive prevalence of one are likely to determine an excess of one or both of the others.

Relation of rinderpest to human diseases.

Affection of other
animals than cattle.

45. Another point to which our attention was always directed was the susceptibility of other animals to rinderpest. On this point the evidence is ample, but very contradictory, and its solution not only interesting, as bearing on the scientific question of what different species of animals are liable to attack by one specific disease, but important with regard to the conveyance and multiplication of contagium and measures of prevention. That bullocks, buffaloes, yaks, joobos, goats, sheep, and deer are liable to infection is beyond doubt. The evidence is strong as regards dogs, jackals, wolves, cats, tigers, and horses, the allegations made are subject to very considerable doubt. There can be no doubt that fowls are liable to an eruptive febrile affection, and in the case of the village of Akna we found this co-existing with rinderpest, but we failed to induce any disease by inoculation. Carrion animals are, however, an undoubted means of spreading the disease, and it is probable that even flies may convey the contagium from one subject to another; the practical rule of preventing access of all living creatures to the diseased or dead is therefore well founded, and the considerations now adduced furnish another strong reason for the burial of carcasses.

Carrion animals.

Cattle poisoning.

46. The subject of cattle poisoning has been methodically and amply treated of in Appendix IV, and its discussion here becomes unnecessary.

Resumé.

47. It will be convenient, before closing this general sketch of the results of our inquiry, to recapitulate the principal recommendations which we have been induced to make. They are as follows:—

I.—Whenever murrain breaks out, it should be made a subject of special local inquiry by committees or skilled agents.

II.—In order to test the effect of epizootics upon stock, an accurate census before and after the outbreak is absolutely necessary; or, if this is not attainable, an approximate census of the cattle of districts should be made to serve as a basis upon which the extent of loss from any outbreak may be estimated.

III.—As a means of exhibiting the fluctuations of value of stock, market prices of different kinds of stock should be periodically published in local Gazettes.

IV.—The systematic storing of fodder and jealous preservation of pasture land, where it exists, and its provision where it does not exist, are important considerations as regards the welfare of stock generally.

V.—Herding and droving cattle should be watched and regulated, especially in times of murrain.

VI.—Large fairs should be subject to skilled inspection and sanitary precaution, and smaller fairs carefully watched, especially in murrain times.

VII.—The hide trade is a source of danger, and should be watched and regulated. In times of murrain, hides should be destroyed or thoroughly disinfected.

VIII.—A law should be enacted for India regulating and restricting the sale of poisons.

IX.—Slaughter-houses should be under skilled supervision.

X.—Government cattle should, if possible, be placed under the veterinary charge of skilled men.

XI.—A law should be enacted embodying rules for the repression, and prevention of spread, of murrain, and capable of ready application to any locality when the necessity arises.

XII.—A veterinary school for the training of a native skilled agency should be organized.

XIII.—Such skilled agents should be attached to municipalities and collectorates to investigate and report on murrains, and apply preventive and remedial measures.

XIV.—A yearly summary of all the information which has been collected during the year regarding cattle murrains should be prepared and published, and the subject should constitute a point of attention in administration reports of provinces.

XV.—The collection of such information and preparation of such reports should be assigned as a duty to some particular individual, office or department.

48. It only remains for us now to express our sense of the unfailing courtesy and ready help which we always experienced at the hands of district officials in the prosecution of our inquiries, and of regret that, from circumstances beyond our power, we have not been able to present this report sooner.

J. H. B. HALLEN.

K. McLEOD,

KENNETH McLEOD.

Secretary.

J. G. CHARLES.

HEM CHUNDER KERR.

Calcutta, June 30, 1871.

MIRZA MAHOMED ALI JAN.

With regard to the identity of the Indian murrain and European rinderpest, I wish to record that I obtained experience of the latter in London and Edinburgh as affecting both cattle and sheep; that I entered on this investigation without having formed any opinion regarding the nature of the former; and that, from a comparison of my experience here and in England, I am firmly convinced that the two diseases are essentially the same.

J. H. B. HALLEN.

From J. G. CHARLES, Esq., C.S., *Officiating Joint Magistrate, Patna, to the President, Cattle Plague Commission*—(No. 838, dated, Patna, 22nd June 1871).

I have the honor to acknowledge the receipt of your letter No. 81, dated, Calcutta, 3rd June 1871, and subsequent telegram, and regret that a press of work has prevented my replying to your communication sooner.

2. The report which accompanies your letter appears to embody the principal conclusions at which the Commission arrived in committee before the civil members were withdrawn, and I have therefore no objection to my signature being attached to it, though I should have been glad if more time and leisure from my other duties could have been allowed me for its perusal previously.

3. With special reference to clause XI, section 47 of the report, I desire to place on record my conviction that any legislation having for its object the repression and prevention of cattle murrain should be introduced with great caution, and I believe it to be doubtful whether much good would result from a very strict law on the subject until the people have been trained to see the necessity for it.*

The civil authorities with whom, as a member of the Commission, I had occasion to converse, as well as many native gentlemen, declared themselves opposed to all complicated legislation with reference to cattle murrains, partly on the ground that it would be resented by the people, and partly because, from want of adequate supervision, it would become inoperative.

XXX

GENERAL REPORT.

J. G. Charles, Esq.

in the present condition of the country. The suggestions contained in the report with regard to legislative action being purposely general, it seems unnecessary for me further to record my own views on the subject, but I am prepared to do so, should the Government afterwards require it.

4. I may remark in conclusion that I believe it to be a matter of primary importance

* This has been already done in Madras (p. 543) and Lower Bengal (p. 810).— C. P. C. that information in a concise form regarding the prevalent diseases of cattle, as well as the treatment recommended, and the action necessary to prevent the spread of infectious disease, should be supplied both in English and the vernacular to the various civil authorities throughout the country, and the spread of such information would do much to render the people generally alive to the importance of segregation and dieting when outbreaks of infectious disease occur among their cattle.*

APPENDIX No. I.

JOURNAL OF PROCEEDINGS OF THE INDIAN CATTLE
PLAGUE COMMISSION.

JOURNAL OF PROCEEDINGS
OF THE
INDIAN CATTLE PLAGUE COMMISSION.

The Commission met at their Office, No. 1, Sudder Street, Calcutta, on the 21st December 1869, at 12 noon.

Calcutta.

All the Members have now joined, namely,—

J. H. B. HALLEN, Esq., Staff V. S., L. R. C. S., F. R. S., (Edin.).	} <i>President.</i> <i>Members.</i>
A. C. MANGLES, Esq., Bengal Civil Service.	
K. McLEOD, Esq., A. M., M. D., Assistant Surgeon, B. M. S.	
BABOO HEM CHUNDER KERR, Deputy Magistrate and Deputy Collector.	

2. Letter No. 5182, dated 27th November 1869, from the Secretary to the Government of India, Home Department, containing general instructions as to the conduct of the investigation, having been carefully studied, Form No. 1 has been drawn up and circulated to all Commissioners for distribution among Collectors, with a view to obtain information for the guidance of the future proceedings of the Commission. Two other forms were framed and printed, in order to facilitate the registration of symptoms and *post-mortem* appearances.

3. Information having been obtained from the Commissioner of Assam of the prevalence of murrain in the Sebsaugor District, application has been made to Government for means of conveyance, in order to visit Assam and investigate the disease reported on.

4. Indents have been submitted for stationery, maps, medicines, instruments and tents, which are in course of being supplied.

5. Until means of conveyance to Assam have been furnished, or reports as to the prevalence of disease in a more accessible locality obtained, the Commission propose to occupy themselves in making inquiries in and about Calcutta on the following subjects, namely,—

- 1.—Supply and quality of meat.
- 2.—State of slaughter-houses.
- 3.—Inspection of slaughter-houses.
- 4.—Inspection of diaries as to condition and health of cows, byres; also quality of milk and number of cows kept in Calcutta for diary purposes.
- 5.—Calcutta diaries; how supplied with cows.
- 6.—Annual exports of hides from 1849 to 1869.
- 7.—Trade in hides in Calcutta; whence and how leather merchants are supplied.

6. A series of memoranda have been drawn up for the guidance of persons Form (No. 4.) volunteering information on subjects relating to cattle.

7. Dr. McLeod has consented to act as Secretary, and Baboo Hem Chunder Kerr as Treasurer and in charge of the office.

22nd December.—The Commission proceeded to examine the Tengra Slaughter-house.

Calcutta.

At a meeting at 11 A. M., Mr. Robert Sheriff, late Manager of the Port Canning Company's Zemindaree, was examined, and gave evidence which is recorded.

23rd December.—Further information having been received of the prevalence of murrain of a severe type in that province, the Commission intend proceeding to Assam by India General Steam Navigation Company's steamer *Colgong*, from Khoostea to Sebsaugor and other districts. The steamer is to leave Khoostea on Sunday next, the 26th. Tents are to be furnished by the Home Department at once. The Commissioner of Assam has been written to, apprising him of the Commission's intended visit.

24th.—Tents were inspected at 10 A. M., and at once despatched to India General Steam Navigation Company's Office, and preparations made for departure to Assam.

25th.—The Commission met at 11 A. M. to arrange for leaving for Khoostea this evening.

26th.—Sunday.

27th.—The starting of the steamer having been postponed till the 28th, the members proceeded by rail to Khoostea this morning.

28th.—The starting of the steamer has been again postponed till to-morrow.

29th.—The steamer started at 4 P. M.

30th.—An accident occurred to the engine at 9 A. M., and no further progress was made this day.

31st.—Engine repaired; the steamer proceeded.

Serajgunge.

1st Jany. 1870.—Touched at Serajgunge; no opportunity of making any enquiries.

Kallygunge.

3rd.—Touched at Kallygunge. Ascertained from Mr. Campbell from North Luckimpore, Assam, that cattle disease had raged in that locality, but had now subsided. A copy of form No. 4 was handed to this gentleman to fill up.

No disease prevailing at Kallygunge.

Doobree.

5th.—Touched at Doobree. Requested the attendance of the Extra Assistant Commissioner, but he arrived just as the steamer started.

Gowalpara.

7th.—Touched at Gowalpara. No opportunity of obtaining information. Received letter from Commissioner of Assam.

Assam.

9th.—Arrived at Gowhatty at 6 P. M.

Gowhatty.

D. Kamroop.

10th.—Had an interview with Colonel Agnew, Commissioner of Assam, also saw Colonel Bivar, Judicial Commissioner, Mr. Mitchell, Deputy Commissioner of Nowgong, and Mr. Boyd, Assistant Commissioner at Gowhatty; were advised by the Commissioner to proceed to Debrooghur in the first instance, and thence march to Sebsaugor. Copies of form No. 4 (20) were left with the Commissioner for distribution among district officials, &c. The Commissioner of Assam proceeds with the steamer to Tezapore.

Mungledye.

D. Durrung.

11th.—Touched at Mungledye. Messrs. Bruce and Campbell, Tea Planters, came on board *en route* for Tezapore. Disease having occurred in their district, they will probably be able to afford the Commission information.

12th.—Messrs. Bruce and Campbell were examined, and their depositions recorded. Mr. Bruce was Extra Assistant Commissioner of Mungledye when the disease prevailed there.

Tezapore.

13th.—Touched at Tezapore. Form No. 4 was placed in the hands of Major Lamb, the Deputy Commissioner, who promised to give the Commission all the information in his power. The Commissioner left the steamer and returned to Gowhatty. He handed two letters, one to the Deputy Commissioner of Debrooghur, and the other to the Officer Commanding the Station, requesting these officers to afford all possible aid, especially in providing more elephants; the Commissioner having been able to place only eight at their disposal. Colonel Agnew suggests that the Commission should proceed from Debrooghur to Sebsaugor, at both of which places, doubtless, all information as to the

nature, &c., of the prevailing disease will be obtained, and afterwards proceed to Jorehaut, and there remain until the Government steamer belonging to the Assam Commission arrives at Kuklamookh. Colonel Agnew thinks that the steamer will probably arrive there about the 25th instant, but he will further communicate through the Assistant Commissioner, Mr. Carnegie, at Jorehaut. Colonel Agnew will perhaps come with the steamer, but, if not able to do so, will instruct the Captain of the vessel to place himself under the direction of the Commission. The latter will be able to return to Khoostea by this steamer.

The Commission have requested Colonel Agnew to be good enough to direct Mr. Farrell, Veterinary Surgeon, to place himself in communication with the Commission, and report on the murrain, as found by him, and the name of the localities where the disease prevails in Sebsaugor.

Colonel Agnew will write directly the steamer arrives in Gowhatty, and name the probable date of its arrival at Kuklamookh. 5 P. M., touched at Koliabar: no information obtained; inspected two Bengal buffaloes and several Bengali bullocks free of disease and in good condition—the property of tea planters.

15th Jany.—Touched at Dhunserimookh: no information.

Dhunserimookh.

17th.—Touched at Kuklamookh. Were informed by Mr. Cogden, the Steamboat Agent, that disease had prevailed at Jorehaut (9 miles off), but that no case had occurred for about a month. Reached Dekoomookh at 7 P. M. Got a packet of letters from Sebsaugor.

Kuklamookh.

Dekoomookh.

18th.—Left Dekoomookh at 12 noon and proceeded. The letters received last night were carefully read and considered by the Commission. Information was received of the existence of cattle disease in Baraitch.

19th.—Touched at Dehingmookh at 2 P. M. Arrived at Debroomookh (6 miles from Debrooghur) at 9 P. M.

Dehingmookh.

20th.—At 4 P. M. arrived at Debrooghur, and took up quarters, in the Circuit Bungalow. A letter was received from Captain Gregory, stating that he had proceeded to Madarghat in the vicinity of which cattle plague was reported to prevail, and the Assistant Commissioner Mr. Maitland informed the Commission that Captain Gregory would return to Debrooghur next day.

Debrooghur.

D. Luckimpore.

21st.—The Commission, finding that Mr. Farrell, Veterinary Surgeon, had been deputed by the Bengal Government to inquire into the nature of the murrain prevailing in Assam, and is at present in Debrooghur, requested that gentleman to give evidence, which was partially taken to-day from 11 A. M. to 5 P. M.

22nd.—Mr. Farrell's examination continued till 2 P. M. Captain Gregory, Deputy Commissioner, has returned from Madarghat, and reports that murrain still prevails there. He has made arrangements for sick cattle from the surrounding villages being sent there for the inspection of the Commission. The Commission will proceed to Madarghat as soon as arrangements can be made for the conveyance of tents and baggage. Dr. White, of the 42nd A. L. Infantry, kindly attended to give evidence, but his examination has been postponed till the return of the Commission from Madarghat.

23rd.—Sunday.

24th.—The Commission proceeded to Madarghat, accompanied by Captain Gregory, Deputy Commissioner. A *post-mortem* examination of a bullock which had died the previous night was made, and the appearances minutely recorded.

Madarghat.

25th.—Captain Gregory, Deputy Commissioner, having to proceed to Jeypore, has placed a Sub-Inspector of Police, four Constables, and 20 municipal coolies at the disposal of the Commission, and has also directed that 6 mouzahdars of the surrounding district should attend in turn, one every morning, at the camp of the Commission, for the purpose of reporting if murrain prevails in their mouzahs; also to enquire if they can afford the Commission any assistance.

At 9-30 A. M., two cases of reported murrain were examined, which had been under the care of the Deputy Commissioner, and found to be affected with *gootee* (rinderpest), but in process of recovery.

Madarghat.

At 10-30 A. M., a *post-mortem* of a cow, which had died of the plague two days ago, was performed with great care. The case was found to be similar to the one yesterday examined, namely, a case of rinderpest.

Rode out in the afternoon to see a cow which was being brought to camp and was reported unable to proceed; found it dying of rinderpest, and directed it to be conveyed into camp.

26th Jany.—In the morning the duties of the coolies placed at the disposal of the Commission by Captain Gregory were carefully allotted. These men are employed in caring for sick cattle, conveying carcasses, digging graves, &c., and one man is sent into Debrooghur for post.

In the forenoon performed a *post-mortem* examination with great care. Dr. White and Mr. Farrell, Veterinary Surgeon, witnessed the performance, and recognized the appearances as the same which they had frequently seen in *post-mortem* examinations of cattle dying from plague.

In the afternoon rode out to see some cattle ill of plague in a village called Cooargaw about two miles distant.

A moribund calf was brought in.

27th.—In the morning carefully examined the sick cattle. Inoculated four sound cattle, one with blood, another with milk, a third with fæces, and a fourth with aphtha from the cow dissected yesterday. Several sick cattle were brought in by villagers. There are now fifteen animals in hospital.

In the forenoon performed three *post-mortem* examinations.

In the afternoon carefully examined all the cases, especially those inoculated in the morning (symptoms recorded).

Baboo Hem Chunder Kerr rode out to visit the Singhjan Garden where several convalescent animals were inspected. He heard that pigs were dying of the disease in that locality.

28th.—At 8 A. M. all the cases in hospital were examined, and notes of their condition, pulse, temperature, &c., carefully recorded; two cases died during the previous night.

At 11 A. M. four carcasses were examined *post-mortem*, namely, the two cases which died, one which was brought in moribund last night, and another which was brought in dead by some villagers. These examinations occupied the Commission till 2-30 P. M.

The evidence of a neighbouring mouzahdar was recorded at 3 P. M.

From 5 to 6-30 P. M. all the cases in hospital were examined. Five new cases were brought by villagers, who seem desirous to assist the inquiry.

29th.—At 8 A. M. examined all the sick cattle, three had died during the night, one died this morning.

At 10-30 A. M. performed five *post-mortem* examinations which occupied 4½ hours.

At 4 P. M. took the evidence of a neighbouring mouzahdar. Baboo Hem Chunder Kerr rode out to the Lahwul Garden to make inquiries.

At 5 P. M. examined sick cattle.

30th.—Mr. Mangles, who had proceeded on the 25th in company with Captain Gregory towards Jeypore (35 miles south of Debrooghur), in order to make inquiries as to the prevalence of cattle plague in the interior, returned, and reported that disease did not exist towards Jeypore, and Captain Gregory did not hear of any. Sick cattle were examined at 1 P. M.

31st.—At 8 A. M. hospital visited.

At 10-30 A. M. two *post-mortems* performed.

At 12-30 up to 5-30 P. M., the Commission was occupied in recording the evidence of mouzahdars and ryots in this neighbourhood. Hospital visited at 6 P. M.

A village, Millingia, was visited by the Commission and the byres inspected. Inquiries were also made of the inhabitants as to the prevalence of disease and condition of cattle. Madarghat.

1st February.—At 9 A. M. visited hospital and examined the sick cattle.

At 11 A. M. the native witnesses selected by Captain Gregory were examined, and their evidence recorded.

At 4 P. M. the sick were again examined.

At 4-30 P. M. several villages were visited, and the inhabitants questioned as to the prevalence of disease. One village was found to have suffered severely, one to be suffering, and one to have escaped the disease. Nothing was found in the character or condition of these villages to account for this circumstance. The cattle sheds were clean and well kept. Microscopic observations are being made daily.

2nd.—At 8 A. M. hospital was visited and the sick cattle examined.

During the forenoon the evidence of Hood Gosain was taken and recorded.

In the afternoon two villages were visited, and their inhabitants questioned as to the prevalence of disease, loss of cattle, &c., &c.

3rd.—At 9 A. M. visited hospital. The four inoculated cattle now show every symptom of disease. The case of the buffalo is not so well marked.

Forenoon.—The evidence of Mohun Gosain, a respectable native, was taken and recorded.

Evening.—Visited villages Katani and Dahlenia, where cattle plague has been severe.

4th.—At 9 A. M. visited hospital. The buffalo now shows the disease more markedly. At 10-30, a *post-mortem* examination was performed of two of the inoculated cattle which had died, one during the night and one at 10 A. M. These animals exhibited every sign of rinderpest.

In the afternoon visited some villages bordering on the Pittar (ricefield) to the south, and questioned the inhabitants as in the previous cases.

5th.—At 9 A. M. visited hospital, no deaths. Heavy rain prevented the usual visit to villages; 5 P. M. visited hospital.

6th.—At 9 A. M. and 4-30 P. M. visited hospital. During the afternoon visited three or four villages.

7th.—At 9 A. M. examined the sick cattle. All are now exhibiting the disease in a very severe form.

During the afternoon, a *post-mortem* examination was performed of a bullock (No. 14 hospital case), which died during the forenoon.

Visited hospital at 5 P. M.

Made inquiries about the murrain at two houses in the centre of the Pittar at the road side. One of the shop-keepers there had a cow and calf which have not as yet suffered from the disease.

8th.—Buffalo died during night.

The two remaining bullocks are extremely ill.

During the afternoon the buffalo was examined and found to exhibit the signs of rinderpest in a most severe form.

Mr. Mangles and Baboo Hem Chunder Kerr proceeded to Debrooghur with the intention of taking the evidence of Captain Gregory to-morrow.

The sheds were pulled down and burnt. One of the bullocks died this evening; the last will probably die during the night. *Post-mortem* examinations will be performed to-morrow morning, and the Commission will return to Debrooghur to-morrow afternoon, and make arrangements for leaving Debroomookh on Saturday, the 12th, for Calcutta.

9th.—At 7 A. M. performed two *post-mortem* examinations of the last bullocks.

Debrooghur.

Camp was struck about 10 A. M., and all the tents, &c., sent in to Debrooghur.

The fence surrounding the hospital was not removed, and the mouzahdar of the village cautioned not to allow any cattle to graze within the enclosure for at least a month.

The other Members of the Commission returned to Debrooghur.

The evidence of Captain Gregory was taken in the afternoon.

10th February.—The evidence of Mr. Comber, Tea Planter, Reverend Mr. Higgs, and Dr. White was taken and recorded in course of the day.

11th.—During the forenoon the evidence of Mr. Hannay and Baboo Mohim Chunder Borooah was taken and recorded.

During the afternoon the Commission proceeded on board the steamer *Koel* which had been placed at their disposal by the Commissioner of Assam.

12th.—Left Debroomookh at 10 A. M., proceeded to Kuklamookh.

13th.—Sunday.

14th.—Reached Tezpore at 11 A. M.

Commenced reading and arranging the information obtained relative to cattle disease in Assam.

15th.—Reached Gowhatty at 10 A. M.

Had an interview with Colonel Agnew.

The evidence of Dr. Purves, Civil Surgeon, Mr. Beecher, Colonel Campbell, Moonshie Syud Sukawat Hossein, and Baboo Gunganauth Moonsiff was taken and recorded by the Members of the Commission during the afternoon.

16th to 19th.—Left Gowhatty at 9 A. M. of the 16th and proceeded to Khoostea. Office work was carried on regularly during these days.

20th.—Arrived at Khoostea and proceeded to Calcutta.

21st & 22nd.—Office not arrived.

23rd.—Met at 12 noon, at No. 1, Sudder Street; went through correspondence which was found awaiting arrival. The President had an interview with His Excellency the Viceroy.

24th.—Met at 11 A. M., continued analysing and arranging evidence, wrote to Home Office reporting proceedings in and return from Assam.

25th.—Met at 11 A. M.; similarly employed: prepared indent for medicines and stationery; obtained maps from Surveyor General's Office. Information having been obtained from the district of Nuddea of the prevalence of *gootee*, a letter was written to the Magistrate, asking for further information and inquiring how the Commission may best proceed to investigate the disease. A letter was also written to the Deputy Commissioner of Fyzabad in Oude, with a similar object.

26th.—Met at 11 A. M., read correspondence, and analysed evidence.

27th.—Sunday.

28th.—Met at 11 A. M.; wrote to Mr. Cotton, Assistant Magistrate, Chooadangah, informing him of the intention of the Commission to proceed thither on the morning of Thursday, the 3rd proximo. Also wrote on the same subject to the Commissioner of the Presidency Division and Magistrate of Nuddea.

Read and analysed a written statement forwarded by Major Lamb, Deputy Commissioner of Durrung, and Mr. Driberg, Assistant Commissioner of Mungledye.

1st March.—Met at 11 A. M. Mr. Taylor, Superintendent of the Municipal Gaokhana, Entally, attended for the purpose of giving information as to past outbreaks of murrain among municipal cattle. His evidence was recorded, and more evidence of a statistical nature was promised by him.

2nd.—Tents and office were despatched to Sealdah preparatory to the Commission proceeding to Chooadangah to-morrow morning on a tour of inquiry.

3rd March.—Yesterday afternoon, it was ascertained that the tents and office had not been despatched by the Railway Company. The Commission were consequently unable to proceed as intended.

4th.—Proceeded to Chooadangah by 7-30 A. M. train. Mr. Cotton, Assistant Magistrate of Chooadangah, had attended yesterday to meet the Commission, but was unable to leave his work at Sindoorree a second time. Some cattle were brought in by villagers in the afternoon, affected by murrain, and placed under out-door treatment.

5th.—Visited the village of Dowlutdear where several sick cattle were seen and examined. Notes were taken of each case.

In the forenoon the evidence of three men of this village was taken and recorded. In the afternoon several cattle were brought for treatment by the villagers of Chooadangah.

6th.—Visited Chooadangah village and saw several sick cattle.

In the afternoon sick cattle were brought for treatment, and medicine was given in each case.

7th.—Visited the village of Tengramaree where several cattle sick of *bosonto* were seen and examined, and the evidence of several ryots taken.

In the afternoon several sick cattle were brought for treatment.

8th.—Two *post-mortem* examinations were performed of cattle which had died of the prevailing disease. During the afternoon the village of Belgachi was visited, sick animals examined, and ryots questioned, careful notes being taken; sick cattle were treated in the evening.

9th.—Visited the village of Taltollah, where *bosonto* had prevailed. Saw some cases of alleged "*Khuriah*." On return, a bullock, goat, and sheep were inoculated with dried faeces brought from Assam. At 2-30 P. M. proceeded to visit the hat of Pudwobilia, where cattle from the surrounding villages are sold. The place is about 9 miles distant from camp, and some 12 beasts were seen, some suffering from *gootee*, and others convalescent from that disease.

On return, a *post-mortem* examination was performed of an animal which had eaten castor-oil leaves and seeds, and died in consequence. The leaves and seeds were found in great abundance in the first stomach whose walls were slightly congested. The second and third stomachs were also more or less congested. The fourth stomach was much congested, especially at the borders of the folds. The contents of the intestines were liquid, but the walls and mucous membrane were healthy; sick cattle were seen and treated as usual.

10th.—Visited the village Nundunpore and examined several cases of *khuriah* (foot and mouth disease); *bosonto* also prevailed in this village. A cow which was brought last night suffering from the effects of eating castor-oil seeds and leaves and died, was examined, and the appearances found corresponded to those above described. In the evening, sick cattle were treated, and a *post-mortem* examination performed.

11th.—Rode to Katchakatta Indigo Factory, 7 miles from camp. Examined several ryots from neighbouring villages, whose evidence has been recorded. On return, performed three *post-mortem* examinations, one of *puschima* among them.

12th.—Hospital cases examined morning and evening; no village visited. Two *post-mortem* examinations were performed in the morning, but the subjects were rather decomposed.

13th.—Hospital visited morning and evening.

14th.—The Commission intended proceeding to the village of Utli near Ramnugger Station, where *puschima* was reported to prevail, and arrangements were made accordingly. It was ascertained, however, late last night that no *puschima* existed in the village, and the visit to that part of the district was consequently postponed.

Gowhatty.

Calcutta.

Chooadangah.

A *post-mortem* examination of a case of *bosonto* was performed in the evening.

15th March.—Hospital cases were examined as usual. Every endeavour is being made to ascertain where the disease *puschima* exists, in order that the Commission may have an opportunity of more fully examining this form of murrain. The disease *bosonto* has been thoroughly investigated, *khuriah* has been seen and identified, and it only remains now to determine the nature, &c., of *puschima*.

16th.—Visited the village of Hazrahattee, about 2 miles to the north of camp. No disease existed there. Hospital visited morning and evening as usual.

A *post-mortem* examination of a case of *bosonto* was performed in the afternoon.

17th.—Mr. Hallen proceeded to Calcutta, in order to have an interview with His Excellency the Viceroy. Mr. Mangles and Baboo Hem Chunder Kerr proceeded to Sindoorree where several ryots were examined. Their evidence was duly recorded, and corresponded closely with that obtained from ryots elsewhere. No disease exists at Sindoorree at present. Hospital cases examined morning and evening; the bullocks inoculated on the 9th and 10th have not as yet exhibited any symptoms of disease; the goats and sheep also evince no sign of affection by *gootee*.

18th.—Hospital cases visited as usual. None of them exhibit as yet any unusual symptom.

No tidings of *puschima* existing anywhere in the neighbourhood comes in.

Inquiries are still being made, however.

19th.—Several moochis (leather dealers) of this place and neighbourhood were examined, and their evidence recorded, for the purpose of finding out all particulars regarding the hide trade. Hospital cases visited as usual.

20th.—Hospital cases visited morning and evening.

21st.—Visited the village of Hazrahattee where the disease had existed, but had disappeared about a week before.

During the afternoon the deposition of a very intelligent ryot was taken at length and recorded.

22nd.—The village of Hatikatta was visited, and the evidence of the villagers taken with care and recorded.

During the day, several ryots were examined; their depositions were duly recorded.

23rd.—The village of Alukdia was visited and evidence taken and recorded as usual. Mr. Hills, a planter of Nischindapore, gave some evidence which has been recorded; several other depositions of natives were taken during the afternoon and recorded.

The evidence of Mr. W. Shirreff, an indigo planter, Manager of the Sindoorree and Taltollah Concerns, was taken and recorded.

The bullock, goats, and sheep not having become affected by inoculation, were disposed of.

24th.—The evidence of Mr. Cotton, Assistant Magistrate of Chooadangah, was taken. Mr. Mangles proceeded to Nischindapore to have an interview with Mr. Hills, the proprietor of the concern. The evidence of a *goalla*—milkman—was taken in the evening.

25th.—The Commission proceeded to Calcutta. Dr. McLeod went to Locknauthpore, and took some evidence as to the existence of cattle disease in the neighbourhood.

26th.—The office not having as yet arrived, no meeting was held.

27th.—Mirza Mahomed Ali Jan, Deputy Collector of Humeerpore, has now joined the Commission.

28th March.—Met in office at 11 A. M. Employed in revising *post-mortem* examinations. Mr. Hallen saw a case of foot and mouth disease near his residence at Momenpore. Inquiries are also being made as to the existence of *gootee* in the neighbourhood of Calcutta. The death of a calf from diarrhoea and passing of blood per anum (dysentery) occurred within a quarter of a mile of Mr. Hallen's residence. Calcutta.

29th.—Met in office at 11 A. M. Continued revision of *post-mortem* records. Mr. Hallen had an interview with His Honor the Lieutenant-Governor of Bengal. Baboo Hem Chunder Kerr proceeded to Mugrah and the neighbourhood, and to Serampore, in order to ascertain to what extent disease exists in that locality, and how the Commission can most conveniently proceed to investigate the matter. He ascertained that disease existed in the villages of Akna, Dalimba, Sonatekri, Melchi and Baloregunge near Mugrah; that as many as 300 head of cattle had died in Dalimba, and nearly 200 at Akna, the disease having broken out there in November. At Serampore he found that disease existed at Bagdanga within 2 miles of the station of Chandernagore.

30th.—Met in office at 11 A. M., and continued revising *post-mortem* examinations.

31st.—The Commission proceeded by the East Indian Railway at 7-40 A. M. to Chandernagore, and thence to the village of Bagdanga, Thannah Biddyabatti, Sub-division Serampore, District Hooghly. Three cases of rinderpest were found and carefully examined. The evidence of villagers of Bagdanga and Noapara was also taken; disease had existed in the latter place to a limited extent in January last. Bagdanga.
D. Hooghly.

The Commission returned to Calcutta by the afternoon train. Mr. Mangles has left the Commission, having been appointed Collector of Patna.

1st April.—Met in office at 11 A. M., and continued revising *post-mortem* examinations, &c.

2nd.—Started at 4-30 A. M. for Oolooberiah, where the Commission arrived at 9 A. M. Inspected the cattle for sale in the market, and made inquiries, and took evidence regarding—1st, districts whence cattle are brought for sale; 2nd, localities to which they are removed after sale; and 3rd, existence of disease. All the facts ascertained have been carefully recorded. Returned to Calcutta at 6 P. M. Oolooberiah.
D. Midnapore.

3rd.—Sunday.

4th.—Office at 11 A. M. The evidence of Mr. R. Harvey, Superintendent of the Municipal Cattle, Northern Division, was carefully taken and recorded.

5th.—Visited Ooltodangah Cattle Market and some of the Manicktollah cattle sheds. Evidence was taken from goallas and others, and duly recorded. Ooltodangah.

6th.—Visited Kidderpore Cattle Market and inspected the cattle carefully; no disease was found. Some evidence was recorded regarding the cattle and hide trade. Kidderpore.

7th.—The evidence of Mr. Dissent, Conservancy Inspector, was taken and recorded.

Several cattle byres at Manicktollah were visited in the afternoon, six cases of *gootee* examined, and the evidence of several goallas taken and recorded. Manicktollah.

8th.—The Commission proceeded to Mugrah in the Hooghly District; the office, &c., proceeded in the morning, and Mr. Hallen in the afternoon. Mugrah.
D. Hooghly.

9th.—Visited the village of Akna. Saw several sick cattle and took the evidence of the Izardar of Dalimba which has been recorded. Mirza Mahomed Ali Jan visited the village of Baloregunge where cattle disease is prevailing virulently.

10th.—Sunday.

11th.—Performed two *post-mortem* examinations at Baloregunge. Visited this village again in the afternoon and took the evidence of several villagers.

Mugrah.

12th April.—Visited Baloregunge and Akna. Examined several cattle in different stages of disease. Baboo Hem Chunder Kerr proceeded to Burdwan for the purpose of inquiring where cattle disease existed in that district and making arrangements for proceeding there.

13th.—Proceeded to Akna and took the evidence of several inhabitants of Akna and Dalimba. In the evening the evidence of several inhabitants of Punsoor village was taken.

14th.—Proceeded to Melchi and found the disease (*gootee*) prevailing there. The depositions of villagers were taken and recorded as usual. Mr. Hallen proceeded to Hooghly to see the Commissioner of the Burdwan Division and Magistrate of Hooghly, with reference to the prevailing murrain. In the afternoon several villages to the east of Mugrah were visited.

Burdwan.

15th.—A *post-mortem* examination was performed at Baloregunge and the village of Bashdehpoor visited. At 3-15 P. M. proceeded to Burdwan and took up quarters in the circuit house.

16th.—Proceeded to the village of Taleet, 6 miles west of Burdwan, where the disease (*gootee*) was found prevailing. The depositions of the inhabitants of this village were taken. Had an interview with the Collector in the afternoon.

17th.—Visited the village of Katgoora, 4 miles south-west of Burdwan. Saw several cases and performed one *post-mortem* examination.

18th.—Visited the goalla sheds at Pallapookur and took the evidence of some goallas.

A visit to the Sub-Division of Kutwa was contemplated, but as no recent reports have been received from that quarter, it was determined to proceed to the Boodbood Sub-Division.

19th.—Visited the villages of Gangpore and Bham. Baboo Hem Chunder Kerr and Mirza Mahomed Ali Jan proceeded to the Sub-Division of Boodbood, in order to make inquiries as to the murrain prevailing there among cattle.

Boodbood.

20th.—Mr. Hallen and Dr. McLeod proceeded to the villages of Mirzapore and Ramnara, and took evidence there. They went by afternoon train to Boodbood, where the other members, who had gone on before, had visited three villages, and taken the evidence of five individuals. A *post-mortem* examination was performed at 5 P. M., and several cases were seen in the village of Dukinpara, where Baboo Hem Chunder Kerr had taken detailed evidence in the morning.

21st.—The villages of Bheershenny and Ghor were visited in the morning, and a *post-mortem* examination performed. Several depositions were taken from the inhabitants of surrounding villages. The Commission left Boodbood by the 9-15 P. M. train, and arrived at Burdwan at 12 P. M.

22nd.—Left Burdwan by the night mail for Cawnpore.

23rd.—On the rail *en route* for Cawnpore.

24th.—Sunday, arrived at Cawnpore, 6 A. M.

Cawnpore.

25th.—Mr. Hallen had an interview with Mr. Halsey, Collector of Cawnpore. Ascertained that no cattle disease existed in his district. Preparations are being made for proceeding to Humeerpore, and Mirza Mahomed Ali Jan started for that station in the evening, in order to arrange for the reception of the Commission, &c.

26th.—Started for Humeerpore.

27th.—Arrived at Humeerpore, 8 A. M.

Humeerpore.

Several depositions of inhabitants of the village Ramerie and Humeerpore were taken during the day.

28th.—6 A. M. Visited the villages of Ramerie and Humeerpore and saw several cases of *khurphutta* (foot and mouth disease). The cattle of these villages were collected together in two places and were carefully inspected. No case of *mahta* was, however, seen. A carcass was examined of a bullock which

had died during the previous night, but it was found partially devoured by vultures. The stomachs and most of the intestines, however, remained uneaten, and showed no evidence of rinderpest. It was afterwards ascertained that this animal had been choked by castor-oil leaves. Saw two cases which were said to have recovered from *mahta* last year. Beyond being out of condition, the animals showed no other sign of disease. Some of the cattle seen were of excellent breed and well conditioned and cared for, and one fine country bull was seen with the Humeerpore flock.

The evidence of some agriculturists and chamars—leather dealers—was taken and recorded during the day. The carcass of a calf which had been brought in was examined, but no sign of rinderpest was observed.

29th April.—10-30 A. M., visited the villages of Oorpurah and Chandowki, inspected the cattle, and examined the villagers.

No *mahta* was found.

During the day, evidence was taken. Zemindars and chamars from distant villages were examined.

The carcass of a calf was brought for examination, and traces of a previous attack of rinderpest found. Notes were taken of the appearances, and a specimen retained.

30th.—Crossed to the Cawnpore side of the Jumna, and took the evidence of the villagers of Rampore and Lahorymow. Started by palki dâk for Cawnpore at 5 P. M.

1st May.—Arrived at Cawnpore 8 A. M.; office arrived in the evening.

Cawnpore.

2nd.—Proceeded to the Commissariat Cattle Yard in order to make inquiries.

The butcher serjeant, a *bepari*—cattle dealer,—and others were questioned as to their knowledge of the recent or past prevalence of *mahta*.

Visited the municipal slaughter-house, where several carcasses of apparently healthy animals were seen, and the three municipal bulls which were greatly admired. One of these, for milch cows, was of pure Alderney breed; one of the two bulls kept for agricultural purposes was country-bred, and the other, half Australian.

11 A. M. Had an interview with Captain Stewart, the Officer in charge of the Government Tannery, and proceeded to visit the places of some chamars who deal in hides. In the evening, Baboo Hem Chunder Kerr and Mirza Mahomed Ali Jan visited several dairies, and made inquiries as to the prevalence of disease in recent years. Mr. Hallen and Dr. McLeod went to the Commissariat yard, and saw the bullocks, among which two or three convalescent cases of foot and mouth disease were shown.

3rd.—Mirza Mahomed Ali Jan and Baboo Hem Chunder Kerr proceeded to visit some villages to the north of Cawnpore, close to the Grand Trunk Road, namely Kakuri, Sadoolapore, and Tantia. Evidence was taken from the villagers at those places. Mr. Hallen and Dr. McLeod again visited the Government Tannery, and obtained some additional information regarding the hide trade and the mode in which hides removed from diseased animals exhibited indications of the disease after tanning. Arrangements were made for the purchase of some hides removed from animals dying of *debee* (rinderpest), with a view of ascertaining more precisely what these changes consisted in.

4th.—Left Cawnpore and proceeded to Lucknow at 8 P. M.

Lucknow.

5th.—Mr. Hallen called upon the Chief Commissioner, and had an interview with Mr. Harrington, his Secretary, in order to ascertain whether any epizootic among cattle prevailed anywhere in Oudh, and make arrangements for proceeding thither. Inquiries were immediately set on foot for that purpose. Meantime, the Commission endeavours to obtain as much information on the subjects of cattle, cattle breeding, and the hide trade, in and about Lucknow, as possible.

Lucknow.

6th May.—The evidence of Mr. A. Foy, a hide-dealer and landowner, was taken at 7 A. M. and carefully recorded. Much and valuable information was obtained and several sources of additional information suggested.

Letters were received reporting the continuance of cattle disease in the districts of Shahabad and Etawah.

Mirza Mahomed Ali Jan proceeded to Bijour in order to make inquiries as to the present prevalence of cattle disease there. He found that no disease existed there at present, but that last year murrain prevailed in the locality to a severe degree. From the detail of symptoms it is evident that the murrain is the same as that already found in Lower Bengal and recognized as rinderpest.

7th.—Efforts are still being made to ascertain whether cattle disease exists in any part of Oudh, in order that the Commission may have an opportunity of determining its nature by personal investigation. Arrangements were made to proceed to Bijour to-morrow morning. Mr. Hallen called on Colonel Aitken, V. C., Inspector General of Police, and Colonel Barrow, District Superintendent of Police, to request their assistance in obtaining information.

8th.—Proceeded to Bijour at 4-30 A. M. Saw and examined the principal inhabitants of the village, cultivators, chamars, and others. Obtained abundant evidence that rinderpest prevailed in this village and the neighbourhood last year and to some extent this year; but elicited no evidence of disease existing at present, either there or in the vicinity.

Bunee.

9th.—Proceeded to Bunee in the afternoon (seven miles south-west of Lucknow) in order to prosecute inquiries at Bantira and the neighbouring villages. A very intelligent and active Inspector of Police (Ramnarain) was placed at the disposal of the Commission by Colonel Aitken; this officer lost no time in initiating a careful and searching investigation.

10th.—Proceeded to the village of Paharpore (fifteen miles south of Lucknow) where some eighteen cases of rinderpest were seen and the evidence of the villagers carefully recorded. During the day several depositions were taken of landowners, cultivators, chamars, and others.

11th.—5. A. M. Performed a *post mortem* examination of a cow which was seen yesterday and died of rinderpest during the afternoon.

6-30 A. M. Proceeded to the village of Arownia, (thirteen miles south-west of Lucknow) where several cases of rinderpest were seen, and some evidence was recorded.

Returned to Lucknow in the afternoon. Mirza Mahomed Ali Jan proceeded to Oonao in order to ascertain whether cattle plague exists in that district in an accessible locality.

12th.—A telegram was received from Mirza Mahomed Ali Jan, stating that there was no need to visit Oonao. The Commission, therefore, proceeded to Cawnpore *en route* for Phappoond in the Etawah District.

Cawnpore.

13th.—Mr. Hallen called on Mr. Halsey the Collector, in order to ascertain whether any information about murrain had been obtained during the absence of the Commission at Lucknow, also on Dr. Loch, the Civil Surgeon, with a view to obtain information as to the hide trade and cattle poisoning from the chamars in the jail. He promised to obtain some information from an intelligent Inspector of Police on these points.

Phappoond.
D. Etawah.

14th.—Left Cawnpore at 6. A. M., and arrived at Phappoond at 8 A. M. The office followed in the evening. The Tehsildar, Syud Davur Ali, who came up in the same train from Cawnpore, having been there for two days, stated that he had received no instructions from the Collector, and that no disease had existed in the neighbourhood of Phappoond for two months. He was instructed to make local inquiries without delay, and sent out several peons with the object of collecting information. In the afternoon he informed the Commission that instructions had been received from the Collector of Etawah to render the Cattle Plague Commis-

sion every assistance. The result of the local inquiries was that no disease prevailed in the neighbourhood; that disease had prevailed in a village, but had disappeared about a month ago. Phappoond.

15th May.—5-30 A. M. In accordance with the information obtained from the Collector of Etawah, the Commission proceeded to visit the village of Gowrie in which cattle disease was reported to prevail. On the way thither in passing through the village of Nounpore (an out-village or purwa of Tajpore) a bullock was seen in the middle of the village, affected with rinderpest in a severe degree. This and several convalescent animals were examined and information obtained from the villagers as to the prevalence of cattle disease in their own and the neighbouring villages. The village of Gowrie was next visited and there several animals affected with rinderpest were also seen and examined, and the evidence of the villagers recorded. The Commission then proceeded to Tazpore, where more sick animals were seen and additional evidence taken. Thence the village of Fukeerpoor was visited and one or two animals evidently suffering from the prevailing disease seen, though the villagers manifested a great inclination to conceal the fact that disease existed there. It was afterwards ascertained that disease was only commencing in this village.

16th.—Proceeded at 5 A. M. to Terrai where murrain had existed for a month, but had disappeared about a month ago. No cases were seen here except that of one buffalo which had recovered. The evidence of the villagers was taken and recorded. The several members of the Commission returned home by different routes, with a view of obtaining information as to the prevalence of murrain in the surrounding villages. As Mr. Hallen was returning through the villages of Bunkipoor and Sainugger, close to the former village his attention was attracted by a number of vultures feeding on a carcase. This carcase on examination exhibited sufficient indications of the animal having died of rinderpest. At Sainugger a buffalo cow which had died during the previous night was being skinned by the chamars of the village, and a careful examination was made on the spot. This proved to be a case of a most severe type of rinderpest. In the evening the evidence of the Zemindar of Sainuggur was taken at Debiapore. A telegram was received from the Military Secretary to the Viceroy, authorizing the Commission to proceed to the Punjab on the reception of authentic information as to the prevalence of murrain there. Accordingly telegrams were despatched to the Commissioners of Lahore and Multan, inquiring whether murrain existed in their divisions, more especially in the districts of Gujranwalla and Jhung where cattle disease had been reported to exist. Pending the receipt of replies to these telegrams, sufficient evidence, &c., having been obtained at Phappoond, the Commission resolved to proceed to Agra with a view to ascertain whether disease actually existed or not in that district.

17th.—Proceeded to Agra. Agm.

Mr. Hallen having casually met the Commissioner and Collector in the evening, suggested that strict inquiries should be instituted, as he believed from the experience gained in the North-West that disease would be found. Mirza Mahomed Ali Jan also expressed a belief that by inquiry amongst his relations and friends in Agra, he would be enabled to obtain information of the existence of murrain.

18th.—A telegram was received from Gujranwalla, stating that murrain had existed during the months of January, February and March, but had died out toward the end of March. With the assistance rendered by the Commissioner and Collector, the Commission had the opportunity of inspecting several hundred head of cattle belonging to the city of Agra, among which two cases recovering from rinderpest and one buffalo suffering from a severe form of this disease were found.

19th.—No reply has been received from the Multan Commissioner. Another telegram was despatched to Multan, soliciting immediate reply to former telegram. Morning and evening the Commission inspected cattle in the city.

Agra.

20th May.—The buffalo cow above referred to (18th) having died last evening was carefully examined. Unmistakeable symptoms of malignant rinderpest were found. The Collector attended the *post-mortem* examination. To him on the spot, as also to the Commissioner subsequently, the President explained the necessity of instituting searching inquiries and establishing systematic reports. Mirza Mahomed Ali Jan accompanied by the Tehsildar, visited the villages Barakur, Angota, Futtehpore, Jehanpore, Tahra and Jotala, where he obtained abundant evidence of the prevalence of rinderpest in these and the surrounding villages.

No reply from the Commissioner of Multan having been received, it was resolved to proceed to Futtehpore.

Futtehpore.

21st.—Baboo Hem Chunder Kerr, who had proceeded to Futtehpore on the previous day, saw the Collector, made all arrangements for the prosecution of the inquiry in this district, and proceeded to the village of Subedar-ka-poorwa where he saw two cases of rinderpest and took evidence from the villagers. The remaining members of the Commission followed by evening train from Agra and arrived on the 22nd at 7 A. M.

22nd.—Arrangements have been made by the Collector for the Commission to proceed to Hosseingunge (ten miles distant from the station) whither it is intended to proceed to-morrow.

23rd.—4 A. M. Proceeded to Hosseingunge (ten miles north-east of the station) where twenty cases of rinderpest were seen. Some of these were recently attacked, but the majority were old cases. Witnesses were in attendance from the villages of Narainpore, Motyapore, Guneshpore, and Satraonpore, whose evidence was recorded at length. Two of the cases were evidently of a severe type, and as it may be expected that one or both will die within a day or two, strict directions were given to keep the carcasses safe for *post-mortem* examination, and report the death at once for the purpose of examining the body.

24th.—Proceeded to the village of Subadar-ka-poorwa, where several animals, convalescent from rinderpest, were seen and evidence taken from the villagers as to the character of the disease, past outbreaks, &c.

25th.—Meah Golam Serwar, Veterinary Assistant, proceeded to Hosseingunge to ascertain whether any probability of having a *post-mortem* examination within a day or two existed, and prepared to perform one, if opportunity offered. He returned at 11 A. M., reporting that he had found a buffalo just dead from rinderpest at the village of Narainpore, had performed a *post-mortem* examination, and preserved the most important parts for inspection. These were brought in and examined in the evening. The parts, basket, &c., were carefully buried. Careful notes were taken of the result. A report having been received from the village of Cheetisapore not in accordance with the previous uniform experience of the Commission with regard to the behaviour of the disease, several of the villagers were brought into the station by the Tehsildar and their deposition carefully taken. It was then found that the extraordinary report (that sixteen animals had been taken ill one day and had died on the next day) was a fabrication of the village Putwari. The Tehsildar of Futtehpore rendered valuable assistance under the direction of the Collector.

The Commission left Futtehpore at 9 P. M., and reached Allahabad at 11 P. M.

Allahabad.

26th.—Mr. Hallen had an interview with the Assistant Secretary to the Government of the North-Western Provinces, the Lieutenant-Governor and Staff and Secretary to the Government of the North-Western Provinces having gone to Nynce Tal on the 23rd. No information or order was obtained to alter the plan already agreed upon, namely, to proceed to Benares where disease was reported to prevail, the nature of which it is the particular desire of His Honor the Lieutenant-Governor, North-Western Provinces, that the Commission should determine.

27th.—Two members of the Commission, Dr. McLeod and Baboo Hem Chunder Kerr, proceeded by night train to Benares. In consequence of a report

received from the Commissioner of Allahabad containing important information from Jounpore, Azimghur and Ghazeepore, relating to cattle poisoning, Mr. Hallen decided to remain at Allahabad in order to have an interview with the Commissioner. Mirza Mahomed Ali Jan also remained in Allahabad in case his assistance might be needed.

28th May.—Mr. Hallen called on Mr. Maine, Commissioner of Allahabad and had an opportunity of perusing a report recently submitted by Captain Dodd, Personal Assistant to the Inspector General of Police, North-Western Provinces. Mr. Maine stated that in forwarding this report to Government, he had recommended that it should be submitted for the consideration of the Cattle Plague Commission, and suggested the propriety of the Commission's visiting Jounpore to obtain information on the subject of cattle poisoning.

29th.—Mr. Hallen and Mirza Mahomed Ali Jan arrived at Benares at 9 A. M. Arrangements were made by the Collector for the Commission to inspect diseased cattle to-morrow morning.

30th.—5 A. M. Proceeded to Secrole, a suburb of Benares, where a *post-mortem* examination was performed, and four sick animals were examined (suffering from rinderpest). Mr. Lawrence, the Collector, accompanied the Commission to Secrole. Thence went to the village of Mordaha, five miles off, and saw eighteen cattle suffering from rinderpest in a mild form. Mr. Lemon, Veterinary Surgeon, Royal Horse Artillery, who had examined and reported on cattle disease in the district, accompanied the Commission to both places.

31st.—Further inquiries are being made with reference to murrain.

1st June.—Performed a *post-mortem* examination of one of the bullocks seen on the 30th at Secrole, also of another bullock in Pundaipore which had died suddenly on the previous night.

Proceeded to Jounpore at 10 P. M.

2nd.—Arrived at Jounpore 5 A. M., had an interview with Mr. Benson, the Collector, explaining to him the reason of coming to the station and requesting him to direct that searching inquiry should be made with a view of finding cattle suspected of being poisoned during the stay of the Commission at Jounpore, and asking for an abstract of records of convictions for cattle poisoning during the preceding year.

3rd.—Mirza Mahomed Ali Jan, who had arrived in Jounpore on the 1st, had informed Mr. Benson of the wishes of the Commission, and orders had at once been issued to the Police to ascertain if any cattle were dying suddenly within a radius of six miles of the station. Mirza Mahomed Ali Jan visited one or two villages in the neighbourhood in the evening.

No sudden death among cattle has been as yet reported. Mirza Mahomed Ali Jan went out to visit neighbouring villages morning and afternoon.

4th.—Employed during the day in examining and taking notes and abstracts of 51 cases of conviction for cattle poisoning during the past year in the Jounpore Magistracy. At 5 P. M. visited the village of Adampore, and found no disease. During the taking of evidence the villagers stated that four or five years ago poisoning by the chamars had reached such a pitch that an agreement was drawn up on stamped paper, stipulating on the part of the chamars, that on the payment of a sum of money (Rs. 8) no more deaths should take place among their cattle, and holding themselves responsible for any future deaths. A copy of this document has been taken.

5th.—Proceeded to the village of Shikarpore where no disease was discovered. Evidence as to past loss of cattle was taken.

6th.—Took the evidence of two villagers of Luckunpore where a similar document to that above alluded to was drawn up about the same period, which subsequently was destroyed by mice. Baboo Hem Chunder Kerr left Jounpore on the 5th for Benares, with the object of preceding the other members of the Commission to the Shahabad District, in order to see that arrangements for conveyance, &c., had been made. The remaining members of the Commission left Jounpore for Benares at 10 P. M.

Jounpore.

7th June.—Arrived at Benares at 5 P. M.

8th.—Left Benares at 6-5 P. M.; arrived at Zamaniah at 8-23; proceeded to Mohunneah in the Shahabad District.

Shahabad.

9th.—Arrived at 1 A. M. at Mohunneah eighteen miles from the Zamaniah Railway Station. 5-30 A. M., visited the village of Belowrie and saw six cases of rinderpest, also took evidence of past outbreaks from villagers.

10th.—5-30 A. M. Proceeded to Belowrie and held a *post-mortem* examination of a cow (in calf) which had died of rinderpest: notes recorded, specimens of third stomach preserved.

5-30 P. M. Held another *post-mortem* examination of a cow brought in from a neighbouring village and found the cause of death to be hoven.

Proceeded at 6 P. M. to Belowrie to examine the carcase of a bullock which had died during the day. Found that hoven had caused death.

11th.—2-45 A. M. Left Mohunneah and arrived at Zamaniah at 6 A. M., telegraphed to the Magistrate of Patna enquiring whether disease still existed in that district. Received a reply in the negative. 8-23 P. M., left Zamaniah by rail.

Sahebgunge.

12th.—9-15 A. M. Arrived at Jamalpore. 9 P. M., left Jamalpore and arrived at Sahebgunge at 11-48 P. M.

13th.—The Commission had hoped to be able to leave by the ferry steamer at 9-30 A. M. for Caragola *en route* to Purneah, but was detained by heavy rain.

14th.—Recorded evidence in the village of Sahebgunge, of *gootee* having attacked cattle there two years ago.

Purneah.

15th.—Left Sahebgunge by steamer at 10 A. M., arrived at Caragola at 2 P. M., and reached Purneah at 11-30 P. M.

16th.—Visited with the District Superintendent of Police, Mr. Cockburn, the village of Morunga, about two miles from the Dāk Bungalow, and saw a case of rinderpest in a buffalo.

17th.—Again visited village of Morunga, also Modhoobunee, and saw four cases of rinderpest. Recorded evidence. Mr. Hallen had an interview last evening with the Magistrate. Recorded evidence of the agent of Munnoo Khan, hide merchant. The Commission left Purneah at 5 P. M., and arrived at Caragola at 8-3 P. M.

18th.—The Commission proceeded at 6 A. M. by steamer from Caragola and arrived at Sahebgunge at 9 A. M., and went by rail to Nulhatee, arriving there at 7 P. M.

Bockhara.

D. Berhampore.

19th.—5 A. M. Proceeded to Bockhara by rail arriving there at 6-30 A. M. Visited the villages of Bhoorcoonda and Beluria and found rinderpest. Inspected several cases and recorded evidence of the inhabitants of both villages.

20th.—6 A. M. Visited the villages of Telongol, Rasbelooria, Delkhorla and Dohalee and inspected many cases of rinderpest and recorded evidence of the inhabitants of the above-named villages. Returned to Nulhatee at 1-30 P. M., left Nulhatee at 8-30 P. M.

21st.—Arrived at Burdwan at 2-30 A. M. The Commission intended proceeding from this place to the district of Hazareebaugh in the Chota Nagpore Division, (from which reports of cattle disease had been received) but were deterred by the receipt of a letter from that district stating that cattle disease had disappeared.

Under these circumstances it was resolved to proceed to Calcutta until further arrangements could be made.

22nd.—Proceeded to Calcutta at 6-15 A. M., arriving at 9 A. M.

23rd June to 4th July.—The Commission was engaged in office work during this period and in preparations for proceeding to visit the province of the Punjab.

J. G. Charles, Esq., Bengal Civil Service, joined as a Member of the Cattle Plague Commission on the 29th June.

5th July.—Met in office from 11 to 5 P. M. Messrs. Hallen and Charles proceeded by 8-12 P. M., express train to Buxar (Mirza Mahommed Ali Jan having gone on in advance to Bulandshahur). Dr. McLeod and Baboo Hem Chunder Kerr remain in Calcutta to carry on that office work. Calcutta.

6th.—5 P. M. Arrived at Buxar. Buxar.

7th.—Had an interview with Mr. Armstrong, C. S., Colonel Plowden, and Major McDougall. No murrain at present prevailed but rinderpest and foot and mouth disease prevail more or less every year. D. Shahabad.

8th.—Recorded the evidence of two cultivators at Kurantadee. Left Buxar at 12 o'clock, arrived at Zamaniah at 1-30 P. M., and Ghazeepore 8 P. M.

9th.—Had an interview with Mr. Oldham, the Collector of Ghazeepore, on the subject of murrain and cattle poisoning. No cattle disease there reported; but obtained valuable information with regard to previous outbreaks. Papers in the Magistrate's Office relating to the subject are to be forwarded to the Commission. Left Ghazeepore 1 P. M., arriving at Allahabad at 11-5 P. M. Ghazeepore.

10th.—Sunday; at Allahabad.

11th.—12-55 A. M. Left Allahabad, arriving at Chola 3-50 P. M.

12th.—Left Chola at 6 A. M. and arrived at Bulandshahur at 8 A. M. Had an interview with Mr. Willock, the Collector. 5 P. M., visited with the Collector the village of Chandpore. Found cases of rinderpest and foot and mouth disease. Bulandshahur.

13th.—6 A. M. Visited the village of Yakoobpore seven miles from Bulandshahur, finding several cases of rinderpest.

5 P. M. Visited village of Jowligarh nine miles from Bulandshahur, finding some severe cases of rinderpest.

14th.—Performed the *post-mortem* examination of a buffalo which had been seen the day before, affected with rinderpest at Yakoobpore. Mr. Willock accompanied the Commission in their visits to the several villages. 6 P. M., left Bulandshahur for Chola, arriving at the latter place at 7-30 P. M.

15th.—Left Chola 4-38 A. M., arriving at Delhi 7-30 A. M.

16th.—Called on the Deputy Commissioner of Delhi to obtain information as to the best means of proceeding to Hissar. No murrain is at present reported from Delhi, but the Tehsildar is to accompany Mirza Mahomed Ali Jan in the search for murrain in the city. Delhi.

17th.—Mirza Mahomed Ali Jan and the Tehsildar find that no disease exists at present, but ascertain that there was an outbreak about six months ago.

18th.—Left at 5 P. M. for Hissar arriving at Rhotuck on—

19th.—at 9 A. M. Left Rhotuck at 5 P. M. and got to Hansi on—

20th.—at 11 A. M. Left Hansi at 5 P. M. arriving at Hissar the same evening at 10 P. M. Hissar.

21st.—Had an interview with the Commissioner, Deputy Commissioner and Major Robinson of the Government cattle farm. Visited Government cattle farm and inspected stock at 5 P. M.

22nd.—Recorded evidence of stud salutes, saw one bullock castrated, left Hissar at 5 P. M.

23rd.—Arrived at Rhotuck at 10 A. M., left Rhotuck 8-30 P. M.

24th.—Arrived at Delhi 10 A. M. Delhi.

25th.—Saw one case of rinderpest—a bullock belonging to A. Skinner, Esq., also an old case of *khuriah* in another bullock, the property of the same gentleman. Left Delhi 5-48 P. M. arriving at Meerut 8-20 P. M.

26th.—Called on the Commissioner and Collector who were both absent from the station. Made arrangements for proceeding to Haupper.

27th.—Arrived at Haupper at 11 A. M. Owing to the Tehsildar being away at Bulandshahur could not satisfactorily ascertain where disease was to be found. Haupper. D. Meerut.

Calcutta.

Haupper.

28th July.—Visited village of Dhanowra about four miles from Haupper. At Dhanowra investigated an outbreak of rinderpest which had proved very fatal. Held a *post-mortem* examination on a buffalo cow which had died the day before from rinderpest. Recorded evidence of villagers as to present and past outbreaks.

29th.—Visited stud at Babooghur and questioned several old Government bullock-keepers on the subject of cattle murrain.

30th.—Left Haupper at 7-45 A. M. arriving at Meerut at 10-30.

Saharunpore

31st.—Commission left Meerut at 10-32 A. M. and arrived at Saharunpore at 2 P. M.

1st August.—Had an interview with the Collector, Mr. Jenkinson, and made arrangements for visiting the village of Reri.

2nd.—At 6 A. M. the Commission proceeded to the village of Reri, inspected many cases of severe rinderpest and made a *post-mortem* examination of the carcass of a buffalo which had died the night before of rinderpest. Recorded the evidence of villagers regarding the outbreak.

Loodianah.

3rd.—Left Saharunpore at 2-30 P. M. and arrived at Loodianah at 9-15 P. M.

4th.—Had an interview with the Deputy Commissioner and made arrangements for proceeding to the village of Kakoowara next day.

5th.—Proceeded to the village of Kakoowara about four miles north-west of Loodianah and investigated the murrain at that place. Saw only two cases of the disease (rinderpest) one of which died and was examined after death. Took the evidence of the villagers.

6th.—As no further reports of murrain could be obtained, made arrangements for leaving Loodianah on the following day.

Umritsur.

7th.—Left Loodianah at 7-30 and arrived at Umritsur at 5-30 P. M.

8th.—Had an interview with General Taylor, the Commissioner, and the Officiating Deputy Commissioner, Mr. Gardner, to make arrangements for visiting villages affected with murrain.

9th.—5-30 A. M. Visited villages of Vadala and Mâl, finding several cases of rinderpest at the former village, and that one cow had died at the latter place the previous day. At Vedala 80 head of cattle had died of rinderpest locally termed *mannoo* during the past five weeks.

10th.—Left Umritsur 6-28 A. M., arrived at Lahore 8-30 A. M.

Lahore.

11th.—Made arrangements to proceed to Sheikhoopora in the Gujranwalla District to-morrow.

12th.—Rode to Mundiallee, twelve miles from Lahore.

Sheikhoopora.
D. Gujranwalla.

13th.—Rode to Sheikhoopora, twelve miles. In the evening inspected sick and weakly cattle collected by the Naib Tehsildar of Hafizabad, who had been ordered by the Deputy Commissioner of Gujranwalla to render the Commission assistance.

14th.—Rode round Sheikhoopora to inspect the cattle of the district, as to their general condition, &c. P. M., inspected more sick and weakly cattle and found amongst them two recovering from rinderpest and two suffering from pleuro-pneumonia.

15th.—In the morning rode to Kooka (five miles from Sheikhoopora) and several other villages, and found that rinderpest had, some little time ago, attacked the cattle, also that pleuro-pneumonia was a common disease among them; and recorded evidence. In the evening inspected more sickly cattle which were evidently recovering from starvation, and found one bullock recovering from rinderpest.

16th.—This morning held a *post-mortem* examination of a buffalo which had been purchased on account of showing well-marked symptoms of pleuro-pneumonia. The lungs were found extensively diseased, with red and grey hepatization. Recorded evidence of an intelligent Zaildar. Left Sheikhoopora at 4-30 P. M., and rode into Lahore a distance of twenty-four miles.

17th August.—Called on Commissioner and Deputy Commissioner of Lahore and at the Government Secretariat, and saw Mr. Trotter, the Assistant Secretary. Made arrangements for prosecuting inquiries in Lahore and Meean Meer. Lahore.

18th.—Had an interview with the Cantonment Magistrate and Commissariat Officer at Meean Meer in the morning, on the subject of murrains and cyst infected meat. At 11 A. M., the Deputy Commissioner and Assistant Commissioner called for the purpose of making arrangements for the Commission to institute inquiries in Lahore.

19th.—In the morning inspected the slaughter-houses of Lahore, and found meat extensively cyst infected; specimens of cysts preserved. Afterwards saw some sick cattle in the city, among which were two cases of pleuro-pneumonia. In the afternoon recorded the evidence of the butcher sergeant (a very intelligent man and butcher by trade) on murrains and cyst infected meat; also questioned several natives sent by the Cantonment Magistrate of Meean Meer, but elicited no information from them worth recording.

20th.—Inspected (A. M.) more cyst infected lungs and livers obtained by the European Inspector of markets from the slaughter-houses this morning.

At 11 A. M. recorded the evidence of the chowdhry of goallas at the city of Lahore on the late and past outbreaks of murrains in and around the city of Lahore. 8-30 P. M., left Lahore by rail.

21st.—Arrived at Montgomery, 4 A. M. Had an interview with Colonel Ferris, Deputy Commissioner of Montgomery. Montgomery.

22nd.—Colonel Ferris has made arrangements for the Commission to proceed to-morrow by Cheechawutnee to Kumalia.

23rd.—The Commission arrived at Cheechawutnee by rail by 6 A. M., and proceeded to Kumalia by road, a distance of twelve miles, arriving at 7 P. M. The services of the Naib Tehsildar have been placed at the disposal of the Commission, and he reports the existence of murrain at the village of Shakeboreham. Kumalia.

24th.—The Commission rode to Shakeboreham, a distance of five miles, arriving there at 6 A. M., and inspected several cases of rinderpest known in this part of the country by the names of *peer* and *mahla* (*andar ka mahla*—inside smallpox); recorded evidence of past outbreaks. Shakeboreham.

25th.—Proceeded at 5 A. M. through the villages of Koha, Man, and Khorooee; recorded evidence of villagers. Held a *post-mortem* examination of a cow which had died of rinderpest the night before. In returning to Kumalia the Commission went to Shakeboreham again, found that one of the buffaloes had died, but unfortunately the carcass had been removed by the chamars. Koha, &c.

26th.—Mr. Brandreth, the Commissioner of the Multan Division, *en route* to Jhung, arrived at 8 A. M., and remained with the Commission all day, leaving at 6 P. M. Shakeboreham.

27th.—The Commission proceeded at 5 A. M. to Rajana, a distance of eleven miles, arriving at 7-30 A. M. Information was received of murrain existing among the cattle of some people at present living at a place called Bararakeekee, five miles off. At 10 A. M. the Commission proceeded to this place, saw three cases of rinderpest and recorded evidence of the people. This village is within the Jhung District on the Bar. Rajana, Bararakeekee, D. Jhung.

28th.—Search has been made in several directions on the Bar for other herds of cattle, but as no rain has as yet fallen, the cattle have not been brought to the Bar. Mr. Allsop, Deputy Superintendent of Police, Jhung, arrived at Rajana at 8 A. M. He has kindly offered his services to assist the Commission within the Jhung District, and has brought a letter from the Deputy Commissioner of Jhung, informing the Commission that it is difficult to find any case of murrain at the present time in or near Jhung.

It is resolved under these circumstances that the President and Mirza Ali Jan should return to Kumalia where murrain prevails, and *post-mortem* examinations can be obtained, and that Mr. Charles should proceed to the station of Jhung to inquire relative to past outbreaks and to record evidence.

Kumalia.

29th August.—The Commission returned to Kumalia, arriving at 8-30 A. M. 5-30 P. M., visited the village of Vwais, four miles east from Kumalia, and held an examination of the carcase of a bullock which had died that afternoon from rinderpest.

30th.—5 A. M. Visited village of Dhalsuree seven miles east of Kumalia, held *post-mortem* examination of a buffalo-cow and recorded evidence. Also at 8-30 A. M. examined the carcase of a buffalo-cow at Kokur, two miles south of Dalsooree. Both proved to be cases of rinderpest.

Cheechawutnee.

31st.—The Commission left Kumalia at 4 A. M., and arrived at Cheechawutnee at 7-30 A. M. Mid-day, inspected some camels suffering from debility.

The Commission left Cheechawutnee by rail at 8 A. M.

Lahore.

1st September.—The Commission arrived at Lahore 6 A. M., and recorded evidence of four Zemindars of the Gujranwalla District, who had been sent into Lahore by the Deputy Commissioner of Gujranwalla.

The President had an interview with the Assistant Secretary of Government of the Punjab, Mr. Trotter, and the Deputy Commissioner, Mr. Moore, and called on the Commissioner.

2nd.—Mr. Trotter has promised to supply the Commission with certain papers regarding past outbreaks of murrain in the Punjab. Mr. Charles returned from Jhung this morning, the Commission left Lahore by 5-30 P. M. by rail.

3rd.—1 A. M. Arrived at Phillour 7 A. M., left Phillour 1 P. M., arrived at Loodianah 2-30 P. M., left Loodianah at 4-30 P. M.

4th.—1 A. M. The Commission arrived at Saharunpore. Resolved that Mr. Charles should proceed to Allahabad to search for papers regarding murrains in the Secretariat of the North-West Provinces, and after completing the search should proceed on to Calcutta.

To economize time, the President is to go by dāk to Kurnaul, and he accordingly proceeded thither at 7 P. M. by palki dāk.

Kurnaul.

5th.—Arrived at Kurnaul 2 P. M.

6th.—Had an interview with Mr. Thomas, Deputy Commissioner, and was informed that the murrain has disappeared from the neighbourhood of Kurnaul; recorded the evidence of lumbaridars.

Saharunpore.

7th.—6 A. M. Left Kurnaul. 10 P. M., arrived at Saharunpore.

8th.—Had an interview with the Collector, who stated that murrain continues to show itself in some parts of his district.

9th.—Left Saharunpore 12-45 night.

10th.—Arrived at Allahabad 11-45 P. M.

11th.—Sunday.

12th.—Left Allahabad 6-30 A. M., arrived at Bankipore 4-30 P. M.

Bankipore.
D. Patna.

13th.—Had an interview with the Commissioner, Mr. Jenkins, and the Collector, Mr. Mangles, and was informed that rinderpest has of late appeared in the Patna District, to a trifling extent, in a sporadic form. Left Bankipore 4-30 P. M., arrived at Jamalpore 8-30 P. M.

14th.—Left Jamalpore 9 P. M.

15th.—Arrived at Calcutta at 9 A. M.

Calcutta.

During the absence of the other members of the Commission in the Punjab, Dr. McLeod and Baboo Hem Chunder Kerr visited the following places:—

Dhappa.

9th July.—Dhappa municipal platform for disposal of carcasses of dead animals; examined one carcase.

Slaughter-houses.

12th July.—Kidderpore and Kurriah slaughter-houses; inspected slaughtered carcasses.

16th July.—Kolingah Street meat bazaar and Dhurumtollah and Tiretta Bazaars. meat bazaars; inspected meat.

19th.—Cattle market at Dum-Dum; recorded evidence of pykars (dealers), &c. Dum-Dum.

16th to 18th.—Office.

19th.—Office from 11 A. M. to 4 P. M. Baboo Hem Chunder Kerr proceeded to Serampore and Hooghly, in consequence of reports having been received of the prevalence of cattle plague in the vicinity of these stations, in order to endeavor to make arrangements for the establishment of a hospital in the Hooghly District, and had an interview with the Magistrate of Hooghly and Assistant Magistrate of Serampore. Information was subsequently received that this object could not be accomplished. Serampore.

20th to 27th.—Office.

28th.—Office from 11 A. M. to 4 P. M. The President called on Dr. Tonnerre, Health Officer, Calcutta, with a view to making arrangements for examining carcasses of dead cattle at Dhappa. The subject of an experimental hospital was also discussed, and Dr. Tonnerre placed at the disposal of the Commission the new vacant pig-slaughtering-house at Entally.

29th to 2nd October.—Office.

3rd.—Office from 11 A. M. to 4 P. M. Baboo Hem Chunder Kerr proceeded to Serampore and Khorserai, in consequence of reports having been received of the prevalence of disease there, but found that no disease existed in that neighbourhood.

4th to 8th.—Engaged in office work. Baboo Hem Chunder Kerr proceeded on the 6th to Mymaree and Gangoorea Police Station in the Burdwan District, in consequence of reports having been received from the Collector of the recent prevalence of rinderpest in that locality, with a view to ascertaining whether a hospital might be advantageously established there. After most careful search and inquiry he ascertained that a sufficient number of cases could not be obtained in that quarter. Mymaree.
D. Burdwan.

9th.—Proceeded in company with Mr. Bartlett, of the Health Officer's Department, to inspect the pig-slaughtering-house at Entally which was found to be suitable for an experimental hospital.

Inspected the municipal cattle at the Boitakhana sheds.

10th.—Office as usual.

11th.—Office till 3 P. M. A case of small-pox having been reported to exist at Cossipore, three calves were purchased and inoculated with a view to subjecting them subsequently to the infection of rinderpest in order to test the protective power of variolation. The case was found to be a very mild case of discrete variola. The calves were however inoculated by placing pieces of cotton wool soaked in the lymph obtained from the pustules in small pouches made under the skin of the axilla. Careful thermometrical observations were daily made at 8 A. M. and 4 P. M., and recorded until the 27th October. No symptom of disease appeared except a slight elevation of temperature in one calf on the 14th (103.2° evening) and a still slighter elevation in another on the 14th also (102.2° evening.) One of the calves died on the 27th of congestion of the lungs, and another died on the 7th of November, apparently of the same cause. The other was disposed of. These experiments were a complete failure, and it is probable that the death of the two calves was owing to their being so young and having to be hand-fed. Young calves were selected to prevent the possibility of their having had a previous attack of rinderpest. The morning temperatures taken during 73 days averaged 100.2° and the evening 101.7°. Calcutta.

12th.—Office.

Calcutta.

13th October.—Office. The President called upon Mr. Greenhill, Veterinary Surgeon of Calcutta, who had seen much of the Calcutta epizootic in 1864 and treated many cases, in order to ask him to give evidence on these subjects, which he readily promised to do.

14th & 15th.—Office.

16th.—Reports having been received of the prevalence of foot and mouth disease on the road between Silligoree and Darjeeling, and that there was a great mortality among the cattle of both the Government and private bullock trains, it was considered necessary that the Commission should proceed to make a local investigation, more particularly as the outbreak had occurred on the hills (7200 feet). Accordingly Messrs. Hallen and Charles and Baboo Hem Chunder Kerr proceeded by mail train 8-32 P. M. *en route* for Darjeeling. Dr. McLeod and Mirza Mahomed Ali Jan remaining in Calcutta to conduct the office work.

17th.—Arrived Caragola 11-30 A. M. and Purneah 4-30 P. M.

18th.—Arrived Kishengunge 12-30 A. M., Silligoree 3-30 P. M.

Kurseong.

19th.—Left Silligoree 6-30 A. M., arrived Kurseong 12-45 P. M.; afternoon, inspected sick cattle. Inspector Thomas, V. C., of the Darjeeling Police, attended to assist the Commission. Several cases of foot and mouth disease were seen, and the evidence of cattle owners recorded.

20th.—6-30 A. M. Inspected sick cattle at various places on the road from Kurseong to Sonada.

Darjeeling.

21st.—10-30 A. M. Performed *post-mortem* examination of a bullock which had died of foot and mouth disease at Goomti on the new cart road between Kurseong and Silligoree. P. M., proceeded to Darjeeling.

22nd.—11 A. M. Called on the Deputy Commissioner to make arrangements for the inspection of any sick cattle in the neighbourhood, and to have intelligent agriculturists and cattle owners sent to appear before the Commission to give evidence. P. M., recorded the evidence of Tenchung Bootea.

23rd.—Sunday. Recorded the evidence of Nurboo, the Sikkim interpreter of the Deputy Commissioner's Court, Darjeeling; Geelong, a native of Sikkim, and Jungpen, a cattle doctor and native of Llassa, Thibet.

Sonada.

24th.—A. M. Returned to Sonada. Recorded the evidence of Mr. John White, farmer, and Wally Khan, a chaprassi (messenger) employed by the Darjeeling and Calcutta Carrying Company.

Kurseong.

P. M. Proceeded to Kurseong.

25th.—Detained at Kurseong by heavy and continued rain.

26th.—7 A. M. Left Kurseong, arrived Silligoree 5 P. M.

27th.—8 A. M. Left Silligoree, arrived Dingraghaut 8 P. M., but detained on the north bank of the Mahanuddee all night.

Purneah.

28th.—Arrived Purneah, 11 A. M. Had an interview with the Collector to inquire if murrain is prevailing at the present time in the neighbourhood of Purneah with a view to establishing a hospital in that district. In consequence of this, the Collector caused careful inquiries to be made, and the result was afterwards communicated, *viz.*, that although rinderpest did prevail to a small extent in some villages of the district, a sufficient number of cases could not be obtained on any one spot to warrant the placing of a hospital for treatment there. Arrived at Caragola at 11 P. M.

29th.—Left Caragola 7 A. M., arrived Sahebgunge 11-30 A. M., left at 12 o'clock night.

Calcutta.

30th October.—Sunday. Arrived Calcutta 9 A. M.

31st.—Office.

1st & 2nd November.—Office closed. Holiday.

3rd.—Office.

4th.—Six A. M., Mr. Hallen and Baboo Hem Chunder Kerr proceeded to Diamond Harbour where disease had raged so violently in 1868, and whence reports of a slight prevalence of *bosonto* were still being received, in order to record evidence as to the past outbreak, and ascertain whether sufficient cases for the establishment of a hospital might be found there.

Recorded evidence during the day.

P. M. Visited the village of Parulia and inspected two cases of rinderpest, not of a severe type and evidently recovering. The Deputy Magistrate has been requested to obtain further information from different portions of the sub-division.

5th.—Returned to Calcutta.

6th.—Sunday.

7th to 10th.—Office.

11th.—Office. Proceeded at 3 P. M. to the municipal platform at Dhappa and inspected three carcasses there, none of them showed any indication of these animals having died of rinderpest.

12th.—Office.

13th.—Sunday.

14th.—7 to 11 A. M. The Commission visited the oilmen's sheds at Manicktollah and recorded evidence on the subject of rinderpest which annually visits there. Office from 12 to 4 P. M.

15th.—Visited the Sukeea's Street cattlesheds from 7 to 10 A. M. Inspected sheds and cattle and recorded evidence. Rinderpest is of yearly occurrence in these sheds. Office from 11 to 4 P. M. Recorded the evidence of Rajah Narendra Krishna.

Mr. John Stalkartt called and expressed his willingness, in reply to a letter, asking him to impart information regarding agricultural stock of this country, and their diseases, to do so.

16th.—Office. Recorded the evidence of Baboo Degumber Mitter, a large landed proprietor and member of the Bengal Legislative Council. Baboo Hem Chunder Kerr proceeded again to Diamond Harbour in order to make more particular inquiry regarding the cattle disease, which, from the Deputy Magistrate's report, evidently exists.

17th to 19th.—Office.

20th.—Sunday.

21st.—Office 11 to 5. Mr. John Stalkartt of Goosery attended and gave evidence which was duly recorded.

22nd.—Office. Baboo Hem Chunder Kerr returned. He had visited about 100 villages around Diamond Harbour and found that though scattered cases of rinderpest were to be found, the disease was not so prevalent or concentrated as to furnish a sufficient number of cases for hospital purposes.

23rd to 26th.—Office.

27th.—Sunday.

Bood-Bood.

28th November.—Office. Baboo Hem Chunder Kerr proceeded to Bood-Bood, whence reports of disease had been recently received, from several quarters, to institute inquiries as to the propriety of establishing a hospital there.

29th & 30th.—Office.

1st December.—Office.

2nd.—Office. Baboo Hem Chunder Kerr returned from Bood-Bood. He found from personal inquiry, that rinderpest existed to a greater or less extent in some of the villages where it was reported to exist. In one village, Warish-poor, twelve miles from Bood-Bood, 90 cattle had died during the preceding eight months of rinderpest, but at the time of his visit, only two or three mild cases were to be seen. The result of his inquiry and inspection was that a sufficient number of cases could not be found at Bood-Bood or its neighbourhood to warrant the establishing of a hospital for treatment. Baboo Hem Chunder Kerr ascertained at the Office of the District Superintendent of Police, Burdwan, that murrain existed at Culna in that district.

3rd.—Office. A hospital has been erected at Momenpore for the inoculation of cows and goats with virus derived from a pustular eruption observed upon the udder of a goat purchased for private use by Mr. Hallen.

4th.—Sunday. Hospital morning and evening.

5th.—Hospital morning and evening. Two young cows and two goats have been inoculated from the exanthem in question; another she-goat having taken the disease in consequence of having been milked by the same person, who milked the original case. Office at the usual hours. Baboo Hem Chunder Kerr proceeded to Culna in order to make a personal inquiry, and ascertain whether a hospital for treatment and experiment can be advantageously established there.

6th.—Office. The evidence of Lieutenant W. Pritchard and Mr. Dobson, Deputy Superintendent of the Alipore Jail, was recorded.

7th.—Office.

8th.—Baboo Hem Chunder Kerr reports from Culna that he finds rinderpest prevailing, and suggests that Mr. Hallen should proceed thither to judge of the advisability of establishing a hospital. He expresses a belief that the owners of sick cattle will readily submit them for treatment.

9th.—Office. Mr. Hallen personally reported to the Military Secretary to the Viceroy his intention to proceed to Culna.

10th.—Office furniture and tent despatched to Culna.

11th.—Sunday. Mr. Hallen proceeded to Culna, and had an interview with the Officiating Joint Magistrate Mr. Beighton.

12th.—Mr. Hallen and Baboo Hem Chunder Kerr inspected ten sick cattle affected with rinderpest, and from personal conversation with the goallas, milkmen, and owners of agricultural stock, found that there is every hope of many cases being obtained for trial of different methods of curative treatment. Baboo Sreegopaul Paul Chowdhry has placed at the disposal of the Commission, free of rent, premises consisting of a house with compound and out-houses in the town of Culna for use as a hospital. These premises are very suitable for the purpose. The larger house will afford room for 23 patients, and sheds can be erected in the compound for 27 more, thus permitting of 50 patients being housed for treatment. The out-houses afford excellent accommodation for the Veterinary Assistant and attendants and for a dispensary. Ten patients have been already collected in this yard, and after being carefully examined by Mr. Hallen are found to be cases of rinderpest.

13th December.—The hospital is being prepared for the convenient reception and treatment of cattle.

14th.—Information has been received of the existence of rinderpest in some little villages adjoining Culna. Having heard that in one village, Serampoor, cattle owners expressed a suspicion of the motives for which a hospital was organized, Mr. Hallen and Baboo Hem Chunder Kerr proceeded thither, and carefully explained the objects and intentions of Government in establishing this inquiry, namely, to endeavor to diminish the losses sustained by ryots owing to the death of cattle. They were so far convinced and re-assured that they sent five cattle to hospital at once.

15th.—Twenty cases of rinderpest have been admitted for treatment.

16th.—Government Resolution No. 5537 of this date has been received, intimating that the Civil Members of the Commission are to revert to their substantive appointments on the 1st proximo, and the Medical Members to continue treating cattle in hospital, making the necessary experiments, and drawing up the report until the 1st of February.

The services of Baboo Hem Chunder Kerr have been found so valuable in furthering the objects of the hospital that Mr. Hallen has addressed Government with the view of retaining them as long as the hospital lasts—a proposal which has been sanctioned. Dr. McLeod remains in Calcutta in charge of the office, preparing matter for printing, and generally expediting the completion and issue of the report and its appendices. Dr. McLeod will visit Culna from time to time in order to enable him to form a judgment from personal observation, upon the operations carried on in the hospital. The general principles of the report have been discussed and agreed upon by the Members, subject to any modification which the hospital experience may render necessary, and the detailed report will, on completion, be submitted for the approval and signature of all the Members of the Commission.

The following are the forms (Nos. 1 and 4) which have been used to elicit written information of a more general or detailed description:—

FORM No. 1.

QUESTIONS.

- | | |
|---|---|
| 1. Name of District, Talook or Mouzah and Village? | Whether there are any eruptions on the body or feet, or not? |
| 2. Name of Disease in Vernacular or English? | Eyes and mouth watering or not? |
| 3. Date of outbreak of disease? | Body cold or hot? |
| 4. Number of cattle attacked? | Cough or labored breathing? |
| 5. Number of cattle which have died? | Shivering fits or not? |
| 6. Number of cattle which have recovered? | Swelling of the throat, or any difficulty in breathing? |
| 7. Number of cattle still ill? | Appearance of urinary or faecal evacuations? |
| 8. Number of cattle belonging to the Village? | 12. Average duration of attack before recovery or death? |
| 9. Whether the disease is supposed to be infectious or not? | 13. As to whether any preventive or remedial measures have been used or not, and with any success or not? |
| 10. How supposed to have originated? | |
| 11. Symptoms of the disease, informing on the following points:—
Appearance of the coat? | |

FORM No. 4.

QUESTIONS.

1. Name of locality?
Area in beegahs, acres or miles?
Geography and nature of soil?
2. Number of cattle in the locality,
and number to square mile?
3. Different breeds of cattle in the
locality?
Average value of cattle per head?
Now and 10 years ago?
4. Uses for which cattle are em-
ployed?
I.—Agriculture, how and when?
Bullocks or cows employed?
II.—Draught and burden?
Treatment of cattle so em-
ployed.
III.—Dairy?
Proportion used for each
purpose?
5. Mode of housing?
Kind of cattle sheds when used?
6. Mode of feeding and watering?
Particular kinds of grass and
fodder?
Native names and specimens if
possible?
Water whence obtained?
7. Whether herded by day or night,
or at any seasons?
Particulars requested?
8. Whether cattle are herded and
driven for pasture to other dis-
tricts?
If so, whither and to what dis-
tance?
9. General condition of cattle?
10. Stock how kept up?
I.—By breeding?
Special bulls kept?
II.—By importation?
Whence?
Average price paid?
11. Mode in which cattle are bought
and sold?
Häts, markets, &c.?
12. Export of cattle, if any, whither,
and for what purpose?
13. Export of hides?
Number of dealers, whether in-
creased of late or not?
Price of hides now and ten years
ago?
How hide trade is conducted?
14. Mortality among cattle, ordinary
and from plague?
15. History of plagues?
In what years they occurred?
16. Character of plagues, source,
cause, mode of spread, &c.?
17. Season in which plagues prevail?
18. Whether different varieties are
apt to prevail at different sea-
sons?
Duration of such outbreak?
19. Statistics of cattle plague?
Proportion per cent. of attacked?
Proportion per cent. of re-
coveries?
Proportion per cent. of deaths?
20. Kind of cattle most liable to at-
tack with regard to
Breeds,
Age,
Sex, and
Condition?
21. Symptoms?
Shivering?
Appetite and rumination?
Skin, temperature, hair, erup-
tion, &c.?
Swelling of tongue and throat?
Difficulty in breathing, cough,
&c.?
Looseness of bowels; blood or
mucus?
Secretion of milk suppressed or
altered?
Posture of animals?
22. If body examined after death,
what appearances?
23. Opinion of reporter as to conta-
giousness of different varieties
of cattle plague?
24. Treatment of cattle diseases?
Effects of different methods?
25. Sanitary measures, if any, adopt-
ed?
Disinfection?
Separation of sick and healthy?
Burial of carcasses?
26. Hides, horns and hoofs of diseased
cattle how disposed of?
27. Prevalence of disease among other
animals during cattle plague?
28. Affection of man by disease pre-
vailing among cattle?
29. Disease at present prevailing?
Particulars?
30. Effects of weather and heavy
falls of rain?
31. Any other remarks on points not
abovementioned?

APPENDIX No. II.

CONTAINING

GENERAL INFORMATION, REPORTS FROM DISTRICT OFFICERS,
AND EVIDENCE AND OBSERVATIONS RECORDED BY
THE CATTLE PLAGUE COMMISSION,

ARRANGED UNDER

PRESIDENCIES, PROVINCES, DIVISIONS AND DISTRICTS.

BENGAL PRESIDENCY: PROVINCE OF BENGAL, BEHAR AND ORISSA.

PRESIDENCY DIVISION,

COMPRISING THE DISTRICTS OF 24-PERGUNNAHS, NUDDEA, AND JESSORE.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

District.	From whom received.	Number.	Date.	Reference and Purport.
24-Pergunnahs.	Historical sketch ...	...		p. 37.
	Dr. Duncan Stewart ...	...	Calcutta, 1844 ...	Report on small-pox, Part II, pages 84-132, p. 41.
	<i>A. Blechynden, Esq.</i> ...	...	1st February 1864 ...	<i>Selections, Bengal Govt., p. 7.</i>
	<i>John Stalkartt, Esq.</i> ...	...	3rd February 1864 ...	<i>Ditto ditto p. 32.</i>
	<i>R. Rutherford, Esq.</i> ...	...	1st February 1864 ...	<i>Ditto ditto p. 33.</i>
	<i>Dr. C. Palmer (Report on Calcutta epizootic.)</i> ...	...	7th October 1865 ...	<i>Ditto ditto p. 74-104.</i>
	Baboo Kalee Churn Ghose, Deputy Magistrate of Satkheera. ...	40	3rd October 1866 ...	<i>Ditto ditto p. 134.</i>
	Hon'ble A. Eden ...	808	21st June 1869 ...	Supplement, <i>Calcutta Gazette</i> . These papers refer to a severe outbreak of murrain in Diamond Harbour Sub-division during the year 1868, p. 52.
	Rivers Thompson, Esq., ... Commr., Presy. Divn. ...	144	14th May 1869 ...	
	Baboo H. C. Kerr, Deputy Magistrate. ...	...	...	
	A. Smith, Esq., Magistrate of 24-Pergunnahs. ...	162	20th April 1869 ...	
	H. Farrell, Esq., V. S. ...	...	No date ...	
	Ditto ditto ...	...	20th March 1869 ...	
	Baboo H. C. Kerr ...	1	14th April 1869 ...	
	A. Smith, Esq. ...	183	7th May 1869 ...	
	Baboo H. C. Kerr ...	...	3rd May 1869 ...	
	E. J. Barton, Esq., Offg. Magistrate of 24-Pergunnahs. ...	96	25th February 1870 ..	
	E. Verner, Esq., for ditto... ..	111	8th March 1870 ...	These papers refer to the prevalence of cattle disease during 1869, p. 63.
	A. R. Thompson, Esq., Officiating Commissione, Presidency Division. ...	18	3rd March 1869 ..	
	Ditto ditto ...	206	14th June 1869 ...	
	<i>E. J. Barton, Esq., Offg. Magistrate, 24-Pergunnahs.</i> ...	97	26th February 1870 ...	
	<i>H. Cockerell, Esq., Officiating Commissioner, Presidency Division.</i> ...	39	12th March 1870 ...	<i>Tabular Statements exhibiting the prevalence of cattle disease in the Diamond Harbour Sub-division—summarised in Appendix No. 3.</i>

District.	From whom received.	Number.	Date.	Reference and Purport.
Index of records.	A. Smith, Esq., Magistrate, 24-Pergunnahs.	180	22nd April 1870 ...	Tabular Statement exhibiting the prevalence of cattle disease in the Diamond Harbour Sub-division—summarised in Appendix No. 3.
	Ditto ditto ...	181	22nd April 1870 ...	
	Ditto ditto ...	208	4th May 1870 ...	
	Ditto ditto ...	221	10th May 1870 ...	
	Ditto ditto ...	123	12th May 1870 ...	
	Ditto ditto ...	232	20th May 1870 ...	
	Ditto ditto ...	241	30th May 1870 ...	
	Ditto ditto ...	258	8th June 1870 ...	
	Ditto ditto ...	266	13th June 1870 ...	
	Ditto ditto ...	282	22nd June 1870 ...	
	Offg. Magistrate of Alipore	366	17th August 1870 ...	
	Ditto ditto ...	374	22nd August 1870 ...	
	Ditto ditto ...	392	27th August 1870 ...	
	A. Smith, Esq., Magistrate of 24-Pergunnahs.	249	31st May 1870 ...	
	Ditto ditto ...	264	11th June „ ...	
	Ditto ditto ...	353	22nd June „ ...	
24-Pergunnahs,—contd.	A. Smith, Esq., Magistrate of 24-Pergunnahs.	131	17th May 1870 ...	Tabular Statement exhibiting the prevalence of cattle disease in the Baraset Sub-division, Appendix No. 3.
	Ditto ditto ...	270	16th June „ ...	
	Ditto ditto ...	283	22nd June „ ...	
	Ditto ditto ...	292	29th June „ ...	
	Ditto ditto ...	314	9th July „ ...	
	Ditto ditto ...	321	15th July „ ...	Reporting on disease in Diamond Harbour.
	Ditto ditto ...	282	25th July „ ...	
	Baboo Rakhaladas Mookerjee, Deputy Magistrate, Diamond Harbour.	D. O.	8th November 1870...	
	Ditto ditto ...	„	10th November „ ...	
	Visit to Wooltadangah market.	...	5th April 1870 ...	
	Ditto Kidderpore market	...	6th April „ ...	Evidence and observations recorded by the Cattle Plague Commission at the Presidency.
	Ditto Dum-Dum market	...	19th July „ ...	
	Ditto Tengra slaughter-house.	...	22nd December 1869	
	Ditto Kidderpore ...	...	12th July 1870 ...	
	Ditto Meat Bazaars ...	...	10th „ „ ...	
	Ditto Dhappa ...	...	9th July and 10th November 1870	
	Evidence of Mr. Dissent ...	...	7th April 1870	
	Visit to the byres at Manicktolah.	...	Ditto ...	
	Ditto Oilmen's sheds, Manicktolah.	...	14th November 1870	
	Ditto Sukhea Street Byres.	...	Ditto ...	
	Ditto Balaram Dey's Street Byres.	...	15th November „ ...	
	Evidence of Mr. J. L. Taylor, Superintendent, Municipal Gowkhanah, Kurreah.	...	1st March „ ...	
	Evidence of Mr. R. Harvey, Superintendent of Municipal Gowkhanah, Boitakhana.	...	4th April „ ...	
	Evidence of Mr. John Stalkartt.	...	21st November „ ...	
	Ditto Rajañ Narendra Krishna.	...	15th do. „ ...	
	Ditto Baboo Degumber Mitter.	...	16th do. „ ...	

District.	From whom received.	Number.	Date.	Reference and Purport.
24-Pergunnahs,—contd.	Evidence of Mr. R. Sheriff, Zemindaree manager of the Port Canning Co.	..	22nd December 1869	Evidence and observations recorded by the Cattle Plague Commission at the Presidency.
	Visit to Diamond Harbour and neighbourhood.	...	4th November 1870	
	Evidence of inhabitants of Culpee, recorded by Baboo Rakhaladas Mookerjee, Deputy Magistrate of Diamond Harbour.	...	10th November 1870	
	Evidence of Baboo Sumboo Chunder Ghose.	...	20th November 1870	
	Evidence of J. H. Dobson, Esq., Deputy Superintendent of Alipore Jail.	...	6th December 1870	
	Evidence of Lieutenant W. Pritchard, R. A., Deputy Commissary General, Calcutta.	...	6th December 1870	
	Evidence of Combar Ali, Government Meat Agent.	...	8th December 1870	
	Evidence of W. C. Hannah, Esq., Hide Broker, Calcutta.	...	5th December 1870	
	H. L. Dampier, Esq., Commissioner, Presidency Division.	8 C T	9th March 1864 ...	
	H. L. Dampier, Esq., Commissioner, Presidency Division.	192	30th October 1866 ...	
	R. B. Chapman, Esq., Officiating Commissioner, Presidency Division.	122	21st May 1867 ...	
	R. B. Chapman, Esq., Officiating Commissioner, Presidency Division.	99 N	20th December 1867 ...	
	H. Bell, Esq., Collector, Nuddea.	7 C T	10th December 1867 ...	
	Ditto Ditto ...	28 C T	18th December 1867 ...	
	K. McLeod, Esq., M. D. ...	725	12th December 1867 ..	
Nuddea.	J. Munro, Esq., Magistrate of Nuddea.	309	1st February 1870...	Reporting outbreak of cattle disease in Chooadangah Sub-division.
	H. J. S. Cotton, Esq., Assistant Magistrate, Chooadangah.	...	8th February 1870...	Statement of cattle disease from Kaloopole Police Station. Appendix No. 3.
	J. Munro, Esq., Magistrate of Nuddea.	539	18th ditto ...	Reports extensive outbreak of cattle disease in Sub-division Chooadangah, p. 94.
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	83	ditto ...	
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	...	ditto ...	
	Ditto ditto ...	...	19th ditto ...	Statement of cattle disease from Chooadangah Police Station. Appendix No. 3.
	Ditto ditto ...	...	...	Statement of cattle disease from Damoorhoodah Police Station. Appendix No. 3.

Index of records.

District.	From whom received.	Number.	Date.	Reference and Purport.
Nuddea,—continued.	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	...	2nd March 1870 ...	Statement of cattle disease from Jeeboonuggur Police Station. Appendix No. 3.
	C. C. Stevens, Esq., Magistrate, Nuddea.	644	1st ditto ...	A further careful report of cattle disease in Sub-division Chooadangah, p. 94.
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	102	27th February 1870...	
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	...	19th ditto ...	Statement of cattle disease from Damoorhoodah Police Station. Appendix No. 3.
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	...	8th March 1870 ...	Statement of cattle disease from Alumdangah Police Station. Appendix No. 3.
	Baboo Ram Sunker Sein, Deputy Magistrate, Ranaghat.	173	5th ditto ...	Reports of cattle disease which prevailed at Ranaghat, p. 96.
	Baboo Ram Sunker Sein, Deputy Magistrate, Ranaghat.	277	29th March 1870 ...	Reports outbreak of cow-pox in Ranaghat.
	C. C. Stevens, Esq., Magistrate of Nuddea.	682	3rd ditto ...	Reports outbreak of cattle disease in village Dehee, Thanah Sarsa.
	Baboo Ram Sunker Sein, Deputy Magte., Ranaghat.	266	26th March 1870 ...	Reports on Bussunto in Ruthdengapara, Ranaghat.
	Evidence of the inhabitants of Dowlutdear.	...	5th ditto ...	These papers contain all the evidence taken by the Cattle Plague Commission at Chooadangah, and information collected during personal visits to villages, &c.
	Ditto of Chooadangah Moochies.	...	19th ditto ...	
	Ditto of Godie Joardar	...	21st ditto ...	
	Ditto of Assan Mondul	...	22nd ditto ...	
	Ditto of Chund Biswas	...	ditto ...	
	Ditto of Modhib-ooddeen Joardar.	...	ditto ...	
	Ditto of W. Shirreff, Esq.	...	23rd ditto ...	
	Ditto of A. Hills, Esq.	...	ditto ...	
	Ditto of Ryots of Koolchara.	...	ditto ...	
	Ditto of Issur Ghose...	...	24th ditto ...	
	Ditto of H. J. S. Cotton, Esq.	...	25th ditto ...	
	The evidence of the villagers of Tengramaree.	...	7th ditto ...	
	Ditto ditto of Belgachee.	...	8th ditto ...	
	Ditto ditto of Taltollah.	...	9th ditto ...	
	Ditto ditto of Puddo bela Hat.	...	ditto ...	
	Ditto ditto of Noonnugger.	...	10th ditto ...	
	Ditto ditto of Katchakatta.	...	11th ditto ...	
	Ditto ditto of Sindoorree.	...	...	
	Ditto ditto of Hathikatta.	...	22nd ditto ...	
	Ditto ditto of Alukdia.	...	23rd ditto ...	
	Ditto ditto of Lokenathpoor.	...	25th ditto ...	

Index of record

District.	From whom received.	Number.	Date.	Reference and Purport.
Nuddea,—cond.	C. C. Stevens, Esq., Magistrate of Nuddea.	2497	15th July 1870 ...	Index of record Informs that at present there is no rinderpest in the district.
	C. C. Stevens, Esq., Magistrate of Nuddea.	2742	4th August 1870 ...	Reports a limited outbreak of cattle disease (small-pox) in the Kooshtea Sub-division.
	C. C. Stevens, Esq., Magistrate of Nuddea.	2929	26th August 1870 ...	Reports that there has been no cattle disease since March 1870.
	H. Johnson, Esq., Joint Magistrate of Kooshtea.	747	12th October 1870 ...	Reports that no cattle disease exists in his Sub-division.
	H. Johnson, Esq., Assistant Magistrate of Kooshtea.	807	8th November 1870 ...	Reports that some cattle sickness exists, but not in an epizootic form.
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	521	17th November 1870	Sub-division generally free from disease; a few cases of bussunto in some villages. Fuschima occurred a short time ago.
Jessore.	H. L. Dampier, Esq., Commissioner of Presidency Division.	8 C. T.	9th March 1864 ...	Selections, Government of Bengal, p. 45. Reports that cattle disease is well known in the district.
	H. L. Dampier, Esq., Commissioner of Presidency Division.	192	30th October 1866 ...	Selections, Government of Bengal, P. 131. Reports prevalence of cattle disease in Jhenidah Sub-division.
	R. B. Chapman, Esq., Commissioner of Presidency Division.	218	5th August 1870 ...	Selections, Government of Bengal, p. 151. A careful report of the symptoms and post mortem appearance of cattle disease in Khoolnah Sub-division.
	J. Munro, Esq., Officiating Magistrate of Jessore.	465	20th July 1867 ...	
	K. McLeod, Esq., M. D., Civil Assistant Surgeon, Jessore.	443	20th July 1867 ...	
	H. A. Cockerell, Esq., Officiating Commissioner, Presidency Division.	319	23rd November 1869	Supplement, Calcutta Gazette, December 15th, 1869. A detailed report of the widespread prevalence of gootee. An earlier report, dated 30th June 1869, p. 118, was forwarded by Mr. Farrell and sent on to Government by R. Thompson, Esq., Commissioner, Presidency Division, under his docket No. 21 P., Calcutta, 22nd July 1869.
	J. Westland, Esq., Officiating Magistrate, Jessore.	169	12th November 1869	
	H. Farrell, Esq., Veterinary Surgeon.	...	20th October 1869 ...	
	J. Westland, Esq., Magistrate, Jessore.	E 150	19th February 1870	A report on cattle poisoning with remarks upon it by the Magistrate of the district. Appendix No. 4.
	H. Farrell, Esq., V. S.	...	12th September 1869	
	E. J. Barton, Esq., Magistrate, Jessore.	G 137	18th September 1869	Reports cattle disease in Kesubpore Station, 7 villages.
	J. Westland, Esq., Magistrate of Jessore.	E 258	2nd March 1870 ...	

Index of records.

District.	From whom received.	Number.	Date.	Reference and Purport.
Jessore, —continued.	<i>E. J. Barton, Esq., Magistrate of Jessore.</i>	<i>G 365</i>	<i>28th March 1870 ...</i>	<i>Reports cattle disease in Borole-daha village.</i>
	<i>Ditto ditto ...</i>	<i>E 737</i>	<i>11th June 1870 ...</i>	<i>Form No. 1. Reports outbreak of cattle plague in Sudder Sub-division.</i>
	<i>H. R. Rainey, Esq., Zemindar, Khoolna.</i>	<i>...</i>	<i>3rd May 1870. ...</i>	<i>Forwards form No. 4 carefully filled up, p. 125.</i>
	<i>E. J. Barton, Esq., Officiating Magistrate of Jessore.</i>	<i>119 E</i>	<i>8th August 1870 ...</i>	<i>Reports extensive prevalence of cattle disease Puschima in the Bagirhaut Sub-division.</i>

HISTORICAL SKETCH.

Historical sketch

Cattle murrain attracted the attention of professional men more early and more strongly in Calcutta than elsewhere in Bengal, and though records and recollection do not extend its history back beyond one century, still we have in the work of Dr. Duncan Stewart, Superintendent General of Vaccination, "On Small-pox in Calcutta," published in the year 1844, a chapter on "the disease among cows," which contains a most valuable and systematic description of murrain, then as now breaking out in the dairies of Calcutta every year or two, and sweeping off numbers of dairy stock. The circumstances of Dr. Stewart's inquiry have been repeated all over Bengal. Whenever attention has been directed to the diseases of horned stock, murrain has been found carrying off hundreds of cattle, or has been ascertained to have recently done so, and the natives have with one voice declared that this is nothing new—has been told them by their fathers and grandfathers—has indeed become such a feature of rural life that it occasions neither surprise nor complaint. Wherever the Cattle Plague Commission has gone in the prosecution of these inquiries, this experience has been faithfully reproduced, until the general belief has grown strong, without reasonable doubt, that over the length and breadth of Bengal cattle murrain has *always* prevailed as it now prevails, quietly stealing from village to village, killing cattle by scores in each, and in some seasons of exceptional insalubrity—a drought, a flood, or a cyclone—producing such wholesale havoc and death that agricultural industry is for the time paralysed, and it needs a season or two of prosperity to repair the damage. As Dr. Stewart's work is not readily accessible, all that relates to murrain has been reprinted in this appendix (page 41). The primary object of his investigation was to find a case of natural cow-pox for the purpose of obtaining an indigenous source of supply of vaccine lymph. This same object led to the discovery and description of cattle disease in Hooghly, Moorshedabad, Sylhet, Saugor, and elsewhere, but the subject of the discovered disease was not in any other case so carefully followed up for its own sake as by Dr. Stewart. This gentleman with an admirable scientific instinct originated a very complete inquiry. He visited the Calcutta byres and personally studied the symptoms and pathology of the disease; he carefully questioned those most likely to know, as to the history and features of the plague, and had a searching inspection of the Calcutta slaughter-houses and meat markets made. The results of these steps will be found in the extract.

The earliest recorded date of any particular murrain is 1795. In that and the following year, according to Mr. Blacquiére, one of Dr. Stewart's informants, a great mortality occurred among men and cattle in the months of January and February. Another informant, Mr. John Teil, a hide merchant and tanner, was familiar with the disease *Malah*, and wrote of its general prevalence in spring. In 1836 Mr. H. Piddington, whose name and repute as a careful and correct observer are so well known in connection with the subject of cyclones, wrote in the transactions of the Agricultural and Horticultural Society (Vol. III, page 126) an account of "the *bosonto* which attacks the cattle of Bengal." He surmises that the disease is a species of dysentery; states that his own cattle were attacked three or four times in the course of seven or eight years, gives a slight sketch of the symptoms, and details a method of treatment (fumigation with muriatic acid fumes) which he recommends with confidence.

This interesting paper leaves no doubt as to the identity of the disease or its frequent prevalence. The outbreak of 1843-44 was a very severe one. It commenced in September 1843 and lasted till June 1844, attaining a maximum in January. The table at page 42 of this appendix shows the very remarkable parallel which obtained between this epizootic and the epidemic small-pox which simultaneously prevailed. The recorded mortality is 2,233. Dr. Stewart's description of the symptoms of

Historical sketch.

Matah leaves no doubt that the disease was rinderpest. His attempts to discover natural vaccinia, perseveringly carried on for 15 years, were a complete failure, and he was equally unsuccessful in his endeavours to variolate cows, and by this means to obtain an Indian source of lymph protective against small-pox. It is remarkable that though the variolation of cows has been tried over and over again in India, no satisfactory results have ever been obtained.

The subject of cattle murrain at the Presidency is now lost sight of until 1864, when two circumstances aroused fresh interest in it. The first was a communication from the Government of Madras, regarding cattle disease which prevailed in Kurnool in 1863, drawing attention to the subject and asking for information. The second and most effective cause of renewed attention was the breaking out of murrain at the Exhibition held under the auspices of the late Lieutenant Governor of Bengal, Sir Cecil Beadon, at Belvidere in 1864. Then, as in 1844, inquiry revealed the frequent prevalence of epizootics, but the inquiry was now conducted on a more extensive scale, and embraced the whole of Lower Bengal, in each *district and division* of which murrain was found to be a subject familiar to the people and a frequent visitant. The interest in the matter spread from Madras to Bombay and Burmah, and from Bengal to the North-Western Provinces, Oudh, and the Punjab, and more recently to the Central Provinces, the result everywhere being the same. Still later the English cattle-plague and the identification of the Indian plague with rinderpest, which was made by Dr. Murchison at Home and by Dr. Palmer and others in India, kept this interest alive; the appointment of the Cattle-Plague Commission still further stimulated inquiry, and facts have latterly been pouring in from all parts of the country. This will explain the peculiarity observable in all these sketches of the history of the disease, and in the maps, namely, that cattle murrain has been apparently more prevalent and virulent during later than earlier years.

As regards Calcutta, it was ascertained that in 1861 "gootee" prevailed so violently among the municipal cattle that the services of a
 1857. Veterinary Surgeon were considered necessary, and that in
 1861-62-63. 1862 and 1863 frequent outbreaks occurred in its neighbourhood. The outbreaks recorded were those which happened among the cattle of gentlemen and men of substance, who bred stock for pleasure or fancy, but the deaths which must have been taking place among the cattle of ryots and goallas were not brought to light. The evidence of Mr. Taylor (page 75) shows that as early as 1857 the cattle of the Municipality were severely attacked by "gootee," which has since then prevailed among them almost yearly.

Dr. C. Palmer was now appointed by the Government of Bengal to report
 1864. on the whole subject, and this officer has given us a most valuable description of the disease as observed by himself and the Veterinary Surgeons of Calcutta, more particularly Messrs. Greenhill and Rutherford at the Exhibition, and a valuable summary of the observations of district officers throughout Bengal. He showed to demonstration that the "Calcutta epizootic" was nothing other than rinderpest, but was in error in supposing that the "gootee" or "matah" reported from the districts was "epizootic aphtha"—foot and mouth disease.

This report has been printed in a volume of selections of "papers relating to cattle disease," which has been extensively circulated (pages 74-104).

As regards the other districts of the Presidency Division, the Commissioner, Mr. Dampier, states generally that "the cattle murrain described by Captain Nelson (Kurnool, Madras) appears to be well known in this division," and this statement is abundantly supported by the reports of district officials in Nuddea and Jessore and their sub-divisions. The oral testimony of the people, communicated to the Commission, and of district officials, leaves no doubt as to the frequent prevalence of *bosonto* or rinderpest, *puschima*, which is applied to

severe forms of rinderpest and to hoven—a disease arising from eating unwhole-
 some food, as well as *khurah*, or foot and mouth disease. Historical sketch.

The next murrain which attracted any notice in this division was in the
 1865-66. Satkeera sub-division of the 24-Pergunnahs district, in the cold weather of 1865. This murrain was *bosonto*, and continued to prevail in 1866. In March and April of this year, this disease is said to have caused great devastation among the cattle of several villages adjoining the Soonderbuns. The same form of disease (rinderpest) prevailed in Jenidah and Bagirhaut, sub-divisions of the Jessore district. In the latter the loss of cattle was estimated at 1,200 head, and pigs, deer, and buffaloes died in great numbers during, and apparently of, the murrain.

The plague continued to prevail in Jessore in 1867, and in July of that
 1867. year Dr. K. McLeod, then Civil Surgeon of the district, personally investigated it in the sub-division of Khoolna. It was found to be committing considerable havoc among the cattle of the agriculturists, and the description of the symptoms and *post-mortem* appearances leaves no doubt that the disease was rinderpest. This year was signalized in these parts by an unusually high inundation, and on its subsidence a virulent murrain broke out in the district of Nuddea. A swelling of the throat and neck, and wasting, are noted by the Collector, Mr. H. Bell, as the most prominent symptoms of the disease, which appears to have been owing to the cattle eating submerged grass; but in the absence of a description by a skilled observer, it is difficult to pronounce decidedly on the type of this disease. It appears to have subsided towards the close of the year.

In 1868 a very serious and severe outbreak of rinderpest occurred in the
 1868. Diamond Harbour sub-division of the 24-Pergunnahs district. This murrain has been carefully described by Baboo Hem Chunder Kerr, Deputy Collector, who was during that time in charge of the sub-division, and by Mr. H. Farrell, V. S., who was deputed in August to visit the affected tract and adopt measures, preventive and remedial, suited to the emergency.

The disease appeared in January 1868 in the village of Bansburia, into which it was supposed to have been imported by bullocks bought at the Ooloburia fair. From this place it spread southerly and westerly all over the sub-division, attained its maximum in July and August, and abated in October and November. The mortality from this outbreak is put down by the Deputy Magistrate at 26,151 head of cattle. This was ascertained as the result of a special inquiry. The losses entailed on the agricultural classes were most severely felt, and notwithstanding the remarkable energy displayed by them in striving again and again to replace their losses, the sub-divisional officer states that "a good one-fourth portion of the paddy lands remained untill for want of cattle." The severity of this outbreak seems to have been enhanced by an unusually heavy rainfall and by the exceptionally high inundation of 1867.

Mr. Farrell's services were in 1869 employed in Jessore, in which district
 1869. rinderpest prevailed to a severe degree. The plague was most virulent in the sub-divisions of Magoorah (to the east) and Khoolna (to the south). There was also an outbreak at the Satkeera sub-division of the 24-Pergunnahs district in the commencement of the year. In the Diamond Harbour sub-division of the same district, rinderpest continued to prevail to a more limited extent, and towards the close of the year began to appear in villages of the Chooadangah sub-division of the Nuddea district. Here the murrain continued to spread, and attained a maximum in February and March 1870.

This district was visited by the Cattle Plague Commission, who established
 1870. their head quarters at Chooadangah, and from the 4th to the 25th March studied the nature, symptoms, and treatment of the disease. Rinderpest of a comparatively mild type was found to prevail in most

Historical sketch.

of the villages of the sub-division, and much interesting information as to the past history of this disease, the condition of agricultural stock, &c., was elicited from the people. Cattle disease prevailed to a slighter extent in the Ranaghaut and Bongong sub-divisions, and was subsequently reported to have subsided throughout the district in April. Rinderpest was found to prevail to a great extent in March in the Calcutta milkmen's sheds, and evidence was abundantly obtained to the effect that frequently, or yearly, great losses of dairy and other stock from rinderpest occurred. There was a smart outbreak of this disease in some villages of the Baraset sub-division in March and April; in the Satkeera sub-division slight outbreaks arose from February to June, and throughout the year partial outbreaks occurred in a scattered manner in the sub-division of Diamond Harbour.

From Jessore, also, occasional reports were forwarded of limited visitations in the Jessore, Magoorah, and Bagirhaut sub-divisions, but nowhere, except at Chooadangah, did any widespread epizootic or serious loss of cattle occur.

Still later—in November and December—cases of “gootee” were reported to occur in villages of the Khoostea, Chooadangah, and Ranaghaut sub-divisions of Nuddea, but the disease was scattered and its mortality slight.

DISTRICT OF 24-PERGUNNAHS.

Extract from a “Report on Small-pox in Calcutta, by DR. DUNCAN STEWART, M. D.

PART II.

THE DISEASE AMONG COWS.—(PAGE 84.)

It has been generally believed that the disease called “Matta” prevails every spring *Vaccinia*, among horned cattle in Bengal. I can positively declare that it does not do so in or within 20 miles of Calcutta.

For the past 15 years I have never failed to inquire for its existence. I have offered rewards, and even paid as much as Rs. 20 in advance to different swindlers merely to bring me to the sight of one case, but invariably was disappointed. Equally difficult and impossible was it till now to get sight of a case of small-pox.

The truth is, that a number of diseases affecting cattle are classed under the same *Inward fever*, name, and the only distinction made by the common people is between what they consider an “inward” and an “outward eruptive fever.” When the fever throws out an eruption of some sort or other on the skin, the case is considered favorable; but if no eruption appears the case is then called one of “inward fever,” and is sure to be fatal.

It is evident that under this category of “inward fever” may be included all imaginable diseases. The occurrence, however, of a very fatal epizootic disease among domestic animals, at the same time or season that some exanthematous epidemic appears among the people of the same district, is certainly not uncommon, and deserves notice; on these occasions popular belief assigns to both diseases the same origin, nature, and name. At a meeting of the Medical and Physical Society of Calcutta, a few years ago, a very interesting account *Penang epizootic.* was read of an epidemic at Penang, from the pen of Dr. Oxley, wherein it was stated that at the time small-pox was raging in the Settlement, a very fatal disease, which went by the same name, destroyed a great number of horned cattle, poultry, pigs, and sheep. The same thing has occurred at Ceylon and in many parts of the Indian Peninsula. I was not *Ceylon epizootic.* surprised, therefore, to learn early in the autumn of last year that the cattle in and about Calcutta were dying in great numbers from small-pox. I visited all the (*Gowkhanahs*) cow-sheds I could hear of, and inspected very many sick cows; but not one had any pustular eruption which I could discover on any part of the body. I saw several young, fat, *Calcutta epizootic.* clean, and healthy looking cows die, after about three days' fever, with convulsive tremors, bloodshot eyes, and parched mouths. These cases the natives persisted in still calling *Symptoms.* *matta*, but of the violent “inward” form, “not permitting the discharge of humours on the skin.” I observed in others, and generally for a few days, signs of fever, such as panting, lowing, thirst, loss of appetite; then followed violent purging, profuse salivation and pituitary discharge from the nostrils; but on the fourth day ulceration of the tongue and pallet, with bloody purging followed, and death occurred usually on the fourth or fifth day. In a good many cases certain rough elevations were pointed out to me on the skin, having the hair turned *Eruption.* back or ruffled over a small inflamed phlegmonous base. A number of these undoubtedly were produced by the burrowing of vermin or bites of insects, but many also may have been pustular without supposing them possessed of a specific character. As no possible good could be expected from experimenting upon human subjects with the matter from such pustules or ulcers, and the consequences could not be foreseen, I did not consider myself warranted in inoculating any children either from the fresh matter or the scabs which formed in any of these animals.

Varicella Bovilla.—Except in three cases out of many hundreds which I inspected, I *Varicella.* never found anything like papulæ, vesicles, or pustules on the teats or udders of cows. Two of these three cases occurred in the dairy of my friend, Mr. Rustomjee Cowasjee, and one in Mr. Blacquiere's compound. The fever was slight, and all of them recovered perfectly. The eruption on Mr. Rustomjee's two cows (one a young China cow, the other an imported English cow with a calf at her heels) was confined to the udders. For three days previous to its appearance there was well marked fever with purging and loss of appetite. On the *Eruption.* morning of the fourth day several small red spots were perceived on each teat, mostly near the root, but not in the least degree elevated nor surrounded by the slightest inflammation; they even disappeared on pressure. On the following morning they were slightly elevated, but still without any inflamed base or areola. In the evening some of them had dried, and a small circular scale of cuticle could be detached from each by a forceps. A slight limpid exudation appeared to take place from each of these denuded surfaces, which subsequently dried into a thin scale; I therefore punctured one with a fine pointed lancet, and had the satisfaction of seeing a small pellucid drop of serous fluid ooze out from the opening. On the 14th of January (the next morning), at daylight, I opened five or six of these vesicles

CALCUTTA.
Dr. D. Stewart.

which had not yet dried up, and from these, with difficulty, I inoculated three healthy Bengalee children (assisted by Dr. R. M. M. Thomson) on two places on each arm.

Experiments.

On the following day both those vesicles which had been punctured, and all the others, had quite dried up; in a day or two the little scale of cuticle attached to each dropped off, leaving no mark of any sort. From the moment of appearance of the eruption the animals seemed perfectly well, resumed their food, and gave milk as usual. The appearances on the teats of the English cow were precisely the same with those above described in the China cow, but the vesicles were fewer; not more than six or eight could be counted altogether. In Mr. Blacquiere's Bengalee cow we had been told by the cow-keeper, with the usual exaggeration, that there were numerous large vesicles all over the teats and udder, and I went with Mr. R. O'Shaughnessy prepared for a grand field day, having sent thither in advance four or five little black children to be operated on. On our arrival, however, we found precisely similar appearances to those already described; the vesicles on the teats were rather more numerous perhaps—quite distinct, without any areola, and already drying up. Strange to say, among all my professional brethren and all the Veterinary Surgeons of my acquaintance in Calcutta there was not one who had ever seen the cow-pox among cows in England. The only drawings of the disease which I possessed or could lay my hands on were those contained in Rayer's Atlas, which gives a highly-coloured portraiture of the cow-pox on the teat of a cow "after Sacco." I need hardly say that the disease above described, though decidedly exanthematous, bore no resemblance to the cow-pox of Gloucester, nor indeed to any other bovine disease with whose description I am acquainted.

May it not possibly be analogous to varicella and other minor varioloid diseases in man, the last in the scale of eruptive fevers communicable by epidemic infection to animals of their own nature, but not transferable to others of a different species, nor possessing any peculiar prophylactic powers?

Results.

It is almost needless to add that no results followed our experiment.

* * * * *

Mortality.

Mortality of Cows.—It will be seen from the subjoined table that the mortality among cattle commenced much about the same time with that caused by small-pox among the inhabitants.

Mortality among men from Small-pox and among cattle from "Matta" in Calcutta from 1st September 1843 to 1st June 1844.

Month.	Died from Small-pox.	Died from "Matta."
September 1843	48	33
October "	44	19
November "	134	125
December "	154	429
January 1844	315	934
February "	506	543
March "	991	126
April "	411	11
May "	180	13
	2,783	2,233

The mortality in January had become very considerable indeed in town, so much so as to affect materially the supply of milk and butter, but was reported to be much greater in the suburbs, where all the slaughter-sheds are situated. It was asserted, with much probability, that the native butchers in the suburbs were in the habit of slaughtering their cattle the moment they suspected them of having caught the disease, and stories circulated of infected beef being seen and sold in the market covered with dreadful marks of "inward" small-pox. How far this may have been the case must remain doubtful. Mr. Allan Webb, Garrison Assistant Surgeon of Fort William, appears certainly to have detected some meat supplied to the European Troops which was of an improper description, but whether this was not a matter of frequent previous occurrence, and whether a little more vigilance in the inspection of the meat might not have sufficed to prevent all such improprieties and obviated the necessity for the total abstinence which ensued, I am not prepared to say. The panic among all beef-eaters became universal, and did the Hindoo religion admit of proselytism, its converts might be said to include the entire European and East Indian population, for I believe that for many months scarcely a morsel of the flesh of the sacred animal of Hindoo worship was swallowed in Calcutta. It was not generally known that the

Diseased meat.

mortality was at the same time very great among fowls and pigeons. I visited, along with my zealous friend Mr. Blacquiere, several poultry-yards and pigeon-houses in and about the town, from which we saw the dead fowls taken out by dozens of a morning, said to have died during the night of the universal small-pox. I could see nothing the matter with the birds, unless a certain degree of swelling and redness around the eyes might be indicative of their disease.

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Disease of fowls.

* * * * *

The very interesting pamphlet (on the poisonous effects of diseased meat, by Dr. Hosack of New York) whereof the above is an imperfect summary, falling into my hands at such a moment greatly interested me, and stimulated my inquiries into the nature of the epizootic malady prevailing in and around Calcutta, some connection between which and the mortality among the inhabitants was, to say the least, a matter of universal belief.

My indefatigable friend Mr. Blacquiere, who, at the age of nearly 80, retains all the philanthropic energies and affections of 18, at once entered with me into the research. His replies to my queries I subjoin in his own words:—

Question.—Are there any natives who habitually consume dead meat? Who are they? Consumers of Are they numerous in Calcutta? What parts of the town do they dwell in? Are they generally healthy or sickly? Have you ever heard of any peculiar sickness among them caused by or attributed to their eating tainted or diseased meat?

Answer.—A class called Chamars, natives of Hindoostan, live upon dead meat. The class is numerous. They live in different parts of this town and are healthy. I have never heard of any peculiar sickness among them attributed to their eating tainted or diseased meat.

Question.—Have you ever known or heard of the disease called *matta* among cattle being communicated to those who handled or milked the cows?

Answer.—I have not.

Question.—Has there, within your recollection, been any small-pox epidemic in Calcutta affecting the cattle and the population in the same way as the present?

Answer.—In or about the year 1795-96 there was a small-pox epidemic in and about Calcutta, during the months of January and February, during which the mortality was great among men and cattle of all sorts, but I have no record of the number.

Question.—Do the Natives consider the human small-pox the same disease as that which destroyed their cattle? and why?

Answer.—They do; the cattle have what the natives call the *matta*, or small-pox, at the same periods of the year that the human species are affected with it.

From Mr. Monteith, the head of an extensive tannery concern in Sealdah, having large Government contracts for belts, boots, and military leather accoutrements, I received the following frank and obliging letter and replies to queries:—

No. 145. I hope you will pardon me for the delay I have made in replying to your letter of the 14th instant.

I have answered all your questions in the form you sent, and beg leave to give you a small outline in this letter.

In your letter of the 14th instant you ask what were the appearances of the cattle said to have died of small-pox. There was no difference from others in appearance. But the hides are of less value on account of being marked from brands, sores, &c. The cattle I get generally are worn out hackney draught cattle. I have never examined any minutely, nor am I a judge of diseases among cattle. But from what information I can gain from a number of butchers and those that deal in cattle, they assert that they cannot say that one disease destroys more than another, but I, in general, get more dead cattle in the rains than any other time of the year. I should say, by looking over my stock-book for the last year, that I received on an average ten to fifteen per month more than formerly this year, say since last January. The difference in the quality of a hide taken off the dead animal to one slaughtered is on account of the animal not being bled, and the blood gets between the flesh and the skin, and very soon spoils the hide—makes it of a soft spongy nature by the time it is tanned.

Hides
dead.

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Dr. D. Stewart.

Consumers of dead
meat.

You wish to know if my people are a healthy race of people; they are very much so indeed, and I have not had one-sixteenth of the sickness among my men this year to that of former years, nor have I lost a man this year yet by death; they say they will eat any fish, flesh, or fowl that dies, of whatever nature, only let them cook it their own way. I would not get a man to work if I entirely prohibited them from eating the meat of dead cattle. There is but one caste that eats the horse's meat, the Doony or Mater caste.

I do not think that ever they took any meat to a market, but among their own caste.

I will at all times be most happy to give all the information I can on the subject.

Calcutta, 30th April 1844.

(Signed) JOHN MONTEITH.

Hides,

slaughtered.

Question.—You are in the habit of purchasing fresh hides for tanning. Are these all hides of slaughtered cattle or of cattle which die naturally?

Answer.—Slaughtered hides.

Question.—What number of hides in every 100 brought to you are slaughtered, and what have died?

Answer.—Slaughtered 2,000 to 1 dead.

Question.—What diseases do the cattle generally die of?

Answer.—I cannot say indeed.

Dead

Question.—Are the dead cattle brought entire to you, or only their hides?

Answer.—Principally entire.

Question.—What becomes of the flesh and bones of those dead cattle which are skinned at your establishment?

meat

Answer.—The meat is mostly taken by the Moochies, and the remainder devoured by the vultures, and the bones are buried in the earth.

Question.—Have you ever found any of your own, or other people carrying off the flesh of dead cattle for market?

consumed by

Answer.—My people have carried off plenty of it till stopped by me, but I believe only to their own caste that had not the opportunity of obtaining it otherwise.

Question.—Who purchase such meat? and what class of natives consume it?

Chamars.

Answer.—The Chamar caste only.

Question.—Is this class of natives numerous in the neighbourhood of Calcutta?

Answer.—Yes, numerous in the suburbs.

Question.—Do they consume the dead meat of other animals—sheep, deer, goats, fowls, fish—when they can get it?

Answer.—Yes, very happy to get it.

Question.—Are they a sickly or unhealthy looking people? Are they more subject to cholera or fever?

No bad effect.

Answer.—They are a hardy race of people, seldom sick, only through drink, when to excess; and when ill, principally through intermittent fevers or spleen. In seven years I have lost only fifteen men out of 100 to 120 daily at work.

Question.—Do you think that dead meat has ever been carried into the Calcutta Native Bazaars and sold there?

Not sold.

Answer.—No, I do not; as stated before, only among their own caste in the suburbs.

Question.—What way do they prepare this dead meat for market? smoked or salted? if the latter, with what salt?

Answer.—They cut it in stripes and dry it in the sun; no salt whatever used; sometimes they half grill it and then take it away.

Question.—Have you any idea of the price it sells at?

Answer.—No, I do not believe it was sold for money to any except their *jat-byes*.

During the late Epidemic among Cattle.

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Question.—What diseases did the horned cattle die of generally?

Answer.—Cannot say more than was told me; some of them with the *small-pox* and others of the *bloody murrain*.

Murrain.

Question.—Did you see any dead cattle with well marked *pustular* disease on the abdomen, udder, teats, and soft parts?

Answer.—Cannot say, never having examined them so minutely.

Question.—Were the dead cattle generally emaciated, or fat and plump? Did they die suddenly or of a long illness?

Answer.—Generally worn out and lean.

Question.—Among the hides of dead cattle, did you find any deep ulcers, or marks of round pustules into the true skin which appeared to be caused by a disease like *small-pox* causing holes in the skin?

Hides.

Answer.—None whatever.

Question.—Were any of the carcasses opened and the viscera examined to see if they were healthy or diseased?

Answer.—No; none.

Question.—What difference did you observe in hides of slaughtered and of dead (naturally) cattle?

Answer.—The usual difference, the slaughtered preferable to the dead, not having been bled, evidently the hide of less value.

Question.—What was the supposed mortality among cattle this year and formerly?

Answer.—Not more than last year; the average is ten per month in my tannery from 1st of January.

(Signed) JOHN MONTEITH.

From Mr. Teil, another large Government Contractor and head of an extensive tannery near Calcutta, I have been obligingly favoured with the following information:—

Mr. Teil.

Question.—Do you purchase fresh hides from butchers, or do you slaughter cattle yourself?

Hides.

Answer.—I purchase fresh hides from butchers daily, but do not slaughter any myself.

Question.—Are the hides of slaughtered cattle worse or better than those of cattle which die naturally? Can you distinguish these hides from each other when fresh?

Answer.—Hides from slaughtered cattle are considerably better than those from cattle that die naturally. I can in almost every case distinguish the one from the other when brought fresh to me.

Question.—What diseases do cattle chiefly die of in Bengal?

Cattle diseases

Answer.—Chiefly, I believe, of two diseases, that of *pox* and of *matta*.

Question.—Is the disease called *matta* common every spring, or does it occur at uncertain and distant intervals of time?

Answer.—No; it is not common every spring although that is the time it generally prevails.

Matta.

Question.—Have you seen many cases of what is called *matta* this year, and what were the symptoms?

Answer.—No, I have not; the symptoms are, I believe, generally a swelling in the head and tongue of the beast.

Question.—Have any cattle had pimples or pustules about the udder resembling the cow-pox you have seen at Home?

Answer.—I have not examined so minutely as to observe whether such is the case or not.

Question.—Did you ever hear in this country of the attendants or milkmen getting an eruptive disease from handling the teats of such cows, or the heels of horses?

Answer.—I have never known such to be the case.

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Dead meat.

Question.—Is there not a numerous class of natives who consume flesh indiscriminately, whether slaughtered or not? Have you seen or heard of any of them suffering illness from eating tainted meat or the flesh of cattle who had died of matta.

Answer.—There is one class of natives called Chamars, who, I believe, eat meat indiscriminately, whether slaughtered or not. I have never known any of them to suffer illness directly from eating such meat.

Mr. Greenfield.

As regards the nature of the recent epidemic, the information derived from Mr. Greenfield, an extensive cattle dealer in the neighbourhood of Calcutta, and the only person whom I have met who had seen and was practically acquainted with cattle and their habits, diseases, treatment, &c., in Europe, is valuable and interesting.

Question.—I believe you keep a cattle farm and slaughter-house at Acra. Be so good as to say what cattle are fed on your estate (I mean fattened and prepared for slaughter), and what are purchased ready for slaughter, or do you prepare all yourself, or buy all ready?

Answer.—Pigs, sheep, bullocks, buffaloes, goats and poultry of every kind are fed on Acra farm. I breed from 2 to 300 China pigs yearly, and feed them for slaughter on the farm. I purchase all my pigs for curing loan, and fat them five to six months before slaughter; some of my beef I fat myself, and some I purchase from others when they are fattened. I cannot kill beef on the farm, as my people are all Hindoos. I get Mussulmen to do it out of the farm.

Cattle diseases.

Question.—Are the "black cattle" subject, in Bengal, to an epidemic disease (called matta) annually or only occasionally. Have you ever seen it in your own farm, and is it usually attended with an eruption of pocks on the udder and belly and teats; or is the disease characterized more usually by ulcerated mouth, bloody purging, and fever? Do you not yourself distinguish several diseases some with pocks and some without; and which is the most common?

Answer.—I have been here now nine years, and I have never had any disease among my cattle until this year; and this year I have lost 60 cows with a disease that has been all over our neighbourhood, something like *strangles* or *glanders*: it first commenced on bullocks and then on my buffaloes; no eruption on the skin or udder or teats, only the eyes, tongue and throat were affected, when the animal died from being strangled, as the passages were completely stopped: they were all suddenly taken ill and seldom lived more than three days, many only one; no purging, no discolour of water appeared. I have seen the pox in England among cows, but this is nothing like it. I have seen two or three cases here of what is called in Sussex the pock; it commences on the bullock in the hind leg generally, and runs all over his body under the skin until it comes to his heart; it is easily known by striking your finger on the animal; it's all hollow.

Question.—What has been the true epidemic of this year so fatal among black cattle?

Answer.—The disease has not confined itself to black or white cattle; all colours have fallen from it. The *strangles*, I think, is the disease, or *glanders*.

Question.—Did it affect any other cattle, swine, sheep, goats, fowls, pigeons or horses?

Answer.—I had none, except my bullocks and buffaloes, affected with any disease; the cattle were mixed with each other on the farm.

Other animals not affected.

Question.—To what circumstance or circumstances do you attribute the epidemic?

Answer.—I cannot say whether it was the grass they eat or the air.

Question.—Have you ever known it, or do you from grounds believe that the disease has been communicated from the animals to their attendants, and what are the alleged symptoms in such cases?

Answer.—I do not think the disease has been amongst any of my men that have been attending the animals or those that skinned them, as not one man has been ill from it, and I have eight men constantly amongst them.

Hides.

Question.—Do you tan any hides; if so, only those slaughtered at Akra, or by purchase of fresh hides from others? What is the difference between the hides of slaughtered and of dead cattle?

Answer.—I only cure the hides of my own cattle. The hide slaughtered is white and clean. The hide of a dead bullock is red and bloody, and not of so much value.

Question.—Among the numbers killed at your place, what viscera have most frequently been found to be diseased?

Measles.

Answer.—Pigs, the liver and kidney is the only disease we find fatal; the "measles" is not fatal, but frequent, and the meat is always thrown away unfit for use, as it is one mass

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of corruption; its presence is never known until the animal is killed, as there is no appearance on the skin. *Bullocks*, seldom any disease inwardly; as we only deal in fat bullocks, and no bullock will fatten if it is diseased.

Question.—Is liver-complaint most common among cattle, or ulcerated bowels, i. e., dysentery, or diseased lungs?

Answer.—Liver and the lungs are what we generally find affected; we have seldom dysentery among our cattle; when we do, it is in the rains, when the grass is young and *flushy*.

From all the information I have been able to collect, and from my own observations, I conclude that the cattle epidemic of Bengal does not prevail steadily and periodically. It does not affect those employed about and among them. It does not confine itself to milk-giving cows, but destroys all horned cattle; it is not the Jennerian cow-pox of Gloucester. There are several fatal diseases among cattle, some attended with eruptions and others without any; the latter are the most fatal. Of the former, some are milder than others; none are known or said or supposed to exercise any prophylactic power against small-pox, nor to secure the animal affected from a second attack.

Conclusions.

Calcutta Slaughter-sheds and Meat Market.—The following polite communication was addressed to me by Mr. Mytton, Magistrate of the 24-Pergunnahs, (Suburbs of Calcutta), not long after his perusal of the aforementioned American pamphlet, which I had sent to him:—

From the Magistrate of the 24-Pergunnahs, to DR. STEWART, M. D., &c., &c.,—Dated Alipore, the 26th April 1844.

On receipt of your note, dated the 14th instant, I deputed my head clerk, Mr. Floyd, to visit all the butchers' shops in the suburbs and to collect all the information regarding them and the sale of meat which he could obtain. The result he has embodied in a very intelligent report, a copy of which I annex. The statistical information being derived from the butchers themselves is not likely to be very exact, but it may be considered as pretty certain that the number of cattle slaughtered at the present time is much smaller than at the corresponding period in 1843. You will gather that an opinion is prevalent, even amongst the natives, that it is not quite safe to eat beef, which is not at all surprising, considering the great mortality which appears to have taken place among the cattle.

Butchers' shops.

2. My attention has been attracted by the inquiry and inspection which has been made to the state of the several slaughter-houses; and the proprietors of these, which are in a filthy state, have been allowed a reasonable period to remedy the nuisance brought to notice, and if the order be not attended to, they will incur penalties under Act XXI of 1841.

Slaughter-houses.

3. I shall in future have a frequent inspection of all the slaughter-houses made by my European subordinates, and occasionally by myself, and I hope by these means to effect some improvement. It is, however, next to impossible to persuade or compel natives to adopt a complete measure of improvement involving an immediate outlay, and without such, it is scarcely to be expected that the nuisance can be effectually obviated.

4. There is no doubt that the river side is the only place where a sufficient quantity of water and a proper drainage for the blood, &c., can be obtained, and it is a matter not unworthy the consideration of Government whether it would not be desirable to purchase two spots of ground, one to the north and one to the south of Calcutta, either on this or on the opposite side of the river, and to construct suitable slaughter-houses with every convenience for disposing, in a proper manner, of the bones and garbage. These might be placed under European management, and the slaughter of animals for sale at any other place within a certain circuit, or the sale of any meat not slaughtered at these establishments, forbidden. Under such a system there might be some hope of the sale of unwholesome meat being prevented. If it be objected that this would destroy competition, it may be urged, in answer, that there is scarcely any competition at present, the difficulty of procuring ground for the establishment of slaughter-houses, whether on account of the prejudices of the Hindoos, or the well-founded objections of other neighbours on the score of nuisance, insures to Peer Ally almost a monopoly.

5. I perceive that the plan advocated by me in the above paragraph was proposed by a medical committee at New York, in the report you sent for my perusal, and it is there stated that similar establishments were erected by the French Government at Paris, so far back as the year 1809. If it was considered desirable in such latitudes as those of New York and Paris, to place slaughter-houses under municipal control, how much more so it is in this, where the climate, the want of drainage, and (at some seasons) of water, together with the slovenly habits of the native, render supervision more necessary to secure pure and healthy food, and prevent the slaughter-houses from becoming nuisances.

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Dr. D. Stewart.
Butchers' shops at
Kidderpore.

From MR. FLOYD, Head Clerk to R. H. MYTTON, Esq., Magistrate of the 24-Pergunnahs.

In conformity with your orders of yesterday, to inquire into certain circumstances connected with the butcher shops, &c., in the jurisdiction of the suburbs thanas, I proceeded this morning (Tuesday, 17th April) to that of Nowhazaree. The first place I visited, in connection with my inquiry, was the *haut* at the Military Orphan School Bazar, where cattle from Oolobaria and other parts are brought up for sale twice in the week. There were a pretty good number on the ground, but not so many as have been known to be brought on former occasions. This diminution is said to have taken place since the prevalence of small-pox. With the exception of one (which from age or disease, or both, could not survive many days), all the cattle I saw, though some were aged and very lean, appeared healthy; at all events were pronounced to be so by competent judges; but I was given to understand that at times cows suffering from the malady have been brought within the precincts of the *haut*, but not finding purchasers on the spot, have been led out again and sold to butchers for trifling sums on the Kidderpore Bridge, for the sake (it is alleged) of their hides; but from what I subsequently witnessed and heard, I am inclined to think that some butchers find as much use for the flesh as they do for the skin. I spoke to the manager of the *haut* not to allow admittance to such animals, and advised him to send the dealers that bring them to the Police, but it is the former's interest to collect all he can, and with natives, generally, money is the primary object.

I next called at the Kidderpore Thana and accompanied by the Daroga visited two butchers' shops situated at the opposite side of the road. In one of these were exposed for sale a couple of sheep apparently just slaughtered. I could not find fault with the mutton, but in the adjoining shop, where beef is sold, I found that immediately behind it they slaughtered almost every day; in consequence of which the place was far from sweet; plenty of skulls and bones lay about, and from their appearance I should say they had been accumulating for months. These shops are almost surrounded by huts, but the proprietor of the land would have it that he is put to some expense in preventing the place from becoming offensive. I gave him to understand that I thought otherwise, and trust he will see the necessity of removing the nuisance, for I can call it nothing else.

Garden Reach

On the Circular Garden Reach Road I discovered one small shop, but it was closed and the proprietor absent; here the natives told me that small-pox had prevailed a short time ago to a great extent, and some were of opinion that the epidemic carried off more Mussulmen than Hindoos. Beef they remark was very cheap, and that people parted with their cattle for anything rather than lose them through disease.

Diseased cattle sold.

I know of an up-country cow, three or four months gone with calf, said to give almost seven seers of milk a day, sell for only Rupees seventeen, whereas in better times animals of her description have brought fifty or sixty, if not more. They further assured me that some families have sold off on the first appearance of the evil among their cattle, not caring, in all probability, whether they were purchased for the knife or the plough.

Budge-Budge.

At a short distance from the *pharee*, at Garden Reach, is another shop which was also closed, and at Burtulla on the road to Akra Farm, are two others, and places attached for slaughtering; on examining the beef in one of these shops, I was pleased with its appearance, but a few black spots in the region of the kidney made me suspect that all was not right. I therefore made the attendant at the shop cut out the piece, which I took down to the farm and had it inspected by the Assistants at Mr. Greenfield's, who pronounced it free from disease. This meat, the best in the whole Kidderpore Division, was selling at only four pice the seer, and that of inferior quality in the next shop at the same price. A respectable old Mahomedan gave it as his opinion that much of the sickness was owing to the bad meat offered for sale, and others intimated that, in the surrounding hamlets, both men and cattle were still suffering. The farm has lost the best part of its cows and buffaloes, and on the Budge-Budge side I heard similar accounts. Here, too, the butchers keep their compounds extremely filthy, of which there were loud complaint by the *ryots*. I fear my speaking will have no good effect, though I endeavoured to persuade them into something like a compliance with the order to keep them clean in future. On my way back my conveyance was stopped by a butcher who complained that some of his fraternity were in the habit of coming from town with tainted meat and selling under price, which statement was verified almost immediately after; for, opposite a village where I stopped, a fakeer-looking man had some of the filthiest stuff imaginable in his basket, which he was selling or offering for sale to some poor people, who, when they perceived that his conduct was noticed, protested against his doing so. The basket contained cloth that had not been washed for an age, and the liver, &c., of cows. I cannot describe in medical phraseology the precise state of the latter, but suffice it to say that it was not only tainted, but covered with blotches, or more properly speaking, perfectly ulcerous, some of the sores discharging a yellowish

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substance altogether disgusting to the sight; in one bit in particular there was a large collection of matter which the vendor in question removed and threw away; a dog standing by prevented my securing it. This man came from Kurria, and the price he asked for the portion I brought for your inspection was about one pice.

Bad meat.

At Kidderpore, west of the School, I witnessed a sight almost as disgusting,—a liver that had become as black as ink from keeping and quite putrified, hung up in a butcher's shop for sale. I gave the owner's servant four pice, the price demanded for it, and think it was the best bargain he made since the morning. You, sir, have seen this as well as the former, so that I shall refrain from saying anything further on the subject. I now proceed to notice part of a cow which had been slaughtered on the morning of the 16th, and which at about 12 P. M., this day (the 17th) was still in the shop and going by degrees for two pice the seer; there was more than flesh about it, and so dry and yellow did it appear that one could feel for the poor whom necessity would drive to bargain for it; but the whole of this meat was not likely to sell in the course of the afternoon as there was more of evidently longer standing to be disposed of. Buxoo, the attendant above alluded to, said that this master had a *Kill-khana* which contained no cattle at the time. I notwithstanding proceeded to inspect the place, and found no less than six or seven cows tied together without drink or provender, and the compound in an extremely filthy condition. How natives put up with the offensive smell this place emits I know not, but those who went in with me appeared glad when they got out again.

Kurria.

This day (the 18th) I visited one of the most extensive slaughter-houses on the east of Calcutta, conducted by *Peeroo Allie Kupo* of Kurria or "Armanry Bazar." The place has been apparently established at some expense, but a total absence of regularity and cleanness, I am sorry to say, prevails. I annex a sketch of the place, and have to observe that though the butchers pursue their calling without experiencing the least ill effects, the stench issuing from the three points of the compass marked thus (+) is truly unbearable. I was not able to breathe, and feel persuaded that had I remained longer under the sheds than I did, where I could observe numerous people were at work, suffocation would have ensued. The blood-stained floors indicated that water is not so freely used as those concerned would make it appear is the case; in fact there is not a tank in the neighbourhood capable of supplying 4 or 500 bags of water a day, and the river is too far off to admit of a constant supply being brought from thence. Towards the north the land lies very low, and it is there that the greatest nuisance exists—every description of dirt and filth is disposed there, and suffered to putrefy, which must render the neighbourhood most unhealthy; nay, a strong southerly breeze must convey what cannot be considered, under any circumstances, wholesome, over the best part of Entally. The late Mr. Overseer Dyson had orders, I understand, to keep an eye upon the butchers, and by no means to allow them to neglect the place as far as respected cleanliness; since his demise, they have not only neglected the place, but have deposited carcasses on the premises. There were I should say no less than 200 of these in a heap, which have accumulated since February; what the state of the low land will be in the monsoon, should the evil not be put down before that period, experience alone must decide.

Diseased cattle.

At a short distance from this establishment dwells a butcher, who has one part of his compound completely covered with the skulls of cows. This man thinks he has a right to do what he pleases on his own ground; but he is a pest to the neighbourhood; his name is Kulloo. I looked in at Peer Allie's stand of bullocks to see if I could find any labouring under the disease which forms the present subject of inquiry. With the exception of two which appeared dull and drooping (but which the keepers would have it were as healthy as the rest), I thought the rest were quite free, though they were somewhat low in flesh. These stands contained cattle for the use of the troops in the fort; here a native evidently spoke the truth when he said that the sickly among the number were the first to be led to slaughter. It is impossible to glean facts from interested parties, but this man was a Hindoo, and did not seem to be aware of any sheep having been known to die of small-pox in this part of the suburbs.

There were other private stands where I also saw cattle, some of them could hardly keep on their legs, and if not sold to the butchers, the owners would soon have been put to the expense of having them removed to the river. The flesh of such finds its way to the shops situated in the several divisions visited by me, and here I would observe, that Kurria supplies not only the Town of Calcutta, but the best part of the district, and has more indigent butchers in waiting to snatch up the refuse of the cows than birds of prey, and also Chamars and Domes, who, it may be relied on, take away the flesh of animals dying natural deaths, with the view most probably to send it into the markets or villages, though the fact may not be admitted.

If permitted to offer an opinion, I would respectfully beg to observe, that considering the state in which this, the most extensive slaughter-house in India, is generally kept, its locality and the great reason there exists for suspecting that unwholesome meat is too often introduced in our markets, European supervision would not perhaps be considered superfluous. I am aware that the State is desirous of avoiding expense, but may the Government not be persuaded to levy a small tax on every head of cattle slaughtered at Kurria and other places, to meet the salary of one or two officers who could reside on the spot, as near to it as possible,

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and see that none but those actually fit for use are slaughtered. This person could improve the place, and see that it is kept clean, and visit all the *sheep folds* in the suburbs, causing to be separated the sick from the healthy, which, as I have shown, is not done at present. I am aware that the office might prove one of great pecuniary gain, and that the best are liable to be tempted to do wrong, but I trust a conscientious European could be found to do justice to all concerned, and who would by no means neglect the well-being of his fellow-creatures: or the wealthy of this populous city would not perhaps object to the establishment of a properly organized slaughter-house on the river-side, such as they have at Akra, if *Peer Allee* refused or neglected to render his place such as it should be. His rates of slaughtering are as follows:—for the best conditioned cows, 3 annas; for inferior animals, 1-6 pie; calves, at 2-6, and sheep and goats, 6 pie each.

Chitpore.

I next proceeded to Chitpore *via* Sealdah. There are no shops at the latter place, but at Narcooldanga a slaughter-house has been recently established, and one at the former, meat being hawked about by butchers from Kumia and Dum-Dum. About sixteen sheep are daily slaughtered at Chitpore by a person said to be in the habit of supplying gentlemen, and consequently keeping superior cattle.

Small-pox.

Many are falling victims to *small-pox* and cholera in this Thana (Chitpore), though, since the fall of rain, the former disease has somewhat abated. Almost everywhere I perceived children from six to eight years old, who had been suffering from it. There are but a few cows here now, great numbers having died a month or two ago, and two were said to have been carried to the river in the morning. I had my eyes about me, but did not meet with a single cow or bullock labouring under the disease, but was told that the disease carried off the best portion throughout the 24-Pergunnahs; a very short period ago, a horse at Chitpore, took the pox and died.

Bad fish.

While conversing with some natives, I learnt that whenever salted fish (especially the hilsa) has been brought from *Furreedpore*, the cholera has been known to be most prevalent—a circumstance not unworthy of consideration. That such is sold at Chitla Haut, I am pretty sure, for a Furreedpore fish merchant was himself attacked at that place not long since and died on the spot. I have myself witnessed the flesh of *deer*, in the worst stage of decomposition, exported from the Soonderbunds, and exposed for sale at Chitla. Of this natives are particularly fond, and many probably fall victims to cholera through eating it. Another circumstance was brought to my notice which I cannot pass over, since the abuse which it exposes prevails almost everywhere: it frequently happens, that boats laden with rice often sink; the rice, if recovered, is sold to the best advantage; this rice from having soaked for days, becomes fermented, and consequently cannot be good or eatable; it is notwithstanding ground, and made into cakes, to which is applied *goor*, or inferior treacle, commonly used for hookah tobacco, and then cooked in the worst description of mustard oil. These cakes are of the size of a quarter plate, hard, and heavy, and as a couple satisfies hunger, the poor prefer them to the more clean but expensive confectionery of the country. They are called *malpooas*, and are of a brown colour. *Dhalpoorees*, too, are known to cause sickness, and with the above are pretty largely sold. I had a confectioner, or rather a *Moirra* (for he said he was not professionally a confectioner) come to me, and found among other things a number of *malpooas* and *dhalpoorees* in his wooden platter. He admitted that they had not been prepared by him, nor did they belong to him, but he had them for commission sale. The natives he knew were afraid to use *malpooas*, because they were injurious, but what could he do; if sold, they brought him a few pice! One standing by observed, "did you not sell some to a person the other day and advise him to drink water after he had eaten them, which instantly brought on looseness?"

Talligunge.

Understanding that there are shops at *Talligunge*, Thana Tazerat, I proceeded in that direction today and found that here also *Kurria* butchers were to be met with. There were a few shops open containing the usual description of beef, (mutton appeared to be used by the Shazadas only, of which I saw one shop) and I learnt from one of the commission agents, that *Kurria* Killkhana this time last year used to send twelve cows per diem for the use of six shops at Talligunge, whereas it now only sends three (or four) in consequence of beef not being in much requisition. I trust I have not been remiss in my inquiries as to whether there are any who sell the meat of animals dying a natural death; none have been detected in doing so; but it is alleged that animals in the last stage of existence have been brought on carts to butchers' houses and there killed.

Milk.

Other establishments of equal importance to the subject of inquiry exist in this district. I allude to the collection of milk by *Gowalas* hired from almost every village, for making the butter which is generally used by Europeans, and for butter-milk and *tire*, both which are largely used by natives. It is questionable whether a native depending solely on the sale of his milk will tell the *Gowalas'* collector that his cow is sick and should not be milked, and also whether the hired servant, and equally so his master, cares whether the milk is from a healthy or sick cow.

Annexed is a statement containing the names of butchers, situation of their shops, and other information; which I hope will prove satisfactory.

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Table showing the result of the inquiry instituted by order of the Magistrate, into the state and price of meat sold in the Suburb Thanas of 24-Pergunnahs, Slaughter-houses, where situated, and other particulars. April 1844.

THANAS.	Butchers' shops where situated.	Names of Proprietors.	Number of cows slaughtered per week at this time.	Calves.	Sheep.	Goats.	Kids.	Number of cows slaughtered per week at the present time.	Calves.	Sheep.	Goats.	Kids.	Price of each description of meat last year.	Price of each description of meat at present.	REMARKS.
Nowhazaree	Kidderpore	Peerbux Cassy	8	..	8	..	..	..	..	8	..	..	Per seer. 3 annas ..	Per seer. 3 annas ..	Mutton pretty good; sells no beef.
Ditto	Ditto	Jummun "	..	..	..	..	..	8	..	..	..	..	1 anna ..	1 anna ..	Slaughter-house very filthy, containing one cow evidently healthy, none had been slaughtered here this day.
Ditto	Allipnagar	Ayrip "	4 to 8	..	..	..	..	4 to 8	..	..	..	..	1 " ..	1 " ..	Shop closed.
Ditto	Burtulla	Bundoo "	8	..	..	..	..	8	..	..	..	..	1 " ..	1 " ..	Good slaughter-house, filthy.*
Ditto	Ditto	Jummun "	8	..	..	..	..	8	..	..	..	..	1 " ..	1 " ..	Inferior, ditto ditto.*
Ditto	Ranchunderpore	Surruldee "	8	..	..	..	..	8	..	..	..	..	2 pice ..	2 pice ..	Very bad, ditto ditto.*
Manicktulla	Armanee Bazar	Peer Allie "	2,100	..	..	..	..	1,400	..	..	..	..	Not sold	here	State of this establishment will be found described in report accompanying.
Chitpore	Road to Barenagore	Closed and the proprietor absent.	..	..	..	..	..	..	..	..	..	..	3 annas ..	3 annas ..	Supplies the Mysore Princes.
Tazerat	Talligunge	Bhowaroo Shaik	..	..	..	..	..	..	..	..	..	..	1 anna ..	1 anna ..	Receive their supply of inferior meat from Peer Allie's slaughter-house, at Kurrya or Armanee Bazar.
Ditto	Ditto	Five shops conducted by Gurreebola and others. The sixth has been abandoned.	84	..	..	..	..	About 21	..	..	..	..	..	..	..

* The cows in these places appeared free from disease.

DIAMOND HARBOUR. From—RIVERS THOMPSON, Esq., Officiating Commissioner of the Presidency Division, to R. Thompson, Esq. the Secretary to the Government of Bengal, Judicial Department,—No. 144, dated Calcutta, 14th May 1869.

Referring to your letter No. 116, dated 12th January 1869, I have the honor to submit,

* Magistrate of 24-Pergunnahs, No. 183, dated 7th May, with a letter from the Deputy Magistrate of Diamond Harbour, dated 3rd May.

Magistrate of 24-Pergunnahs' letter No. 162, dated 20th April, with enclosures, containing a copy of Dr. Farrell's report and an original plan.

in original, the accompanying papers* received from the Magistrate of the 24-Pergunnahs, including a copy of Veterinary Surgeon Farrell's report of his operations in connection with the cattle disease which prevailed in the villages of the Diamond Harbour Sub-division during

some months of last year.

Origin.

2. From the letter of the Deputy Magistrate, who was in charge of this Sub-division for the greater part of the time that the disease prevailed, it would appear, in opposition to Doctor Farrell's opinion, that the epizootic originated with the importation of some diseased cattle into one of the villages of the Diamond Harbour Sub-division, from the fair held at Oolobarra in January 1868. The cases, however, were either not very numerous at so early a date, or the violent character of the disease had not been ascertained, for it was not till June 1868 that the local authorities first brought to notice that small-pox had broken out among cattle to an alarming extent in the jurisdiction of the Sooltanpore Police Station, embracing in its ravages some thirty villages. The facts were reported to Government in the letter from this office, No. 188, dated 28th July last, requesting, if it were possible, that a Veterinary Surgeon might be deputed to visit the locality and render such aid and advice as he could give. In the meantime instructions were sent to the local officers to adopt every means in their power to isolate the diseased cattle and to prevent the complaint spreading.

3. A later report from Diamond Harbour, received here on the 31st July, brought to our knowledge the result of the Deputy Magistrate's personal inquiries at Sooltanpore, which showed that within that Police jurisdiction 464 head of cattle had died under the disease up to the middle of that month. It was further shown that the disease had assumed a most virulent type, was not amenable to any treatment which the natives themselves could supply, and that even the experiment of removing the cattle to a distance from the affected places had failed to arrest the calamity. The most serious fears were entertained, that so large a mortality in the cattle of the place would materially affect the cultivation of the land.

4. The orders of the Lieutenant Governor, dated 1st August 1868, intimating that an application had been submitted to the Government of India for the deputation of a Veterinary Surgeon were followed by the services of Doctor Farrell being placed at the disposal of the Commissioner of the Division, for employment in the affected locality; and on the 5th of August that gentleman was in communication with the Magistrate of the district, and reported his arrival at Diamond Harbour with a sufficient supply of medicines and other necessities on the 8th of the same month.

Mortality.

5. From that date up to the close of the year when the disease had almost died out, weekly reports have been regularly submitted to this office, showing the progress of Doctor Farrell's operations, and of the number of deaths among the cattle. The full report which Doctor Farrell has now sent, details his proceedings from the time that he assumed charge of the special duties imposed upon him till his services were formally dispensed with, on the 6th January last. From that time repeated applications have been made to Doctor Farrell for the submission of the report which the Government required, and it was only on the 25th March last that it was received, undated, in the Magistrate's office.

6. Upon one point, the total number of deaths from this epidemic, I am quite at a

Mr. Farrell's return of deaths from August last, 4,927.
The Deputy Magistrate's from the commencement of the year, 26,151.

loss to reconcile the statements of the Deputy Magistrate and the returns submitted by Doctor Farrell as marginally noted; and the explanations which I have since obtained from

the local authorities do not satisfy me that the Magistrate and his subordinate are at all correct in fixing the total number of deaths at 26,151 heads. It may be quite true that the disease had prevailed throughout the Diamond Harbour Sub-division from the beginning of the year 1868, and that it was only on its assuming a virulent form, about June last, that the matter was brought under official cognizance. Doctor Farrell's figures commenced from the month of August, and are based upon the number which actually came under his treatment. The actual number of deaths may be somewhat in excess, but I do not think, even admitting the existence of the disease from the commencement of the year, that Baboo Hem Chunder's returns, from inquiries among the Zemindars and the employment of an agent visiting from village to village, are based upon any accurate data. I scarcely believe there were so many head of cattle in the Sub-division; and certainly, if the facts were as now reported, and some 20,000 head of cattle died before June from the murrain, the

executive officers of the district were very remiss in not bringing the fact prominently to notice with a view to the adoption of remedial measures earlier. I discredit however the accuracy of the statement altogether.

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7. The proposition with which Dr. Farrell supplements his report, as regards the Veterinary School establishment by Government of a Veterinary School in Calcutta, appears somewhat premature. Endeavours are being made, by the circulation of pamphlets in the vernacular, to interest the native community in the districts on the subject of the general treatment, breeding, and care of cattle, and till some appreciation is shown by the natives themselves of the endeavours already made by Government in that direction, I do not suppose such a proposal as that referred to need be seriously entertained.

Extract from General Report of BABOO HEM CHUNDER KERR, Deputy Magistrate of Diamond Harbour, for 1868.

In the early part of the past year small-pox, which had commenced raging from 1867 in some of the villages comprising the Sooltanpore Thannah, gradually disappeared, and since then all has gone on well. But while the health of men and women did not suffer, that of the cattle suffered tremendously, and my inquiries lead me to believe that, more or less, 26,151 head of cattle fell victims to the plague. I beg to subjoin a list of the villages affected, and the number of cattle that died in each village. I also beg to subjoin a plan showing the situation of these villages.

LIST OF VILLAGES.

STATION SOOLTANPORE.

Bansburia	...	...	150	Gurankatty	...	...	30	Mortality.
Luckipore	...	...	160	Joyrampore	...	...	50	
Bosogram	...	...	125	Culpee	...	...	20	
Belpookhorra	...	...	160	Romzannugger	...	...	20	
Tentoolberia	...	...	125	Burrakorah	...	...	40	
Jhikra	...	...	100	Meerzapore	...	...	90	
Maunapara	...	...	70	Ramsarunpore	...	...	50	
Nakally	...	...	150	Suntoshpore	...	...	125	
Arya Bhoerubbee Tolla	...	...	140	Gowreepore	...	...	30	
Taley	...	...	100	Abkole	...	...	35	
Joomoory	...	...	160	Koyekhallee	...	...	60	
Kantabaniah	...	...	100	Gabberia	...	...	50	
Korunjoly	...	...	150	Sooltanpore	...	...	70	
Oroonugger	...	...	100	Modhoosoodunpore	...	...	60	
Buttolla and Chittamaree	...	...	200	Kharee	...	...	400	
Kansareer Chuck	...	...	250	Chandbasa	...	...	100	
Ghosin Abad	...	...	150	Kasseenugger	...	...	100	
Tengerabeechee	...	...	45	Arjoontolla	...	...	25	
Damoodhurpore	...	...	90	Pooranderpore	...	...	60	
Mawleergram	...	...	24	Kowtolla	...	...	40	
Allypara	...	...	125	Gopalnugger	...	...	150	
Haskee	...	...	70	Moheshpore	...	...	50	
Koosfull	...	...	125	Pookheria	...	...	90	
Dholla Krishnanugger	...	...	200	Bansheria	...	...	40	
Joggodishpore	...	...	150	Motilall	...	...	100	
Ramdebore	...	...	90	Kallikapore	...	...	70	
Harishpore	...	...	50	Mowraltolla	...	...	40	
Wooloodanree	...	...	100	Dhannunjoypore	...	...	80	
Chundeeopore	...	...	50	Krishtodebpore	...	...	90	
Doyarampore	...	...	90	Mullickpore	...	...	80	
Gazeepore	...	...	125	Depay Protima	...	...	80	
Usuttobenja and Dowlatabad	...	...	50	Ghuttockpore	...	...	80	
Khurdohobutpore	...	...	15	Chowghoree	...	...	90	
Krishtodallubpore	...	...	100	Goomkee	...	...	90	
Roypore	...	...	100	Banichapra	...	...	100	
Sreenugger	...	...	40	Mundubtolla	...	...	40	
Ramkrishtopore	...	...	200	Harindangah	...	...	30	
Maenapore	...	...	45	Anchna	...	...	90	

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STATION SOOLTANPORE—continued.

Baboo H. C. Kerr.	Naknan	...	...	135	Biddadhpore	...	...	125
Mortality.	Enathpore	...	...	100	Doolalpor	...	...	200
	Sreekrishnougger	...	...	22	Badaybullubpore	...	...	30
	Rameshpore	...	...	50	Bullubpore	...	...	90
	Pathpookheria	...	...	22	Dullubpore	...	...	60
	Doorgapore	...	...	60	Dadpore	...	...	90
	Bhuggobanpore	...	...	100	Krishtopore	...	...	50

STATION DABEEPORE.

Pathpookheria and Patkelbaria	...	240	Japherpore	...	40
Buttolla	...	20	Burghur	...	50
Monshar Haut	...	30	Digra Bhuggobanpore	...	90
Jhingah	...	90	Jhoomnah	...	25
Narainpore	...	25	Hurrishpore and Shola	...	40
Woolkoonce	...	40	Daooly	...	60
Kodalish	...	25	Govindpore	...	250
Dowlatpore	...	50	Sookhdebpore	...	60
Boyaree	...	15	Chunarbat	...	50
Bosudebpore	...	125	Kasseerampore	...	125
Balirdanree and Jangaliah	...	40	Kowkhally and Bhowanipore	...	80
Debeepore and Ramghur	...	15	Nowbhashan and Gowlbaree	...	100
Boichberia	...	100	Egarogorag	...	250
Ghuneshampore	...	60	Ghorahatta	...	150
Burnugger	...	100			

STATION BANKIPORE.

Soondipookheria	...	40	Hashoory	...	150
Gocoolnugger	...	60	Meerzapore	...	60
Hattolla	...	100	Jeypore	...	40
Bangaberia	...	200	Chackdoha	...	150
Choetunnepore	...	250	Puddopookheria	...	200
Angulmoheshpore	...	25	Bagdanree	...	250
Mooldiah	...	40	Kankooapara and Rungilabaz	...	80
Bhowanipore	...	100	Ghurkhally and Shibpore	...	50
Odeypore	...	200	Chinguaikhally	...	100
Chandpore	...	350	Shapmara	...	100
Kadipookheria	...	300	Wooter Mohishdauree	...	125
Surradana	...	350	Dhuckin ditto	...	150
Chowkeetolla	...	250	Brishogatchee	...	50
Luckheekantpore	...	200	Surisapara	...	100
Hurrypore	...	60	Jaugeerghur	...	150
Berayshurpore	...	300	Shalpookheria	...	100
Koosulpore	...	200	Hezul Haut	...	80
Mocoondapore	...	60	Aubtawoolee	...	150
Porankhally and Halnugger	...	250	Bishtoopore	...	100
Sonatollah	...	60	Baley	...	150
Bankipore	...	40	Banesherpore	...	200
Mietollah	...	50	Ghola	...	200
Dhonepotta	...	250	Burgatchee	...	100
Ugrodanee	...	100	Ruasadagatchee	...	80
Banshpallah	...	100	Woostee	...	200
Barropow	...	200	Noenan	...	150
Bamna	...	200	Rajar Haut and Noenan	...	100
Jowaroo	...	70	Chuck Deboo Ghose	...	60
Goroeejola	...	200	Hatooriah	...	150
Kanbally	...	100	Haukhola	...	60
Shiboopore	...	200	Chukhatooria	...	250
Sekunderpore	...	300	Earpore	...	250
Nilkuntpore	...	200	Chuckroypore	...	100
Takpanja	...	500	Moheshura and Tengrakhalce	...	60
Toolan	...	150	Rajapore	...	60

STATION BANKIPORE—continued.

Sungrampore	...	100	Rajapore, Chandpore and Nilkoosee	...	1,550
Conecha	...	40	Mugra	...	70
Khanpore	...	80	Dhora	...	80
Enathpore	...	60	Ektara	...	125
Jalghurah	...	80	Surberiah	...	25
Mullarchuck	...	50	Dolooepore	...	35
Colus	...	40	Bongong	...	50
Soepera	...	60			

STATION GOBINDPORE.

Maluncha	...	70	Ramgobindpore	...	40
Umbulhaura	...	125	Parbuttypore	...	15
Mokeondapore	...	50	Pathra	...	30
Shaothdoha	...	80	Daripathra	...	50
Moynan	...	30	Mollapookheria	...	20
Dagoriah	...	80	Chandnugger	...	20
Bahoorganga	...	50	Mohunpore	...	80
Boray	...	30	Bussuntapore	...	40
Naraoneepore	...	70	Majeer Haut	...	10
Gowreepore	...	30	Jafrallee	...	15
Caupore	...	25	Akhrapoonjo	...	80
Hatigunge	...	15	Andariah	...	25
Bardun	...	90	Reckha	...	25
Bursagoria	...	25	Roypore	...	10
Gurghatta	...	25	Kamarpole	...	30
Abdanpore	...	40	Bagdaha	...	40
Paroolia	...	50	Doorgapore	...	10
Debeepore	...	25	Agneeshur	...	30
Beloorbada	...	25	Sungrampore	...	40
Singberia	...	30	Coolayshur	...	30
Panchgong	...	70	Mushaut	...	25
Bhowanipore	...	30	Chengraha	...	10
Kullagatcheeah	...	10	Nausut	...	20
Koosharia	...	15	Nagra	...	20
Maloor	...	125	Nowbhashan	...	40
Kontikaree	...	50	Narayantallah	...	80
Jhawoodhauri	...	80	Khamarcoor	...	20
Pitamburra	...	25	Patdoha	...	15
Bhoosnay	...	7	Chundeeepore	...	15
Surisa	...	80	Bangala	...	40
Morigatchee	...	100	Hinchaberia	...	2
Kanipore	...	15	Panchshut	...	5
Garooarah	...	15	Mohishgote	...	5
Dearuck	...	25	Jhingah	...	73
Satghurrah	...	25			
Ghantoo	...	15	289		26,151
Bhogpoonjo	...	30			

DIAMOND HARBOUR

Baboo H. C. Kerr.
Mortality.

It appears that in the month of January 1868 the disease, commonly called the *Gootee* Origin of disease. or *Bussunto*, made its appearance in the village of Bansburia, Pergunnah Shahapore, Police Station Sooltanpore, where, shortly before the appearance of the disease, people had brought a few bullocks from the Ooloburia Haut, situated on the other side of the river, where every week a very large number of cattle, mostly from Midnapore and Orissa, are sold, and it is believed that these animals brought the disease with them. From this village the murrain travelled in a south-westerly direction, and attacked some of the cattle in the village of Luckhipore. It then took the southerly direction and went to the village Bosar, and thence travelled to the west side, making its appearance at Belpookheria. It subsequently attacked Spread. the villages of Culpee, Ramessorpore, Kharee, Poorandarpore, Howree, and its neighbouring places, and then broke out on all sides. The murrain was at its height in the month of July and August last, at the latter end of which month it began to abate, and continued abating till it almost disappeared at the latter end of October or the commencement of November last. The villagers believed the disease to be contagious; yet with this knowledge they had

DIAMOND HARBOUR. no means of separating the healthy from the sick cattle. They had no place, and they were at the time all anxiety for their paddy fields. The energy displayed by the ryots at this critical time was something wonderful.

Those who could afford and those who could not afford it borrowed money and purchased cattle and ploughed their fields, and when the first batch died, they got a second batch, and in some places even a third batch was procured for the completion of the sowings.

With all this endeavour on the part of the tenantry, a good one-fourth portion of the paddy lands remained untilled for want of cattle.

I have already mentioned that the murrain was most severe in July and August last, and this circumstance is attributable to the bad grass which had rotted after the continued rains of June last, and which was devoured by the hungry bullocks that had no opportunity of grazing for nearly 20 or 25 days in consequence of the flood. In the jurisdiction of Thannah Bankipore, where the low *boonani* fields form nearly a twelve-anna portion of the rice lands, the people finding all their crops gone and the fields submerged in water, commenced selling off their cattle at rather low prices, and the ryots of Sooltanpore, Hotigunge, and other places, not similarly situated, began to buy them, and therewith ploughed their fields. The value of these cattle ranged from 5 to 15 rupees a head.

Symptoms.

The majority of the animals that died in the plague were oxen, called by the people *Damragoroo*, and these form the majority of the horned cattle here. The symptoms of the disease were not the same in all places. In and about Kharee, an ox attacked by the murrain would pass watery stools, cough violently, and salivate, and then die after six or eight days. Towards Culpee and the adjacent hamlets the symptoms were quite different. Here the cattle would at first cough, and a sort of shivering would come upon them; they would then water from the mouth, eyes, and nose. Pustules would then make their appearance upon the body, and the sick cattle would pass watery stools, which had the appearance of being mixed with blood and pus. The cattle would then feel disinclined to get up, and gradually sink within five to ten days from the date of attack. In all the afflicted villages the sick cattle would refuse food from beginning to end. Those which would commence eating *Kolmee sak* and soft grass mixed with *ghee*, which the people were invariably in the habit of placing before them, and those which had large pustules on them often recovered, but these, unfortunately, were few.

In this part of the country the oldest man does not recollect the occurrence of a like scourge; but I have been informed that there were now and then *Gootees* amongst cattle, which had to a certain extent proved destructive.

From A. SMITH, Esq., Magistrate of the 24-Pergunnahs, to the Commissioner of the Presidency Division,—(No. 162, dated Alipore, the 20th April 1869.)

A. Smith, Esq.

Referring to your No. 230, dated the 3rd instant, I beg to transmit herewith a copy of Veterinary Surgeon Farrell's report of his operations in the Diamond Harbour Sub-division, and of a review of the same by Baboo Hem Chunder Kerr, who was in charge of the Diamond Harbour Sub-division while the operations were in progress.

2. It will be seen that the total loss of cattle from the plague was about 26,151 head.

3. Baboo Hem Chunder Kerr is of opinion that the epizootic originated with the importation of some cattle from the Ooloburia fair. I have not heard that disease has prevailed on the other side of the river, but the fact seems established that it broke out on this side in a village to which importation was made. Dr. Farrell assigns a later period and a different village to the origin of the outbreak. In this as well as with reference to the early course of the epizootic, I think that Baboo Hem Chunder Kerr, who was in charge of the Sub-division and obtained his information at the time, must be accepted as more reliable than Dr. Farrell, whose account is necessarily based on the information he collected from villagers, few of whom probably knew much beyond what occurred in their own immediate neighbourhood.

4. The disease does not appear to have been very amenable to treatment, though even in the cases where medicine was given, a fair proportion of cures is shown. Greater benefit appears to have resulted from the measures taken for isolating the diseased cattle and preventing the spread of the contagion.

5. The testimony borne by the Sub-divisional Officer to the zeal and assiduity with which Dr. Farrell discharged the duties entrusted to him, and the ready attention he paid to the representations of the people, is very gratifying.

6. As explained in a previous letter, the delay in the submission of this report is due to the delay with which, notwithstanding repeated reminders, it was obtained from Dr. Farrell. The report is not dated, but it was received in this Office on the 25th March.

7. It was then sent to Baboo Hem Chunder Kerr for his review, which reached me on the 14th instant. **DIAMOND HARBOUR.**
A. Smith, Esq.

8. Dr. Farrell's report contains his own explanation of the delay. I fear I must pronounce it altogether insufficient and unsatisfactory.

9. I submit with these papers a further letter, dated 20th March, from Dr. Farrell, in which he suggests the institution at the Presidency of a Veterinary School for the instruction of Salootries, Farriers, and all others who may choose to learn the Veterinary art, as applied to horses and cattle. The suggestion is deserving of consideration, not only with reference to the provision of a class of skilled practitioners for practice among agricultural cattle, but also as a means of training a better subordinate agency for the cure and treatment of Government cattle. **Veterinary School.**

From HIRAM FARRELL, Esq., Veterinary Surgeon, Her Majesty's Bengal Army, on Special duty, to BABOO HEM CHUNDER KERR, Deputy Magistrate, Sub-divisional Head Quarters, Diamond Harbour.

Agreeably to Presidency Division Orders, dated 5th August 1868, placing my services at the disposal of the Government of Bengal, I waited on the Commissioner, 24-Pergunnahs Division, and received instructions to proceed to Diamond Harbour, the Sub-divisional Head-Quarters, to investigate the cattle disease that was said to be raging in that district. Having provided myself with medicines and other necessities, I reported my arrival to the Deputy Magistrate on the 8th August 1868. I there learnt that the disease was at its height in the Sooltanpore District, some fourteen miles off. **H. Farrell, Esq.**

2. From the boisterous state of the weather no boat could be got to venture out, and as the roads were impassable from heavy inundation, I was delayed some ten days before I could proceed to Sooltanpore. In the meantime I visited the villages in the vicinity of Diamond Harbour where the disease had begun to make its appearance. On the 18th I reached the Sooltanpore District, and having made Culpee my head quarters, I proceeded to visit the neighbouring villages.

3. In the course of my inquiries I learnt that the disease, commonly called *Gootee*, first appeared in the village of Deolapore in the Sooltanpore District, and from thence extended over the surrounding country; a few days afterwards it was discovered in the Bankipore District. It was first noticed in the month of May, and was most fatal during the months of August, September and October; about the end of November all trace of the disease had disappeared. I append a map in which the course of the disease is marked in red. **Origin.**

4. In the course of seven days I visited most of the villages to which the disease had spread, and having personally witnessed the nature and extent of its ravages, and given instructions for the sanitary arrangements that could be immediately carried out, I proceeded to make the necessary preparations for aiding the cattle owners, in curing the diseased animals, preventing the spread of the disease, and putting an entire stop, if possible, to its further spread.

5. The natives were terror-stricken at the great loss and ravages of the disease, and not properly understanding the cause of my appearance in the district, they were not then inclined to attend to instructions, but being very intimate with their character, their customs, and superstitions, especially in cases of the kind, and having a very good knowledge of the language, I used quiet persuasion in allaying their fears and working on their feelings, so that at a very early stage of my proceedings they attended to me willingly. I there secured the services of one Jemadar and four Salootries, men who had already some knowledge of treating cattle. I instructed these men in the nature, symptoms, and treatment of the disease, and posted them at different points throughout the district with medicines, &c., and careful instructions for attendance on, and treatment of, the animals within the portion of district allotted to each. **Losses.**

6. I likewise had circulars printed in Bengalee, containing full particulars for treatment and sanitary arrangements; these were distributed throughout the district with the most happy, beneficial, and, I may say, wonderful effect, not only on the diseased animals, but on the minds of the Natives, who were convinced that their good alone was sought, and that it was possible by attention and care to check the epizootic; the result was very satisfactory, for success attended the operations, and in the course of two weeks the mortality was reduced from over 800 a week to less than 300. **Measures adopted.**

7. From the most careful enquiries throughout the district, and from conversation with all classes of the community, it is evident that the disease is not new in the part of the country south of Calcutta, and that it is of periodical occurrence, appearing here and there every year, but generally the cases were in some years so few, previous to the present epizootic, as not to attract public attention; in fact, it dates back for a series of years, far beyond the memory of the oldest people: some fifteen or twenty years ago it appears to have caused great mortality. I could however find no records on the subject. **History.**

DIAMOND HARBOUR.
H. Farrell, Esq.

8. Some curious facts are worthy of notice in connection with the cattle epizootic. It continued its course to the Diamond Harbour Creek, where it appears that the stream of water checked its progress, and it ran along the right bank of the creek without crossing it, throughout the continuation of the epizootic; and again the disease was of a more virulent type, and more fatal in all the villages on the banks of the creek than those some distance from it. The symptoms were much more aggravated, and there were very few recoveries, the animal affected dying off within 48 hours of being attacked; this was especially the case in the village of Raipore, where a week after the disease appeared all the cattle in the village were exterminated.

Causes.

9. I conclude from the fact of the disease being constantly present in all months and seasons in the district, sometimes destroying many, and at other times few, that it is of spontaneous origin, no trace of its importation from other countries can be discovered. The specific poison appears to find a habitation in the soil, caused doubtless by the want of proper drainage, the stagnant pools, unusual falls of rain, and, as was the case last season, inundations over the whole country; these and the decomposition of vegetable and animal matter make a combination of agencies sufficient to develop disease, and once developed, it is propagated by immutable laws that govern all contagious diseases; the animals do not inherit the disease, nor do they carry it about in their flesh and blood, but, as I have stated, certain conditions of the soil and atmosphere are favourable to its development, especially where cattle are congregated in any large numbers.

Neglect of cattle.

10. There are also other causes which help to engender disease; there is great neglect in the management and care of cattle; they are ill-fed as a rule, allowed to graze on pastures that are rank and have been under water; they are crowded together in miserable dirty huts, without ventilation or cleanliness; in many cases families and cattle are under one shed, the latter quite uncared for after the day's work, generally the cultivation of paddy, which necessitates their working in water and mud far above their knees; they have little food, but what they can pick up; when the paddy is cut, the coarse straw is given to the animals in small quantities; they are scarcely ever attended to, dried or cleaned: these causes dispose the cattle to disease. Again, no attention whatever is paid to the breeding of cattle; they are nearly all small, weak, and overworked: numbers are brought from the Midnapore District annually. I think the above facts will prove that there are ordinarily sufficient exciting and predisposing causes to produce disease in the district at all times and seasons: the only wonder is that epizootics are not more common.

Carcasses.

11. Another point that deserves attention is the exposure of all dead bodies of animals—they are thrown near villages into the nearest ditch or khall; in most of the villages I found bodies in every stage of decomposition not fifty yards from the huts, and when the frightful mortality that has taken place this year is considered, alike injurious to the health of the inhabitants and of their cattle, and to the cultivation of their fields from deficient plough and draught bullocks, who can doubt the advisability of establishing such sanitary arrangements as may in future have some check on the spread of disease, or prevent similar epizootics altogether.

Disinfection, burial.

12. Free use was made of lime and other disinfectants to purify the various places, and I made every endeavour, with the aid of the Police, which was freely given, to put a stop to the practice of leaving the dead bodies of animals exposed: from some caste prejudice, which on enquiry was found to be untenable, there was at first great difficulty in inducing the villagers to attend to my advice and instructions in the matter, but by perseverance and persuasion the prejudice was happily overcome.

Hides.

13. I found that the Chamars and other low caste people were in the habit of removing the skins of the deceased animals for sale in the Calcutta market, where they obtained good prices, and must have made great profit, for numbers of skins were thus removed, spreading the disease far and wide, and causing much mischief and loss, for the disease is prevalent in many parts of Calcutta, Entally and the suburbs. To put a stop to the practice of removing the skins, I sought your assistance to have the skins scored and rendered useless for sale, and I could not have a better opportunity than the present for noticing the active and willing aid given to me in every instance of appeal. I received the most cordial counsel and succour on all occasions.

14. Having thus given a summary of my proceedings from the latter end of August to the beginning of January, I will briefly narrate the nature, symptoms, and appearance of the disease, with the particulars of the measures taken for its prevention, &c., &c.

NATURE OF THE DISEASE.

Nature of disease.

It is known in the district by the name of "Gootee" and "Bushunto," literally small-pox. It is, in my opinion, the Rinderpest or Murrain of the Russian Steppes, a low malignant fever of typhoid type, capable of being propagated by inoculation, and similar

to the variola of human beings: it is highly infectious and contagious, the virus can be transmitted in several ways: the excrement which drops from a diseased animal is highly charged with the poison; food taken in the mouth or breathed upon, if eaten by a sound animal, will produce the disease; discharges from the nose, eyes, and mouth on pasture will give it; flies and dogs by feasting on diseased carcasses will disseminate it: in fact, the very air in the neighbourhood of cattle sheds with infected animals is poisoned.

DIAMOND HARBOUR.
H. Farrell, Esq.

15. The popular opinion throughout the district, and what the inhabitants implicitly believe, is that once an animal is attacked by *Gootee* and recovers, it becomes free from the disease, and never takes it again; but my experience does not confirm this belief, for, in the case of a few experiments in inoculation which produced the disease, two animals recovered and again became diseased from contact with others affected: the second attack is however much milder than the first. I am also convinced, from observation and inquiry, that the majority of the recovered animals at the period reported on had the disease at some previous period.

SYMPTOMS.

Symptoms.

16. I will divide the disease into four stages.

First, Incubative; second, Premonitory; third, Febrile; fourth, Dysenteric.

The first, or *Incubative*, lasts from four to ten days, and is marked by a high degree of temperature of body and rapid pulse. The second, or *Premonitory*, is noticed by great dullness; the animal stands aloof, with its head drooping, coat staring. Cows lose their milk gradually, the urine becomes scanty and bowels costive, pulse increases, visible mucous membranes become affected, rumination is suspended, but the animal will eat food offered to it; this stage continues from forty-eight hours to four days, and is succeeded by the third or *Febrile* stage, in which the body is warm, pulse fluttering and weak, animal refuses all food, has great thirst, will run to any pool of water; running at the nose and eyes, slobbering at the mouth, great debility, and urine scanty and high colored, and often voided: diarrhoea sets in—a scouring of foetid green faeces; the breath and exhalations from skin foetid; rumination is suddenly and completely suspended; there are spasmodic twitchings of the muscles, of the neck, flank and hind-quarters, and the skin becomes rough by the elevation of the hair.

This stage lasts from forty-eight hours to five days; during its latter part, the body undergoes alternate changes of cold and heat, the pulse is thin and wiry, breathing heavy and laboured; the expirations become double and are emitted with a peculiar grunt; there is difficulty of deglutition; cough sometimes is present; vesicles appear in the mouth, and skin inside of thighs and axillas cracks, from which a watery discharge exudes; body is also covered with small vesicles resembling pimples, the roots of the hair evidently being their seat, and the animal is often affected by tympanitis and slight colicky pains.

17. The fourth stage, *Dysentery*, is marked by a change in the constitutional symptoms; alvine evacuations being less, but with streaks of blood and slime, very foetid; tenesmus, urine high colored, scanty and offensive; pulse very weak, barely perceptible; body and extremities become cold; fever disappears, leaving great prostration; the discharges from the nose and eyes are very purulent; the vesicles in the mouth are filled with pus, and most of them burst; those on the body become ulcerated, dry, and covered with scales; the glands and throat swell, and there is a difficulty of breathing; the muscles have slight spasms, and the animal from the beginning of the stage falls down and lies with its head and neck stretched out.

18. The symptoms increase to the eighth or ninth day, when the crisis is observed; as death approaches the mucous membranes become of a livid hue; there is extreme foetor of all discharges, the evacuations come away involuntarily, the muscular twitchings cease, and the animal dies without a move. When the case takes a favorable turn, the pulse is lower, the temperature of the body and extremities is equable, the appetite returns, and in fifteen to twenty days the animal recovers its health. I have invariably found that the greater the amount of eruption the more favorable was the case.

Cases reported and attended to	...	...	6,735	Results.
Ditto cured	...	...	1,808—26.9 per cent.	
Ditto died	...	...	4,927—73.1 per cent.	

POST-MORTEM APPEARANCES.

Decomposition rapidly ensues after death, and the mucous membranes of the mouth, larynx, pharynx, oesophagus, trachea, appear inflamed, with patches of ulceration and ecchymosis, with considerable effusion of serum, in the thoracic and peritoneal cavities, the

Post-mortem appearances.

FOOD.

The disease being of a very weakening nature, the sick animals were drenched several times a day with rice or suttoo water; or, in their absence, with water acidulated with vinegar, or gruel made of bran or linseed; when convalescent, nourishing and easily digested food was given, such as green grass, or mash made with the siftings of rice; and in addition to the food, attention was paid to the cleanliness of animals and sheds: the wood-work of the latter was washed with warm water, the old earth of floors removed, and new earth sprinkled with lime put down to replace the old, and in several cases the sheds were entirely destroyed by fire with the permission of the owners. Some villages were placed in quarantine, and all connection between them and healthy places prohibited, a measure that would be of the greatest benefit at the first outbreak of cattle plague: this matter is certainly worthy of the grave attention of the authorities, and perhaps it would be worth while to have periodical professional visits made to the chief towns and their neighbourhood, of the Bengal Government, for the purpose of ascertaining the condition of the cattle kept by the ryots for agricultural and other uses: the result of such visits would very possibly far more than repay any expense that would attend them, in the improved condition of the animals on which good agriculture so much depends, in the quality and quantity of milk for food, and in removing from the minds of the poor inhabitants the dread and its consequences (alike injurious to the poor people, their landlords, and to the Government), which overcomes them on the loss of cattle and injury to crops, &c., which surely follow in the train of such disease when it comes on suddenly and generally.

21. I cannot close my report without apologizing for the delay which has apparently taken place in submitting it, owing to the loss of many of my notes and the difficulty of bringing to remembrance the many particulars connected with my visit to the villages in the district.

I await orders for my future movements.

From H. FARRELL, Esq., Veterinary Surgeon, Her Majesty's Bengal Army, to the Magistrate and Collector, 24-Pergunnahs,—(dated Calcutta, the 20th March 1869).

In continuation of my report, submitted in February last, to the address of the Deputy Magistrate, Diamond Harbour, I do myself the honor to invite the consideration of the authorities to the advisability of establishing a Veterinary School in Calcutta for the instruction of Native Salootries, Farriers, and all others who may choose to learn the veterinary art, as applied to horses and cattle; very few persons will be found at present who really understand the proper treatment and management of horses and cattle, either in health or disease. I have been long impressed with this fact, from intercourse with the Salootries of Native Irregular Cavalry Regiments, and also with European Farriers in Batteries, &c., entrusted with the care of horses; these men obtain a sort of superficial knowledge of disease from practice, but are almost totally ignorant of the anatomy and physiology of the animal they are treating. Would it not therefore be a great benefit to instruct such Government servants by a course of lectures, dissection, and clinical demonstration? Such a school or schools would be of immense benefit to every mounted branch of the service, especially the Irregular Branch, who are almost entirely dependent on their Native Salootries, and doubtless civilians and others in and out of Government employ would take advantage of any establishment of the kind that would be the means of imparting to them knowledge that is so much wanted in India. I had the advantage of acting as Demonstrator at the Edinburgh Veterinary College for a session before entering the service, by which I gained a fair knowledge of most matters connected with veterinary science, especially tuition: and am prepared to go further with the subject of the proposed school in respect of the course of study and other particulars connected therewith if considered necessary, and to show that the expense of its institution would be little more at first than the cost of a suitable building, while the commensurate advantages would in time far exceed any expense or trouble that can possibly be incurred; in time indeed the establishment would be self-supporting.

I send this communication direct to prevent delay, as it may be deemed necessary to review it in connection with my communication regarding the cattle disease which prevailed to the south of Calcutta in the latter part of 1868.

From BABOO HEM CHUNDER KERR, Deputy Magistrate, to the Magistrate and Collector, 24-Pergunnahs,—(No. 1, dated Alipore, the 14th April 1869).

With reference to your note on Dr. Farrell's report on the cattle disease that lately raged in the Diamond Harbour Sub-division, I have the honor to submit the following remarks.

Discrepancies.

DIAMOND HARBOUR. lining membrane of the first three stomachs "slightly congested," the membranes of the fourth stomach and small intestine, more especially the ileum, ulcerated, and in some gangrenous; the large intestines healthy, the contents fluid, of an offensive odour; lungs in most cases slightly congested; heart flaccid, but healthy; spleen and liver in some cases enlarged and congested; kidneys healthy; the organs of generation inflamed with ulcerated patches and ecchymosis. The brain in most cases healthy, sometimes the membranes and substance injected, and ventricles filled with a yellow colored serum; spinal cord healthy, and in some cases injected with deposit of serum about the lumbar region; blood black and watery, does not coagulate readily or produce a buffy coat; inhalation of the vapour of the blood will produce fever and diarrhoea in man with violent nervous headache.

TREATMENT.

There is no drug that is really a specific for the disease, nor can it be counteracted by any known antidote; the disease is essentially one in which prevention is far better than any attempt at cure; careful attention to sanitary arrangements, to the comfort and care of the animals, with good hygienic management, will be found of much more value in dealing with an outbreak of cattle plague than trusting to medicinal agents.

19. I will now proceed to give a detail of the treatment adopted by me, premising that the drugs, &c., used are simple, safe and economical, easily procurable throughout the country, and generally known to the ryots. In the first stages when constipation is present—

Common salt	...	...	...	1 pound
Ginger	...	...	...	4 drachms
Rice water	...	...	...	4 pounds

repeated every twelve hours until scouring is produced, then as the disease is weakening and the vital powers sink rapidly, stimulants must be used. I found rum the best remedy in ounce doses, and native spirit in two-ounce doses, to be very useful, when the febrile action is lowered.

Antimony	...	...	...	2 drachms
Nitre	...	...	...	2 ounces
Black salt	...	...	...	4 drachms
		or		
Camphor	...	...	...	4 drachms
Bhung	...	...	...	2 ounces
Cherata	...	...	...	1 ounce

given twice or three times a day to control excessive diarrhoea, dysentery, and straining; to the above was added, in some cases, catechu 4 drachms, in others opium 1 drachm; when tympanitis was present, blisters were applied to the sides of the abdomen, and given internally

Assafoetida	...	...	...	2 drachms
Bhung	...	...	...	4 "
Ginger	...	...	...	4 "

When convalescence took place

Sulphate of Iron (kussees)	...	...	...	2 drachms
Bhung or Cherata	...	...	...	2 ounces

given for three or four days and found of the greatest benefit: the bhung and cherata were also used in the form of a decoction; the doses above mentioned are for the drugs when used as such. The decoction is thus made—

Bhung or Cherata	...	...	...	1 pound
Water	...	...	...	16 pounds

boil for half an hour; and strain for use when cold.

20. An animal when taken ill was separated from the healthy animals, and when possible removed to another shed. This in most cases was impossible, when it became necessary to place the animal in one side of the shed with a fire in the centre kept burning night and day; all the droppings, &c., were put on the fire, and sulphur sprinkled over it, three times a day, to promote fumigation. The animals were also made to inhale the fumes of sulphur twice a day, which was found to be of the greatest benefit. The occasional use of fires and fumigations in the cattle sheds throughout the district, with doses of medicine now and then to the animal of two drachms of black salt, or four drachms of common soda, known by the inhabitants as "Kharee Neemuck," is to be recommended as a prophylactic measure.

DIAMOND HARBOUR.
H. Farrell, Esq.,
Food.

Veterinary School.

Baboo Hem Chunder
Kerr.

DIAMOND HARBOUR.
Baboo Hem Chunder
Kerr.

Origin and spread.

Neglect of cattle.

Mortality.

Smith, Esq.

2. In the first part of his report Dr. Farrell gives a summary of his proceedings and of the history of the disease; in the second he describes the symptoms of the disease; in the third, its treatment; and in the fourth, the food most appropriate for cattle during illness, and the sanitary measures to be adopted during the prevalence of the murrain.

3. As regards the history of the disease, Dr. Farrell is mistaken in saying that it first broke out at Dulapore in May. On referring to my annual general report No. 43, of date the 1st February last, you will perceive that the disease was brought over from the other side of the river so early as January 1868. Some ryots of Bansberia, Purgunnah Shahapore, purchased a few head of cattle at the Oolooberia hat, where a large number of cows and bullocks from Midnapore and Orissa are weekly sold, and these, it is believed, brought the seeds of the disease with them, for it was immediately after their arrival that the disease broke out at Bansberia. From Bansberia the murrain travelled in a south-westerly direction and attacked a number of cattle in the village of Luckhipore. It then took a southerly direction and appeared in the village of Bosar. Thence it extended on the one side attacking successively Belpukhuree, Culpee, Ramessurpore, &c., to the west, and on the other to Khari, Poorundropore and the neighbouring villages to the east. Its subsequent course I cannot correctly trace, as it spread very rapidly and became general nearly all over the Sub-division.

4. Dr. Farrell thinks (paragraph 8) that the course of the disease was checked by the Diamond Harbour Creek. This may have been the case, but I find that the disease prevailed on both sides of the creek with almost equal virulence, and proved as fatal on the sides of rivers and creeks as in villages far removed from water-courses. It is also certain that it crossed several channels of water in its course.

5. I have no doubt that the causes noticed by Dr. Farrell (paragraph 9) had a great deal to do in bringing on the murrain in the southern parts of the 24-Pergunnahs; for none can deny, and it is a truism, that defective sanitary arrangements, privation and neglect, lead to disease; but it must be borne in mind that the disease under notice is common all over Bengal, and is not unknown in the North-Western Provinces, and that its ravages are neither enhanced by rank vegetation and damp soil, nor mitigated by high dry land and clean pastures. In Burdwan, Bancoorah, Hazareebaugh and Beerbhoom, places noted for their high, dry, and well drained soil, the disease is often as severe as it has ever been on the damp, low, alluvion of the 24-Pergunnahs. It may be also remarked that generally it breaks out with the greatest virulence in the months of February, March, and April, and altogether disappears in the rainy season. It is true that at Diamond Harbour its severity was at its height in July, August, and September, but even there it first broke out in January. It may also be noticed that the floods which submerged a great part of the Diamond Harbour Sub-division in June last, and deprived the cattle of their natural food for three or four weeks, and then offered them a rank unhealthy vegetation for fodder, contributed much to render the murrain much more fatal than it usually is in this part of the country.

6. As regards the purely professional part of Dr. Farrell's report, I can offer no remark. But I have much pleasure in bearing my testimony to the zeal and assiduity with which he attended to the onerous duty which was entrusted to him, and the ready attention he paid to the representation of the people.

7. His treatment, I must own, did not prove very efficacious, and the death-rate, according to his own showing, exceeded 60 per cent. But the disease (gootee), like cholera, is one for which I believe no effectual remedy has yet been discovered.

8. Of the number of cattle carried away by the disease, I have already submitted a statement along with my last annual general report. A copy of it I hereto annex for ready reference. It shows a total of 26,151 head of cattle, which, at an average of Rs. 10 per head, would represent a loss of Rs. 2,61,510; nor was this all, the mortality among the cattle having been at its height during the season of paddy cultivation, the ryots were obliged, from want of cattle labor, to leave about one-fourth of their fields uncultivated, and the loss to them from this source amounted at the lowest calculation to over two lacs of Rupees. Some of the ryots replaced their lost cattle two or three times successively, but unfortunately the disease which was then raging swept away the newly purchased batches, and the cultivators were ultimately obliged to leave their lands fallow.

From A. SMITH, Esq., Magistrate of the 24-Pergunnahs, to the Commissioner of the Presidency Division,—(No. 183, dated Alipore, the 7th May 1869).

With reference to your No. 292, dated the 27th April, the epidemic broke out in January, though it was not reported as especially virulent till June.

2. The weekly reports were got from the Police, and are only for a part of the time, besides which they are not, I fear, very trustworthy. DIAMOND HARBOUR.
A. Smith, Esq.

3. Baboo Hem Chunder Kerr informs me that his estimate, as given in his letter under notice, was based upon inquiries made from the chief zemindars, and ascertained by an agent deputed from village to village for the purpose.

4. Dr. Farrell's figures refer to deaths from the cases reported and treated.

5. No official action was taken until the report from Sooltanpore in July. I had heard previously that deaths were very numerous among the cattle, but they were attributed to starvation, no food being available, owing to the extreme height of the inundation, and so not capable of any remedy.

6. The Deputy Magistrate's annual report is herewith forwarded for perusal and return.

From BABOO HEM CHUNDER KERR, Deputy Magistrate, 24-Pergunnahs, to the Magistrate Baboo Hem Chunder
Kerr.
of 24-Pergunnahs,—(dated Alipore, the 3rd May 1869.)

With reference to the letter No. 292 of the 27th ultimo, from the Commissioner of the Presidency Division, to your address, I have the honor to state that the figures showing the number of deaths caused by the murrain in the Diamond Harbour Sub-division during the past year, must of necessity be in excess of the figures given in my weekly returns and in Mr. Farrell's final report.

It has already been brought to your notice that the plague made its appearance and commenced its havoc in January 1868. The Veterinary Surgeon was deputed only in August last, and he remained on the field of his labor, I believe, till November, or the early part of December following. His figures therefore can never tally with those given by me. It will be seen that both the weekly returns which began to be submitted either at the end of July or the commencement of August, and Dr. Farrell's statement, do not embrace the whole year during which the plague was raging.

I joined the sub-division about the middle of January 1868, and some two or three months afterwards (I write from memory) I heard of the outbreak of small-pox amongst the cattle. I then commenced instituting inquiries, and these inquiries were being made when your No. 39 of the 7th July last was received. On the following day I was on the scene of the plague, and on the 9th submitted my first report in the matter. I then stated that the murrain had broken out in Chytro or March, but subsequently I learnt that it had spread in January last.

In the beginning of the present year I deputed a man well acquainted with the country to all the villages affected, in order to ascertain the number of cattle that had been carried off by the pestilence. I got my figures by this means.

Note on the Mortality in 24-Pergunnahs District during the year 1869.

The Officiating Commissioner of the Presidency Division, in two letters, dated respectively 3rd June and 14th July 1869, and embracing a period from 1st May to 19th June 1869, reports that 355 deaths among cattle took place in the Diamond Harbour Sub-division. Disease in 1869.

Mr. E. J. Barton, Officiating Magistrate of the 24-Pergunnahs District, writes on the 25th of February 1870 that cattle disease prevailed in some parts of the district in 1869, and encloses a statistical statement which does not pretend to embrace all the affected villages, a few villages only in each sub-division being selected. This statement embraces two villages of the Diamond Harbour Sub-division, 23 villages of Busheerhaut, and four villages of Barripore. The deaths reported are 93, 44 and 57 in these sub-divisions respectively, total 194. The outbreak is dated February in Diamond Harbour and September in the other two. The diseases noted are *puschima*, *bosonto* or *gootee*, which are, from the symptoms detailed, names of rinderpest, and *aishu*, or foot and mouth disease.

Visit to Wooldadangah Cattle-sheds and Fair.

5th April 1870.—Visited the cattle-shed of Kistoghose of Wooldadangah. It is a *durma* matted house with *golepatta* thatching. It contains 40 head of cows, most of which are in very good condition; the size of the shed is 9 x 16, the floor is raised to the height of 2½ feet, and consists on its upper surface of tiles and wood; at the rear of the stalls is an open drain about 1 foot deep by 6 inches broad, running the entire length of the shed. There were two ranges of stalls; at the head of the stall are mangers (gumlows); the diet of each animal consists of 40 bundles of rice straw (weighing 5lbs.), 4lbs. of urhur dal, bhoosee (ground rice husks), and 2lbs. of oil-cake (linseed and mustard); each animal gets about 20 quarts (two kolsies) of water daily in two portions. The Wooldadangah.

WOOLTADANGAH.

sheds are well ventilated, but at each door and window is a gunny (coarse cloth) for the purpose of keeping flies out and the byres dark. There is a good fall to the drains, the dung and urine are collected in a reservoir at the lower end outside the shed, and when in a sufficiently dry state are made into cakes for fuel purposes; the atmosphere of the shed is sweet, the temperature is cool; the sweetness of the atmosphere depends upon the good fall of the drains, and the inducement for the good fall is the manufacture of the fuel cakes; at one of the entrances is a fire-place where the fuel cake is continually smouldering for the purpose of keeping the flies and mosquitoes out of the shed, and this plan is evidently successful, as very few flies could be seen in the shed. At night, for some little time, a larger fire is made with a view of giving a good fumigation to the shed. Cows cost on the average from Rs. 10 to 30 at the Wooltadangah haut, and they yield from 1 to 3 seers of milk daily, being milked twice a day: the cows are occasionally washed for the purpose of removing the dung from their bodies. Kisto purchases his cows at the Wooltadangah haut only, and these cattle are brought from the north and north-eastern districts (Baraset and Nuddea). He is not aware of any being brought from the western side of the Hooghly. He has had experience in regard to the disease *bussunto*. In last September (Assar) he purchased a cow at the Wooltadangah haut, and four days after he had placed it in his byre, it became affected with *bussunto*, and five others became affected afterwards. He gave them green grass and wheat gruel and kept them in the same shed, but a little apart from the other cattle, and all recovered. He knows the disease to be infectious, and he is also aware that a cow never gets a second attack. The reason why the rest of the cows in the byre did not become affected was, in his opinion, that they probably had the disease before he bought them (in the villages where they were reared). He never has lost a cow from *bussunto*. He always feeds them as above recorded. When cattle do not give milk, or get old, they are sold to butchers.

Cattle market.

3-40 P. M.—Visited the Wooltadangah cattle market. There were 98 cows and 82 calves for sale. Saw one cow with discharges from eyes, nose dry, respiration very much affected. The owner said that he had bought it from Cassiadangah, north-west of Krishnuggur, distant 6 miles. No male cattle are sold at this place. The Izaradar of the haut was present, he said that he was paying Rs. 150 monthly for Wooltadangah and Dum-Dum haut. This sum he pays to Amanut Ali, a butcher of Kurriah, near the burial ground. He said that, for some reason or other, goallahs would not buy at the present moment so many cattle as they used to do before.

Rinderpest prevalent in and around Calcutta.

milkmen did not purchase many cows.

Stock whence brought.

Value.

increase is attributable to the circumstance that cattle have become rare, and that the butchers are buying up all the cattle of the country. The farmer of the fair would not admit that cattle affected with *bussunto* were ever sold in the market, but he said that animals with foot and mouth disease were now and then sold at the market. The traders were almost all Mussulmans. Occasionally a few cows were brought from Oolobariah when they were not sold there.

Kidderpore.

Visit to the Kidderpore Cattle Market.

6th April 1870, Noon.—Visited the Kidderpore cattle market. Kipiatoollah Meeah is the farmer, but was absent; his nephew Meajan was present. The market is held twice a week, i. e., Wednesday and Saturday; there were 360 head of cattle this day for sale here. Both bullocks and cows are sold here. Examined all the cattle carefully and minutely and found them to be healthy, but very many were found in very poor condition; cattle come here from Jessore, Oolobariah haut, and Busheerhaut; the butchers chiefly buy these cattle. Other people also purchase them. The price of the cattle is from Rs. 2 to 25; those cattle which are not sold in one haut are kept and produced for sale in the following haut; these cattle are not taken to any other haut from this place, as this is the last market-place. The animals are taken out to pasture by day and tied up during night. On the market grounds the owner of the cattle sells his stock to the butcher, and the butcher slaughters the cattle and disposes of the hides to the hide merchant for Rs. 1-4 to 2-8 each hide. The hides of live-stock are marked as soon as they are purchased by the butcher. There is a less number of cattle brought to the market than before; the cause of

KIDDERPORE.

this is that cattle have become rare and the agriculturists do not like to sell them. There are local cattle hats where the pykars (dealers) make their purchases and bring the cattle for sale to the butchers at Dum-Dum and Kidderpore, the butchers never go to Oolobariah and Wooltadangah; the two latter markets are supported by milkmen and agriculturists.

Mahomed Ali, the proprietor of the Kurriah slaughter-house, who was present,

Evidence of Mahomed Ali.

said that there was no great demand for butcher meat owing to fish being cheap; the cattle have died away and they are consequently becoming rarer daily. Does not know whether there is at present any disease prevailing in Calcutta or not. Has not heard also. Cannot say whether the circumstance of the disease prevailing in Calcutta, prevents the milkmen

Price.

Evidence of Amanut Ali.

from buying a large number of cattle or not. The cow sold 10 years ago for Rs. 8 is sold for Rs. 12 or 13 now. Amanut Ali, brother of Mahomed Ali, says that he has a large slaughtering-house at Kurriah in the suburbs of Calcutta where 50 to 60 head of cattle, on an average, are daily slaughtered. Does not himself slaughter any cattle but is a hide merchant.

Hide trade.

Advances Rs. 400 to 800 to each butcher. Is present at the markets of Kidderpore and Dum-Dum, and as soon as the butchers who are under an advance from him, buy any cattle, he places his mark upon them, so that another hide merchant may not be able to take the hide. Has advanced Rs. 83,000 to the butchers for hides. Sells the hides to Golam Arab Arutoollah of Colootollah, who delivers them to the mercantile firms, who either export them or use them in this country. Pays Rs. 2-4 and 2-6 for each hide to the butchers. Takes *dagi* hides, namely, those marked by firing—branded, does not buy *murdah* (dead) hides. There is a man near Dum-Dum who buys them. There are three sorts of hides, Nos. 1, 2, and 3. No. 1 is *suffa* (or free of fault). No. 2 is *fut dagi* (cut or broken). No. 3 is *dagi* (branded).

Murdah hides are a different class of inferior hides. Does not dress the hides, the *Arutdars* dress the hides.

Golam Arab, Fyzoollah, Hufeezoollah are some of the Arutdars.

Visit to the Dum-Dum Cattle Market.

19th July 1870.—Dum-Dum, Shamnuggur, 7 A. M. Visited this morning at 6 o'clock

Inspection of cattle.

the cattle fair at this place. About 300 to 400 head of cattle were exposed for sale. There were cows that had ceased to give milk and bullocks in almost equal numbers. The fair meets once a week, and it is from this market and Kidderpore that the Calcutta butchers get their supply of cattle. The butchers pay from Rs. 4 to 30 for each animal, the price varying according to the condition of the cattle. The cattle are brought to this fair from Jessore, Modhookhally, and Jughetdulin Furreedpore.

Weekly fair.

Price.

The cows that give milk are sold at the Wooltadangah market only and are brought from the Krishnuggur District; some cattle are also brought from the Rajshahye District.

Rinderpest.

There is an izardar (farmer) of this market. No diseased cattle, it is said, are admitted into the fair. There is no *gootee* now prevailing. There was *gootee* in the hot season, but with the fall of rain it disappeared. The butchers say that they can recognise the disease *gootee*, the symptoms of which are drooping ears, watering from eyes and mouth, and sticky discharge from nose. The affected animals also purge, and some of them have eruptions on their body.

Bibun Butcher says, that he has seen sick animals in the fair, but that he has invariably rejected them. Other butchers have done the same. Amanut Ali of Kurriah, Khadem Hossein

Hide trade.

Cazee of Narcoldangah, and Sheraj Sarcar of the same place are traders in hides, and they advance the butchers Rs. 300 to 500 and Rs. 600 even; no interest is charged, but they are obliged to supply them with hides at fixed rates. Amanut Ali's rate is Rs. 2-10 the skin, Khadem's Rs. 2-6, Sheraj's the same.

Bibun says that the price of slaughter cattle has increased. The animal that cost Rs. 8,

Price.

10 years ago, cannot be had under Rs. 10 or 12 now. The butchers do not go to Oolobariah but to Dum-Dum and Kidderpore markets which meet once a week. Saw an old cow in the fair in very bad condition,

Case of rinderpest.

and the bepari, who brought it, said that he had got it from the Soonderbun Grant, Camorghaut for Rs. 4. It has much sticky discharge from nose, profuse discharge from eyes, dung hard, hair standing on end, scabs and pits here and there; buccal membrane congested; aphthous condition of the lower gum. Another old bullock was seen, said by the owner to have been bought at the Baripore Fair, Jessore. The animal was breathing hard and had a sticky discharge from the nose—a suspicious case.

Six head of cattle were seen; the owner said that he had bought them from Soonderbun lots Minakhan and Camorghaut. These looked as if they had recently recovered from rinderpest.

Dum-Dum.

Wuzeer Bepari, an elderly cattle dealer present in the cattle fair, states that he has been a dealer for the last 25 years or more. Lives at Banee-poor Hât, Jhenidah, Jessore, where there is a large cattle market where he gets his supply of cattle principally. He, as also other beparies (dealers), get their supplies from other places, such as Pubna, Rampore Beaulauh, Jessore, and Kishennuggur; they do not go about from house to house and purchase cattle by private bargain, but they frequent cattle markets only in certain districts; they seldom or never buy cattle labouring under gootee, which malady appears generally in the months of January, February and March. The disease disappears after the fall of rain. Informant and other beparies visit the cattle hât at Puddobilah, Zillah Nuddea, in August and September every year, and buy cattle there. They saw gootee amongst cattle at Puddobilah last year. It has occasionally happened that after buying cattle for the Calcutta market one or two animals got gootee. These generally die and they throw the carcasses into the *bhagar*, but those that recover are brought to the market after some time. He brings a herd of 50 to 60 head of cattle each time from a distance of 7 to 11 marches, and during night keeps the cattle under some trees or in some bazar by the road side, where the herdsmen cut grass and give it to them. Has never seen cattle being poisoned at Jhenidah or any other place. Has seen gootee in several districts. The disease spreads from one village to another. The best cattle are generally bought by the regimental butchers. Has known that people in the interior have offered gootee cattle for sale at half the usual price.

Evidence of Wuzeer Bepari.

Baneepoor Fair.

Puddobilah Fair.

Movements of cattle.

Rinderpest.

When asked in what district he found gootee most prevalent, he stated that he could not assert that any one district is more healthy than another; that the disease prevailed sometimes in one, sometimes in another; if any thing he thinks that disease is worse towards Magoorah in the Jessore District. States in conclusion that young and well conditioned animals are more liable to attacks of gootee than the old or emaciated ones.

Visit to the Municipal Slaughter-house at Tengra, 22nd December 1869.

Tengra Slaughter-house.

The municipal slaughter-houses consist of three blocks: one intended for the slaughter of cattle, another for sheep and goats, and the third for pigs. The first two stand close together on the right of the municipal railway which runs to Dhappa, and the third stands separate from these on the left of the line. These are well-built open sheds of brick-work with very excellent slaughtering arrangements. Animals are brought for slaughter during the evening and night. They are thrown and killed by having their throats cut. The blood runs into a series of earthenware basins into drains which are flushed by water brought from a cistern, which stands between the two larger sheds at a considerable height. The water is pumped up by a steam engine. The carcass is now raised by pulleys and ropes attached to iron beams, the offal is removed, the carcass is quartered and stamped according to quality on the quarters, hump and sides. The offal and dung are removed by conservancy carts, and sent to the Salt Lake at once. The lights and head are sold outside the premises, and the hides are carried off by contractor's carts, having been previously sold by the butcher to the hide dealer. This slaughter-house was repeatedly visited, and once or twice during the time when cattle were being slaughtered and the arrangements for slaughtering and disposal of offal, &c., were always found to be admirable. No unpleasant smell of putrefaction was ever observed. Mr. D. K. Peddie is in charge of these slaughter-houses. He furnished the following information:—The place is constructed to hang 264 carcasses of cows, and 3 sheep may be reckoned to each cow. Buffaloes are sometimes brought for slaughter, but the number of cattle daily killed varies between 50 and 100. This is owing to the native slaughter-houses at Kurriah and Narcoldangah continuing open notwithstanding the refusal of the Suburban Municipality to license them. The cattle brought to Tengra are principally 1st class and come from the goallas' sheds in the northern part of the town. He is the sole inspector and judge of the healthiness of cattle and the quality of meat, and when any difficulty arises, the Health Officer is applied to. About one month and a half ago one animal was rejected for "pox." The order is, that rejected carcasses are to be destroyed, the justices paying for the cost. He never noticed foot and mouth disease or heavy lungs. The charges for slaughtering are—1st class, 4 annas each, 2nd class, 2 annas, calf and kid, 1 anna, sheep and goats, 2 annas. As regards breed, Bengali cows are generally brought for slaughter. Mr. Peddie remarked that as long as the native slaughter-houses remained open, only 1st class cattle would be brought to Tengra.

12th July 1870.—Dr. McLeod and Baboo Hem Chunder Kerr proceeded at 3 P. M. in company of Mr. Bartlett, Municipal Inspector of Bazars, to visit the Kidderpore Slaughter-house. This is an open shed brick built, with a central drain leading into the adjoining nullah for conveying away blood, sweepings, and refuse. Its use, as a public slaughter-house, has been discontinued for about two months in consequence of the refusal of the Suburban Justices to renew the

license. Commissariat cattle to the number of 6 to 8 are still slaughtered there. As the Commissariat operations do not commence till 6 P. M., there was no opportunity of seeing how they are conducted. Tengra Slaughter-house

The slaughter-house at *Kurriah*, owned by Amanut Ali butcher, was next visited. It is an open thatched shed with central drain leading into an adjoining masonry pit. The carcasses of about 100 sheep and goats recently killed were seen, and they seemed to be in good condition and sound. Some 70 cattle had been brought for slaughter, and these were carefully examined. They were mostly cows, but several bullocks were likewise seen. Some of the animals were in very fair condition, most of them in poor, and some in wretched condition. Several animals appeared to have recently recovered from rinderpest. They were extremely emaciated, hair rough and erect. There was loss of hair and a caked covering of soft excrement around the anus and on the posterior aspect of the hind legs. Bare patches of skin and small scabs were seen on the back, sides and dewlap, and the dung of many was very soft. The intestines of one cow, which looked worse than the rest, were inspected and presented externally a congested appearance. On opening the cœcum of this animal, it was found sparingly filled with gruelly excrement, patches of congestion appeared on the mucous membrane which was considerably thickened and studded with aphthous ulcers in process of healing. The small intestines were constricted, somewhat congested and the mucous membrane thickened. The liver and spleen contained numerous cysts. Cysts were seen in several other livers.

Kurriah Slaughter-house.

Animal affected with rinderpest slaughtered for food.

The cattle slaughtered in this place are most of them bought at the Dum-Dum market and a few at the Kidderpore market. The hides are bought by the proprietor Amanut Ali.

Calcutta Meat Markets.

16th July 1870.—Dr. McLeod and Baboo Hem Chunder Kerr proceeded at 6-9 A. M. in company of Dr. Tonnerre and Mr. Bartlett to inspect the meat sold in the Colingah Street Bazar. The mutton seen was very good, no disease was detected. Much of the beef was poor and pallid, but could not be said to be positively diseased. Some of the pale meat was more like veal than beef, the fibres being absolutely anæmic and sodden looking, but firm and free of cysts or cretaceous particles. The Dhurum-tollah Bazar was next inspected. The quality of the meat exposed for sale here varied greatly, much of it being really good, and much of the inferior pallid description above described. Small stalls are used behind the market for the sale of liver, tripe, &c. Several specimens of cystic liver were here seen and on one table a piece of small bowel in a state of acute inflammation. This inflammation seemed to be general and no specific lesion or appearance of aphtha was seen on opening the gut. Dr. Tonnerre remarked that fowls were frequently brought for sale affected with "gootee" an eruptive affection manifested on the comb and bill of the bird. The Tretta Bazar was next visited. The quality of the beef and mutton examined here was good. One or two cystic livers were seen and a bad specimen of cystic pork. The cysts were very numerous throughout the meat, which was confiscated. The cysts were spindle shaped about $\frac{3}{4}$ inch long, consisting of a clear sac containing a glistening pearl like body sprouting from the lining membrane of the sac about the size of a pea and consisting of concentric laminae. The lining membrane of the sac was composed of broad interlacing fibres in whose interstices numerous cellulæ or sac like bodies appeared. On examining the fluid contents of the outer sac microscopically, clear bladder-like bodies of all sizes were observed, some plain and unmarked, others granulated, some caudate or kite shaped, and others oval or round. Molecules in active motion and bacteria were also seen in great numbers. The muscular fibres surrounding these cysts did not appear to be in any way diseased.

Colingah Street Market.

Meat.

Dhurumtollah Market.

Meat.

Tretta Bazar.

Cystic meat.

Nature of cysts.

Municipal Platform at Dhappa.

9th July 1870.—Dr. McLeod and Baboo Hem Chunder Kerr proceeded in company of Dr. Tonnerre to the municipal platform at Dhappa, constructed for the disposal of all animals dying within municipal bounds. The "platform" is a space raised above the surrounding bheel, and carcasses sent thither are conveyed to the place by a small tramway. A contractor pays the municipality Rs. 125 monthly for the right of removing hides, and the carcass is abandoned to vultures and adjutants after the hide has been removed. The number of dead animals sent to this place has decreased of late, as will appear from the following statement for 1866-69 furnished from the Office of the Health Officer.

Dhappa.

Municipal platforms.

Number of carcasses.

Statement showing the number of dead cows and calves brought to the skinning ghaut from 1st January 1866 to 31st December 1869.

	1866.			1867.			1868.			1869.			GRAND TOTAL.
	Cows and Bullocks.	Calves.	Total.	Cows and Bullocks.	Calves.	Total.	Cows and Bullocks.	Calves.	Total.	Cows and Bullocks.	Calves.	Total.	
January ..	64	82	146	87	62	149	143	80	223	269	34	303	821
February ..	63	78	141	58	55	113	126	78	204	219	84	303	761
March ..	71	78	149	34	39	73	103	63	166	161	78	239	627
April ..	58	66	124	23	20	43	171	51	222	107	34	141	530
May ..	71	70	141	50	32	82	145	48	193	76	40	116	532
June ..	93	39	132	31	25	56	58	45	103	90	43	133	424
July ..	83	49	132	62	28	90	57	49	106	106	51	157	485
August ..	126	62	188	51	39	90	62	54	116	107	42	149	543
September ..	115	64	179	58	51	109	46	48	94	100	43	143	525
October ..	84	58	142	65	56	121	155	67	222	108	65	173	658
November ..	86	72	158	118	72	190	141	57	198	109	36	145	691
December ..	103	62	165	85	62	147	133	57	190	120	41	161	663
TOTAL ..	1,017	780	1,797	722	541	1,263	1,340	697	2,037	1,572	591	2,163	7,260

C. F. TONNERRE.

The alleged reason of this is, that other chamars remove carcasses surreptitiously else- DHAPPA. where in order to obtain the hides for themselves.

On this afternoon only 3 carcasses had been brought, namely, those of one cow and two horses; that of the cow was opened and examined.

The abdominal cavity presented, when the viscera were exposed, every appearance of acute inflammation. The peritoneum was generally injected and that covering the intestines more vividly so. The omentum was more especially congested where it was reflected off the lower borders of the stomach.

Post-mortem appearances.

The rumen was well filled with softish food which was at its entrance in a pultaceous or liquid condition. Here many grains of gram* were found and among these occurred a considerable number of the grains of the kunch plant (*Abrus Precatorius*). The lining membrane of this viscus was congested, more specially at the entrance of the organ. The *reticulum* and *omasum* both contained soft food and many grains of *khosa* and *kunch* and their lining membranes were also in a state of congestion. The contents of the *abomasum* were still softer, consisting of a yellowish, brown gruelly matter in which the seeds above-mentioned were also seen. Some of the kunch seeds were hard and others softened and in process of bursting. Spots of acute congestion were seen on the mucous membrane, the greater part of which was apparently healthy. The *small intestines* contained throughout a mixture of blood and mucus. The mucous membrane was acutely inflamed and presented a vividly congested appearance with spots of extravasation. The *larger intestines* were in the same condition, but less severely affected.

On the way back, the Municipal Slaughter-house at Tengra was visited. Some fifty cattle had just been slaughtered and were being eviscerated. The arrangements of the slaughter-house are in every respect admirable, and all the operations were conducted in a methodical cleanly way, while there was an utter absence of any offensive odour. The quality of the meat appeared to be unexceptionably good, and no diseased appearance was detected in the meat, viscera or dung with the exception of cysts in the liver of one animal.

Visit to the Dhappa platform by Mr. HALLEN and Dr. MCLEOD on the 10th November 1870.

Saw	1	1	Bullock	} From Taltollah.
"	2	1	Cow	
"	3	1	Bullock		" Bag Bazar.

These were opened in our presence.

No. 1. Cysts in liver and lungs, stomachs healthy, lungs inflamed, hepatized (red.) Heart flabby.

No. 2. Stomachs healthy, small intestines congested, liver tubercular and extremely fatty lungs collapsed and emphysematous.

Heart extremely flabby and dilated; walls very thick.

No. 3. Prepuce inflamed, all stomachs inflamed and much distended with a large quantity of food (chiefly paddy straw); spleen contained two immense cysts as large as a small pumelo; liver contained several cysts, large and small.

Lungs congested (acute); heart very thin, pale, and flabby. There was no sign of rinderpest in any case and no cyst in the muscle of the heart or in the muscles elsewhere. All three in fair condition. The two bullocks were cart bullocks. Vultures fed on the carcasses and their claws and heads were smeared and red with blood.

The carcasses of three horses were seen, but there was no time to examine them.

Many horses are disposed of in this way.

Evidence of Mr. J. DISSENT of the Health Officer's Department, Calcutta, recorded 7th April 1870.

I have been a Conservancy Inspector for the last six years in almost all parts of Calcutta. My duties are to see to the general cleanliness of the town and to prosecute persons for committing nuisances. With regard to diseased cattle, if I see a diseased cow or bullock let loose on the street or running about unclaimed, I have the power to destroy the animal and prosecute the owners, if he is found out, in the Police Court.

Mr. J. Dissent.

Mr. J. Dissent.

During the last 6 years I have frequently found diseased cattle in the precincts of the town and my experience is, that no sooner cows in the *goallas* sheds become diseased with *gootee* than they are sold to the butchers. In cases where the *goallas* are aware that the Health Officer is cognizant of the disease prevailing in any particular shed, the owners thereof become careful and do not sell the diseased animals to the butchers, but cart them off when they die, to the place appointed by the Justices; now to Dhappa; formerly to Golabari Ghaut.

I have apprehended butchers who have purchased cattle very badly diseased with *bussunto*. These men take diseased carcasses into the town for sale for human food. On the 2nd instant, about 12 noon, I apprehended 4 men who were carrying on a cart, a cow very badly diseased with *bussunto*. I inquired and found that the animal, still alive, was being carried to a private slaughter-house, whereupon I seized the animal and having obtained a warrant for its destruction, had it destroyed at Dhappa. During the past 6 years *gootee* has

always been present in Calcutta at certain seasons but for the last 2 years the disease has been very prevalent. *Gootee* is more prevalent at this time of the year than in other months. I would suggest that the Commission apply to the Health Officer for detailed information as regards the prevalence of *gootee*. I think the Commissioners ought to visit the cattle sheds in division No. 2, as most of the cows of the town are kept in that division. With reference to the disposal

of hides of diseased animals, I may mention that there is a contractor named Madhub Moochee who receives for a certain sum that he pays the Justices the skins of all the diseased animals, *bussunto* included. At the present moment, the contract system has been done away with and the Justices are carrying on the business themselves.

The disease generally is more prevalent at this time of the year and commences at the same time in different sheds and in different parts of the town and generally spreads from these centres to other places. I believe the disease to be contagious, but I cannot say whether it has been brought into town from other places or is indigenous to the place.

The neighbourhood of cowsheds is covered with cesspools of dung and urine accumulated from the sheds. I find eruptions on the skin of the diseased animals in *bussunto* cases. They refuse food and drink and there is discharge from eyes, nose and mouth and purging, the animals are uneasy and there is puffiness of the stomach. The diseased hides are curried in Madhub's Tannery, but these hides turn out very inferior and are generally used by the lower grades of moochees for making shoes, and are not exported. The disease commenced in town in December last, and I think it is still raging, though in a mild form.

Visit to Manicktollah Dairies.

Manicktollah
Dairies.

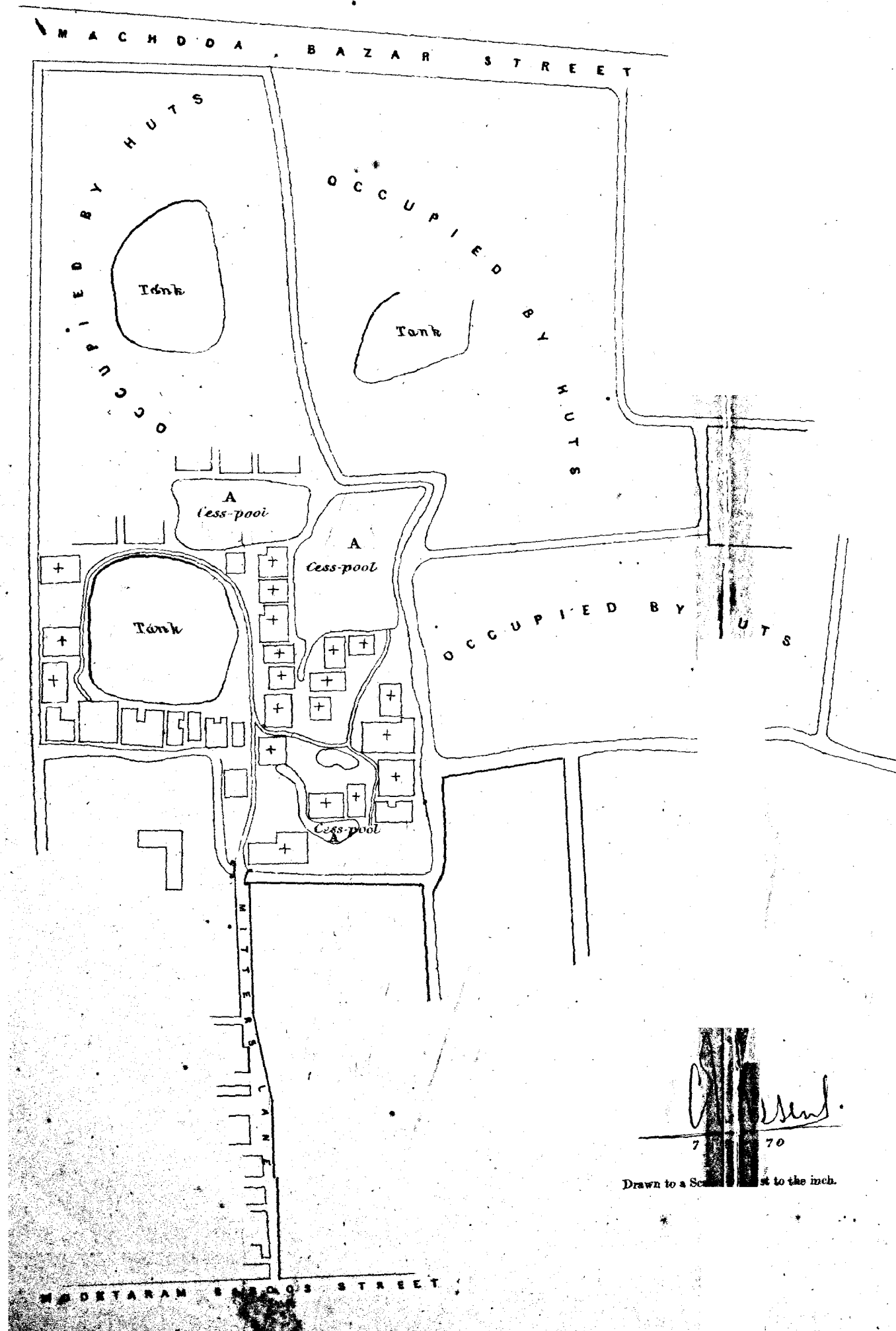
4-30 P. M. Visited the cattle-shed of Ramkisto Goal. Saw a diseased cow with profuse discharge from eyes and nose, excoriation on lower lip, corner of mouth, also on mucous membrane of pad: ill 12 days, had purging with blood, is better now. Owner lost 4 cattle of *gootee* in August. There were 2 ill at this time, one has recovered; buys cattle from Wooltadangah Hat, purchased these 2 cows 3 months ago; does not know of the sale of any diseased cattle at the markets. The shed is very nice and clean, temp. (4-30 P. M.) 92°. No eruption on the one that has recovered. No eruption on the cow still ill but scalding on the thigh from purging.

Saw also cow which has had 3 calves: ill 9 days. Had the cow for the last 6 months.

Cattle-shed had 32 head of cattle in it (owner Gopal Cooky): every one of the cattle was ill, but they have all recovered now. The disease commenced in February last. Owner lost 2 cows. The one that is sick is very ill, the symptoms are very urgent; there is very viscid discharge from eyes, nose, and mouth, excoriations on both lips and lower gums, with aphthous deposits; tongue very much furred, most offensive breath, purging watery stools; a number of flies attracted by discharge; eruptions over all parts of the body with a pimply appearance, slight eruption surrounded by a cracked appearance on skin of udder. The milkman says he gives tepid water and green grass; he also applies ghee and pan to the mouth. Did not buy cows for the last 4 months: the last he purchased from

Dum-Dum market. Purchases from Dum-Dum and Wooltadangah markets. Has lost 52 head of cattle during the last year: the disease commenced in Chyft (March) last, all the calves have died. They send cows to be

served by bulls kept up for breeding purposes at a cost of 6 to 8 annas for each cow. After a cow has been to the bull, she gives milk for 5 or 6 months. Sold some calves to others and some died; sells cows when they become dry and buys new ones: the cattle that had been



- + Gooahlah's Cow sheds
- Lands strewn or heaped with Cow-dung
- A Cesspools
- ==== Streets Pathway

70 A


 Drawn to a Scale of 1 inch = 70 feet

bought became ill 2 or 3 months after the date of purchase. Lost Rs. 1,300 in 52 head of cattle. Every year loses 2 or 3 cows from gootee. Other milk men are equally unfortunate. The cesspools in the neighbourhood of the sheds inspected this day are in a filthy state, but the cow-sheds are comparatively clean. When a cow gets an attack of *gootee* she does not get it again. Has seen one or two in ten never get *gootee* although others get it; this is owing to their having been attacked in the native villages. *Puschima* is very rare, sometimes it comes on in the rains and sometimes in winter. The subject if it dies, dies on the 1st or 2nd day, after that it recovers. The usual *puschima* symptoms are given. Has 50 or 60 cattle in the shed. Never before did he lose so many cattle as this year. In other years the number of casualties was 5 to 10 or even less.

MANICKTOI
Dairies

Three other cows with *gootee* were seen in a neighbouring shed where there are 12 head of cattle. The owner lost 4 cows during the year of *gootee*: bought a new cow 2 months ago, the disease broke out 15 days ago.

Another byre.

Another cow sick of *gootee* was seen in another shed. There are 19 cows, all were ill, 4 died; bought 3 months ago. Cattle disease made its appearance once before in Kartick (October) and on this occasion, 10 or 11 days ago. Last year lost 2 or 4: disease does not come every year.

Another byre.

The Balaram Day and Sookea's Street Dairies.

The Balaram Day and Sookea Street Dairies consist of a number of huts rather irregularly placed among several pools of dirty greenish brown water called tanks. Some of these "tanks" are covered thickly with green vegetation, which has to be removed or skimmed away when any one goes to draw water or bathe. The water looks intensely dirty and seems to be actually thick with filth. There are steps on one or more sides which lead down to the water in which men, women, and children bathe and it is acknowledged by the natives that the bathers always relieve their bladders every time they bathe. They also wash their clothes here, and while this bathing and washing was going on, a child was observed cleaning some grain, probably rice, in a small basket at the same steps. This water is used for domestic purposes, women were seen carrying away pitcher-fuls of it, for watering cattle, for lepoing the floors of houses, and, it is asserted, for diluting milk. A dairy hut is a long unpartitioned house with walls of bamboo matting, sometimes daubed with cow-dung and clay, and a tiled roof; generally about 10 yards long and 4 yards wide, and the ridgepole not more than 8 feet from the ground; the floor is generally raised about 1½ to 2 feet. Down the centre runs a single narrow drain about 9 inches wide and one foot deep. On each side of this, the floor is planked and outside the planks flagged. The planks and flags, form the floor of the stalls on which the cattle stand: outside of this space stand the manglers which consist of a range of large earthen vessels about 2 feet in diameter. These are placed upon a bank of clayey earth which is raised about 1 foot above the level of the floor and is separated from it by a plank set on edge along the inner and upper border of the earth-work. The cattle are tied to posts well sunk into the ground. There are no separate stalls and when standing the hind feet of the animals are close to the edge of the drain, so that dung and urine fall into it. This arrangement is evidently adopted to save trouble. So narrow is the standing room that when a cow lies down, she has to do so obliquely. The cattle are packed as closely as possible and when standing together in two rows their sides touch each other; they also frequently dung over each other. There is generally only one door at the side and there is a small window at each end. On each side of the entrance there is a narrow verandah in which straw, &c., are kept and where cattle ill with rinderpest are placed for segregation. The end windows are kept closed, a purdah generally hangs at the doorway within which a smouldering cow-dung fire constantly burns in order to keep flies and mosquitoes away from the cattle. The beams and inside of the roof are covered with a thick layer of cobwebs and dust. The drains are open at each end and their contents fall into cesspools or open drains leading into cesspools. These cesspools vary in size from 6 to 20 feet in diameter and are generally 10 feet deep, and the contents are never removed. They are exceedingly numerous and surround the houses and dairy sheds in every direction. The solid manure is removed as required for the manufacture of cow-dung cakes and the putrid liquid manure is sometimes at night surreptitiously turned into an adjoining municipal drain. If there is no such drain convenient the liquid manure is left to evaporate or subside and it goes on seething and decomposing until a municipal prosecution and penalty force the owner to fill up the pool. This is sometimes done by throwing some loose earth and litter over it. Vegetation grows upon this, an artificial quagmire is formed and there are so many of these quagmires in the neighbourhood of these sheds that a visitor has to trust to the services of a guide for safe conduct through the place. One pool larger and more

Balaram Dey and
Sookea Street.

liquid than the rest was pointed out by Mr. Dissent, the Municipal Overseer, who accompanied the Commission. This was covered with a frothy scum of combustible gas, and when a lighted match was thrown on its surface a flame spread all over the pool. Wells are occasionally met with. These are constructed when the water of the neighbouring tanks is very bad. The water in these wells seems to be quite as bad as that in the tanks. The walls of the houses and sheds and all the available dry ground are covered with cow-dung cakes which are used for fuel in the sheds and dwelling-houses and for boiling the milk. The manufacture and drying of these cakes is carried on daily and the cakes are stacked and thatched as completed, for sale. The cows generally are of the small Bengal breed. They are, as a rule, in excellent condition, but it was observed that with few exceptions they laboured under diarrhoea, a consequence of the oil-cake with which they are fed. This probably accounts for the oily taste which the Calcutta milk is often said to have.

Oilmen's Sheds.

The oilmen's sheds at Manicktollah are somewhat differently arranged. They are much longer. At each end there are stalls for the bullocks. These are generally flagged; with a central drain which has a good fall towards the end of the shed where the usual cesspool may be observed. The central portion of the shed is occupied by the oil-mill or mills; to each mill one bullock is yoked. The animals are blindfold while at work; and a small *gumlah* is suspended by a string below the belly in order to catch the urine. The bullocks are generally in good condition and the manufacture of cow-dung cakes goes on in exactly the same way as in the dairies.

The truth of the foregoing description, which was written from observation, is, as regards the filthy state of these localities, well confirmed by the following judgment:—

Prosecution of Goallahs in Mitter's Lane.—Police, 31st August 1870.

(Before BABOO OMESH CUNDER DUTT, Honorary Magistrate.)

Thirteen *goallahs* were charged with keeping their lands in a filthy state. They were convicted of the offence, and His Worship gave the following judgment in their case:—

The defendants, who are *goallahs* by profession, admit the charge brought against them under Section 32 of Act VI of 1866 B. C. They could not have done otherwise, for I have carefully examined the land myself on which they have committed, and still continue committing, the nuisance with which they are charged, and can conscientiously affirm that I have never visited a more offensive and filthy place. The defendants have kept up immense open cess-pools of cowdung, urine and other refuse in a state of putrescence, full of maggots and surcharged with noxious vapours. They have likewise kept up uncovered drains full of cowdung, urine and night-soil, which connect the several cess-pools with each other, and convey a seething and sluggish stream of putrefaction to the public drain, which is being rapidly choked up. The respectable people in the neighbourhood complained to me on the spot of the ever-increasing nuisance near their houses, adding that they have been tired of vainly applying to the Justices for redress, and that they are now obliged to live daily in a foul and tainted atmosphere, which is the cause of so much disease in their families. Being, therefore, satisfied by the admission of the defendants, and by my own personal observation, that the nuisance with which they are charged has been caused by their wilful neglect, and taking into consideration their indifference to the repeated warnings and admonitions of the officers of the Justices to clean their lands and to cease committing the nuisance complained of,—I cannot do otherwise than convict the defendants of the offence with which they are charged, and fine them in the sums as against their respective names. I further order them forthwith to clean their lands, and warn them that, if they are again brought before me under similar circumstances, I shall be under the necessity of imposing upon them the full penalty as provided for in the Act.

The defendants were fined in different sums, the amount of fines coming up to Rs. 280.

Evidence of GUDADHOR BARICK.—Manicktollah, 14th November 1870.

GUDADHOR BARICK states:—I am an oilman and have at present 12 head of cattle, all bullocks. I purchased these from the Oolooberiah Hât. I generally buy my cattle from that market. Last year during the cold season I had also this number, of which 7 had the *gootee*, 4 died and 3 recovered: the rest had the disease the year before and as one attack protects from a second attack, these escaped dying the outbreak of last year. The average price of a bullock is from Rs. 20 to 30. I am owner of several oil-mills and have always kept a pretty large number of animals, but I have never in my time (36 years old) seen a second attack among cattle. *Gootee* is a most

fatal disease and there is no medicine for it. Out of 10 attacked 2 or 3 may get better. We apply only *aghee* and pan to the sick cattle; give generally green grass and other green vegetables to the cattle affected with *gootee*; but they generally refuse food. The cattle feel thirsty and we give water but in very small quantities. We also give the parched rice water. *Bussunto* in its attack is either mild or severe. The mild attack is not fatal. In mild cases the cattle do not absolutely leave off food; but in severe cases there is an absolute refusal of food. We give warm water to the sick cattle to drink. In mild cases the cattle keep their head somewhat erect, while those in severe cases they keep their heads down, also in severe cases the stool is watery, bloody, mixed with pus-like matter, whereas in mild cases there is dung in the stool and it is not so watery. In mild cases the skin is smooth and the hair does not stand on end so much as in severe cases, when the skin is very rough, the hair stands erect and something like small pimples underneath the hair are seen upon the body. This is a bad sign. We have observed that one or two bullocks purchased from the Oolooberiah Hât have entirely escaped the attack, while during their life time there has been sickness in the cow-house year after year. The idea of inoculating cattle never occurred to us and if it prevents a second attack we all will be glad to let our cattle be inoculated. During my lifetime I have seen the disease *gootee* and *aishoo* from my boyhood. (Here a man 78 years old says that *gootee* has been prevalent all the time since his boyhood, but formerly it was not so frequent as it has been during the last 25 years, he also says that he had heard of its existence in times gone by from his grandfather and father). I consider the disease to be infectious; as an instance, I may mention that on one occasion I got a bullock from Oolooberiah. As soon as it was brought to my house it looked ill and not only did it get the *bussunto*, but also others kept in the same stall. I have seen one or two cases of *gootee* in the Oolooberiah Hât. I know the disease called *puschima*. It occasionally attacks cattle; it is more fatal than *bussunto*. Death is quicker in it than from *gootee*.

Treatment.

Different types.

Inoculation. History. Infectiousness. Rinderpest in markets. *Puschima*.

Sookea's Street, milk sheds—visited 14th November 1870.

HURRO CHUNDER SEN (50 years old) says:—I am owner of 90 cows in 4 sheds, all giving milk. My cattle have been free from *gootee* for the last 3 years. I lost none during the last year. I sold to the butchers nearly 25 cows which had got dry. I get my cattle from the Oolooberiah Hât and Dum-Dum market. During the last outbreak nearly all my cows got *gootee*; only 15 or thereabout did not get it, and I lost from that disease nearly 25 cows; the rest recovered. Those that did not get it must have got the disease before. My experience is that a cow that recovers once from *gootee* does not get it again. I did not separate the sick from the healthy, I have never done this. I never gave any medicine, for I knew and know of none. I only applied ghee and pan juice and washed the affected cow's mouth with hot water. *Gootee* generally breaks out in the months of January, February, and March. This sickness generally comes on at an interval of 2 or 3 years. In order to extract as much milk as possible, we inflate the vagina each time of milking, and the men that perform that office, do not wear a moustache. We do not keep the calves; first for want of place, and secondly for fear of incurring expense in keeping them. On separating the calves from their mothers, the latter would not give any milk unless the vagina was inflated with air. On an average each cow gives 2 seers (4 pints) of milk morning and evening. We sell the milk in Calcutta and before selling mix as much water as there is milk. I feed my cow with the husk of *kalye*, oil-cake and straw. The husk is cheaper than the *kalye*, and therefore we cannot afford the latter although it makes the cow give more milk. The price of a cow varies from Rs. 20 to 40, when we sell it to the butchers we generally get the price we paid at the time of buying, provided the animals are in good condition: occasionally for a very fat cow we get Rs. 50 or 60. The feed of a cow costs Rs. 7-8 a month on an average. The price of a seer of milk is one and a half anna, sometimes 2 annas and sometimes 3 annas or even more during festivals. The cattle are watered twice a day, and we get the water from the nearest pond or well. If I give green *doob* grass to the cows they will give 25 per cent. more milk than they do on the

SOOKEA STREET.

food we give them, but the milk in that case will not be not so thick, and consequently not so rich as we get upon *bhoosee*, *khulee* and straw. The price of *khulee* (oil-cake) is 32 seers for a rupee. The *khulee* is generally a mixture of mustard and *teel* and poppy. We never use linseed *khulee*. I am quite willing to have all my cows inoculated, provided this be a bar to any future attacks of *bussunto*. The attack of *bussunto* is sometimes mild and sometimes severe. Even if the cattle get a mild attack they do not get a second attack. After a cow affected with *gootee* gets round, it gradually gives an increasing quantity of milk until in about a month's time the former quantity in full is resumed.

Mitter's Lane, Mooktaram Baboo's Street, Chorebagan,—visited 14th November 1870.

RAMDHONE PAUL (aged 70 years), says:—I am a milkman and own 70 cows. I always keep about this number. Last year in January, February, and March I lost from 25 to 30 cows from the disease called *bussunto*. In the year before, my cattle had *gootee* and I lost about the same number. We have *gootee* every year and I lose about the same number every year; 10 or 15 in a herd of 60 to 70 cows generally recover. The disease comes one year in a mild form and in another in a severe form. Free eruptions on the body of the affected cow lead to ultimate recovery. They appear on the body and on the udder. In severe cases the stool of the sick animal is watery, mixed with pieces of flesh-like material, body cold, watering from the mouth, eyes, and nose, and refusal of food. The animals that get watery purging mixed with flesh like pieces, and those also that get eruptions on the neck and throat generally die. I sell milk. I get my cattle mostly from the Oolooberiah Hât and sometimes I get them from cattle dealers who now and then come to our place with cows for sale. The price of a cow is Rs. 16 to 40. A cow gives 2 seers (4 pints) of milk on an average. When the cow becomes dry I sell her to the butchers: sometimes I sell cheap, at other times dear. We do not keep calves, and no sooner do we buy the cow with the calf than we sell the latter to the butchers and extract the milk by inflating the vagina. As a rule I do not lose much when selling. I give my cows *bhoosee* (wheat chaff) straw and oil-cake and it costs me 3 to 4 annas a day for the feed and keep of each cow. I keep a milk shop at Jorasanko. I water the cows twice and I get the water from this tank (a tank filled with filth and vegetation). *Gootee* has been known in this place from time immemorial; but for the last 10 or 15 years it has been more severe and frequent. In this locality the number of cattle is being reduced. This is owing to the heavy taxes imposed upon us every day.

Evidence recorded at Balaram Day's Street Dairies,—visited 15th November 1870.

LALCHAND MARIK, aged 42. I have 24 cows at present, but the number varies, as I always keep selling and buying cows. In Pous (December) last my cattle were seized with rinderpest (*bussunto*). When two of my cows got the disease, I sold off my whole herd to the butchers, except 4 or 5 which I kept to carry on the business. In Jeyt (May) following I purchased a new lot. Before getting the new stock I cleaned and washed the stalls with water from the tank close to my house and *lepoed* the floor, keeping a fire lighted as usual to keep off mosquitoes. In Pous (December) three years ago I lost 11 head of cattle valued at Rs. 300. Out of 28, 17 were attacked but 6 recovered. The remaining lot did not get the disease as they probably had it before. Cattle never have *bussunto* more than once. The average time I keep cows is 6 or 8 months, as long, that is, as they give milk, but sometimes they continue to give milk for a year. The cost of keeping cows, including the servants attending them, is 3 annas and 1 pice per day: one servant attends to 10 or 12 cows. The price I pay for milk cows is from Rs. 20 to 40 according to the quantity of milk the cow gives. A good cow give about 3½ seers of milk a day. In selling cows I sometimes get a little more than the original price paid and sometimes lose half the cost price. I sell the calves to the butchers. My cows are fed with *bhoosee*, rice dust, oil-cake, and straw. Each cow gets 1½ pound of oil-cake, as much straw as they can eat and 7 or 8 pice worth of *bhoosee* and rice dust mixed. To make the cows give more milk when

BALARAM DAY'S STREET, Dairies.

their calves are removed, I inflate their vaginas. I have known of *bussunto* among the cattle all my life. It comes every 3rd or 4th year and is gradually increasing in virulence. Adulteration of milk. Those milkmen to whom I sell my milk, water it, and in order to thicken it, mix with it *singhara* nut flour.* (A Brahmin priest present stated that the milkmen continue to add water to the milk as long as they can without changing the colour). We know the disease *puschima*. The symptoms are,—hoven, shivering, refusal of food but no purging. This disease is not so common as *bussunto*, and I can't say how it originates.

ARGUN BAKOOLI, aged 34. I have 36 cows and two cow sheds, one containing 17 and the other 19. The sheds could not hold more. Last year, from Maugh (January) to Cheyt (March) *bussunto* appeared among my cattle, 13 were saved but all the rest of the 36 died. The whole of my cattle were ill. I lost Rs. 600 in cattle beside what we lost from having no milk for sale. The disease was generally prevalent at this time and was more severe than usual. After losing the cattle above referred to, I waited for about 2 months and then purchased a new lot. I had to borrow money to enable me to buy fresh cattle and I have not repaid the money as yet. I pay 24 per cent. per annum for the money borrowed. I have always suffered more or less loss from *bussunto* but especially within the last two years. The rinderpest season will come with the dry months, from Maugh (January) to Cheyt (March). When I lost so many cattle I cleaned the sheds with water and swept them out. As each cow died I had to pay the Hari bearers 1 Rupee for removing the carcass. I am of opinion that the disease *bussunto* originated in my sheds on that occasion.

JADUB GHOSE, aged 40. I have 45 cows. Last Maugh (January) I had 44 cows, out of which I lost all but 24 of rinderpest (*bussunto*): my whole herd was attacked. I did not sell any of my cattle. Those which I lost, died within 3 months, i. e., Maugh (January) Phalgun (February) and Cheyt (March). I lost from Rs. 500 to 700 at the time. There is no medicine for *bussunto* and I allow my cattle to eat whatever they fancy. When my cattle died I had to wait for 2 or 3 months until the disease was over before buying a new lot, which I did with money borrowed at 24 per cent. per annum interest. I have been at this trade for 15 or 16 years. I have not lost cattle from *bussunto* every year.

NEMY SHITANATH MARIK, aged 30. Number of cattle 19; my 2 sheds can hold 24; lost most of them last Cheyt (March) from rinderpest—*bussunto* i. e., 11 out of 21 attacked; loss in Rs. 200 to 220. After this replaced the losses with borrowed money, for which I pay 24 per cent. per annum interest. I have been in the trade 5 or 6 years. *Bussunto* does not appear every year.

MOTH BAKOOLI, aged 32. I have been a cow-keeper for 15 years. I have 18 head of cattle. Last Maugh (January) 15 were attacked with rinderpest—*bussunto* and of these 8 died and three were sold. In the following Srabun (August) and Bhadur (September) I purchased new cattle with borrowed money. I lost Rs. 200 to 250 at the time.

Evidence of MR. T. L. TAYLOR, Superintendent of the Municipal Gaokhana, taken 1st March 1870. Mr. T. L. Taylor.

Question.—Have you had any experience in regard to cattle plague?

Answer.—For the last 11 years I have been in charge of the municipal cattle: the first outbreak of plague that I can remember was in February and March 1859, since when it has been almost of yearly occurrence with the exception of the years 1862-63, but none of the outbreaks were as bad as that in 1859. My predecessor told me that there was a very bad outbreak in the year 1857, when the municipality lost nearly 200 head of cattle. An outbreak generally lasts for 6 weeks or two months, and generally makes its appearance about this time in February or March, though I have seen a few cases as early in the year as January. The natives say that the disease shows itself when the "Sinal gach," the cotton tree, is in flower, just when the buds are beginning to burst.

Mr. T. L. Taylor.	<i>Question.</i> —Have you had any outbreak of cattle disease lately among the cattle under your charge? and if so, could you give us, 1st, the number of cattle under your charge; 2nd, the number of those attacked; 3rd, the proportion of those which died?
Recent outbreaks.	<i>Answer.</i> —For the last two years I have had no disease among the cattle under my charge, but on reference to my papers I could give you the information you require, regarding the previous outbreaks.*
	<i>Question.</i> —Of what breed are the cattle under your charge?
Breed.	<i>Answer.</i> —For the most part they are of the Bengalee breed, being got from the districts round about Calcutta; we have a few up-country cattle, but not many. The cattle used by us are now worth from Rs. 25 to 30 a head; 10 years ago the same cattle were worth from Rs. 12 to 15.
	<i>Question.</i> —In what manner are your cattle employed, and please state in detail how they are housed, fed, and watered?
Work.	<i>Answer.</i> —All our bullocks are used for draught. They are worked on an average eight hours a day, that is to say, they go out at 4 A. M. and return from 11 A. M. to 3 P. M. They
Housing and feeding.	are housed at night in pucca sheds, open at the sides and well raised. They are fed once a day in the evening on gram and straw, 4 lbs. gram and 12 lbs. straw. They drink the river water out of a cistern as often as they like.
	<i>Question.</i> —What is the condition of the cattle?
Condition.	<i>Answer.</i> —They are generally in low condition, owing to hard work and being so long without food.
	<i>Question.</i> —Where do you obtain the cattle from?
Supply of Cattle.	<i>Answer.</i> —From the districts within a radius of 10 or 12 miles of Calcutta. They are mostly Brahminee bulls, brought in by men in our employ, who leave their service for a time and catch these animals. They are brought in in droves of 10 to 12 at a time. This practice is common with all firms requiring draught cattle. These animals are found roaming about loose and do a good deal of damage to crops: people don't object to their removal. They are brought in as required.
	<i>Question.</i> —Do you remember any instance of these cattle being diseased when brought in?
Disease imported.	<i>Answer.</i> —I do not, but I hear that in the northern Gaokhana, Mirzapore, old Boitakhana Bazar Street, two or three of some bulls recently brought in, have shown signs of gootee, and one of them has died. Some 4 or 5 years ago, I remember cattle being brought in with foot and mouth disease.
	<i>Question.</i> —Do you obtain cattle from any other source?
Markets.	<i>Answer.</i> —For the last 6 years a great number have been purchased at the fairs of Kidderpore, Ooloberiah, and Dum-Dum. These have never shown disease immediately or shortly after their arrival, but have become affected when the disease broke out.
	<i>Question.</i> —What are the names of the murrains you have seen?
Names.	<i>Answer.</i> —Foot and mouth disease (<i>aishoo</i>) and <i>gootee</i> .
	<i>Question.</i> —What are the symptoms of <i>gootee</i> ?
Symptoms of <i>gootee</i> .	<i>Answer.</i> —Staring coat, ears drooping, head depressed, eyes and nose watering, mucous discharge from latter, eruptions in some cases occurring generally on the loins, fore shoulders, not on the belly. The eruption is dry, and in passing the hand over the skin it feels like hard pimples. In some cases I have altogether failed to detect eruptions or pimples of any kind in any place. There is purging of a violent kind, after the second day—very offensive and bloody. The tongue is swelled and protrudes, and the mouth is very sore. In some cases the skin has come off the inside of the lips and gums showing raw surfaces. The disease lasts from 2 to 5 days. Cattle showing an eruption generally die more rapidly than those which have none. Flies collect around the nose of a sick animal, and deposit their eggs inside. When cattle recover they are not fit for work under 6 weeks or two months.
	<i>Question.</i> —When one animal becomes thus diseased, have you found that others are attacked similarly?
Infectiousness.	<i>Answer.</i> —Yes, sometimes one or more on the same or following day. Our plan now is to remove sick cattle at once to a shed in an adjoining compound. This practice has been in force for the last two years; previously, sick cattle were removed to Ballygunge about two miles distance.
Segregation.	

* Mr. Taylor subsequently wrote that he was unable to obtain this information.

<i>Question.</i> —Are animals in good or bad condition more prone to take the disease?	Mr. T. L. Taylor.
<i>Answer.</i> —I feel assured from experience that well conditioned cattle are more liable to take the disease than lean cattle, and that the latter pull through the disease better.	Liability.
<i>Question.</i> —How do you account for your cattle becoming affected by this disease?	
<i>Answer.</i> —1. I attribute it partly to the dome cattle, (those which remove dead carcasses) introducing the disease among the other cattle. I have kept the dome cattle apart from the rest for the last two years, and since then no disease has broken out.	Origin of disease.
2. I think that the disease may be caught by the cattle removing or eating litter on the streets.	
3. The disease also spreads by infection amongst our own cattle.	
<i>Question.</i> —How are the carcasses and hides disposed of?	
<i>Answer.</i> —All cattle dying in our yard are sent to the public skinning ghaut, where the hides are removed and taken over by contractors. The carcasses were formerly thrown into the river and now are disposed of at Dhappa. The contractor pays a yearly sum to the Municipality for the right of removing hides.	Disposal of carcasses.
<i>Question.</i> —Have you any idea how the carcasses of other draught cattle in Calcutta are disposed of?	
<i>Answer.</i> —In the same manner. Sometimes a moochee will buy a carcass from a <i>garriwan</i> —cartman—and take it out of Calcutta, remove the hide and feast off the carcass.	
<i>Question.</i> —How is the manure of your yard disposed of?	Manure.
<i>Answer.</i> —In the dry weather the dung is caked and used for tightening wheels, on the premises. In the wet weather it is conveyed away along with other refuse matter.	
<i>Question.</i> —Have you ever known of man being affected by cattle disease?	Man.
<i>Answer.</i> —No, though I have seen men in constant attendance on sick cows.	
<i>Question.</i> —Have you known of any other animals contracting the disease?	
<i>Answer.</i> —No, the municipal ponies stand in the same sheds, and goats go about in the yard and sheds amongst the cattle, but I have not known of either being attacked. I have known of goats being affected with foot and mouth disease by infection from cattle.	Horses.
<i>Question.</i> —Whose duty is it to inspect cow-houses in Calcutta?	
<i>Answer.</i> —It is the duty of the Overseers of the Conservancy Department.	
<i>The evidence of Mr. R. HARVEY, Superintendent of the Municipal Gaokhana at Boitakhana,—4th April 1870.</i>	
I have been Superintendent of the Municipal Gaokhana at Boitakhana for the last 5 years. The stock under my superintendence consists of 100 head of cattle—bulls and bullocks, principally the former, and 160 country poties. There are at present about 36 extra. The last outbreak of disease among the cattle was in February and March last. At present all the cattle are healthy: out of 5 affected, 2 died and 3 recovered. The disease was what the natives call <i>gootee</i> or <i>bussunto</i> . The symptoms are off feed, ears drooping, coat staring, animal dull, running from mouth and nose, no running from eyes which become sunk in the last stage. I never noticed any sore in the mouth. Purging watery stools or sometimes mucus sets in, in the last stage. They die after 2 or 3 days. I never noticed any eruption on the skin, I never observed the hair fall off or scabs form during the period of recovery. In 1867 the disease was very bad and the loss amongst the cattle attacked was 75 per cent.; the total loss being 30 or 35 in a herd of 100 head of cattle. In 1868 there was very little disease. There were also a few cases in 1869. I consider the disease to be very contagious. The practice has been that the sick cattle are separated from the healthy flock at a distance of 200 or 300 yards. The separation is complete as regards attendance—food, drink, &c., &c. An animal that once gets the disease seldom or never gets a second time. I have observed that after a new batch of bulls has arrived, some of them become diseased both from <i>gootee</i> and foot and mouth disease. The dome caste bulls frequently become affected in consequence of their having to convey carcasses to the skinning ground. They are therefore kept separate and when one animal dies, the ground is <i>lepoed</i> and sprinkled with carbolic acid water. In the febrile stage, I give Tartar Emetic 2 drams, ginger powder 2 drams, nitrate of potash 2 drams, in a sufficient quantity of molasses to make a ball which is repeated twice a day until the fever ceases. If they are off feed I drench them with linseed tea or <i>salbod</i> water and give some tonics such as camphor or gentian. When the diarrhoea sets in, I generally give "gunja" or Indian hemp, 2 drams for a dose	Mr. R. Harvey.
	Stock.
	Rinderpest in 1870.
	Symptoms in 1867, 1868, and 1869.
	Separation.
	Second attack.
	New arrivals.
	Dome cattle.
	Treatment.

Mr. R. Harvey.
Puschima.
Supply.

twice a day with tonics with nutritious food. In the last stage I give no medicine. I am not acquainted with the disease called by the people *puschima*. We get our supply of bulls from Baraset, Chooadangah and other places in that direction where our *garrywans* seize the bulls and bring them to the Gaokhana where we pay Rs. 5 for each animal. They have got instructions to take possession of the animal amicably and not to use force and when a Hindoo claims a beast, he is to let it go at once. Now no bulls are obtained for us on the west side of the Hooghly. I was not here in 1864. There have been 8 or 9 cases of foot and mouth disease among the new bulls during the last month, but they have all recovered. These were off work for 15 days. I use weak solution of blue stone or nitric acid and subsequently apply *linimentum æruginium* in foot cases. I try alum solution in mouth cases. I have never seen any purging in this disease.

Foot and mouth disease.

Treatment.

Present disease.

Disposal of carcasses.

Sheep.

Horses.

I have heard that disease has been prevailing in Manicktollah and Baboobagan. It has never happened that a bull with disease has been brought in from the interior. When the new cattle come in they are inspected by the Chairman of the Justices and they are then invariably in first rate condition and sent to mix with other cattle. When animals die, they are taken to the skinning ghat at Nimtollah and thence carried to the opposite side of the water where the contractor removes the skins, &c., &c., and the carcasses are subsequently thrown into the river. I never saw sheep being attacked with *gootee*. I have however seen sheep with discharges from the nostrils, but I never saw them purge. I have seen the chamars of my Gaokhana bringing in carcasses of cattle which have died and eating the meat thereof. The horses under my charge here never got *gootee*.

J. Stalkartt, Esq.

Evidence of JOHN STALKARTT, ESQ.,—21st November 1870.

Indian murrains identical with English.

Preventive measures.

I am of opinion that the rinderpest and most of the other diseases to which cattle are subject in England are identical with those of India, and the means to check and prevent them are much the same. With respect to rinderpest, the only means of prevention is slaughter of the first few animals in which it appears, and the segregation of the remaining portion of the herd from all other cattle for some time, till there is a certainty that the disease is stamped out.

Killing.

I prefer killing and burying the carcasses immediately also burying their excrement wherever found, as well as some attempt to purify the cow-house or place in which they may have been lodged.

Preventive measures.

An objection might be raised that such a proceeding would interfere with the prejudices of the Hindoos, but this is a very shallow objection, considering that so many Hindoos eat beef in these days and sell their cattle for the purposes (well known) of slaughter; also that the Hindoos by their Shasters should slaughter cows at the Dewalee Pooja; but as cows are dear, they slaughter, or rather sacrifice buffaloes instead. Therefore, to meet all these objections, I propose that the Magistrates, in the outbreak of any disease, be authorised to purchase the animals diseased and liable to disease, and to deal with them as they may think fit. Should a large herd be infected, to purchase all which would, of course, be too much for the present finances of the country, such animals should be kept in the open fields and a cordon established as in England till they die or recover. A cow is too large and too troublesome an invalid to attempt to cure; besides that, the expense would be more than ten times the value of the cow. Next to be considered is the possibility of prevention. This is a very difficult question, for all the cattle of a village are, when not ploughing, entrusted to the village cowherd, whose duty it is not merely to drive them and take care of them, but drive them to some place where they can get something to eat. The zemindars have broken up the grazing grounds of each village—I may almost say of every village, and hence the great difficulty the cattle have in getting any thing to eat: they become emaciated from starvation, and thus extremely liable to the influences of any poisonous air.

Grazing grounds.

One would suppose that the villagers themselves would come forward and exert themselves; but no, they say that there is a curse upon the country; they are not permitted to enjoy the fruit of their own labours, and if they make a profit, they hide instead of enjoying it.

Gootee in Tirhoot in 1845.

I became acquainted with the disease called *gootee* in 1845. I was then an Indigo Manufacturer in Tirhoot. My factory was Bongong near Seetamaree. I had about 200 pairs of cattle. The disease broke out and carried off about three-fourths of them. With the exception of separating a few of the healthy from the sick, nothing more was done. Since then I have often lost cattle, but I have generally attributed the deaths to the chamars. They were suspected of either poisoning the animal or inducing disease. I now, as a rule, whenever an animal dies, have the skin slashed and the carcass buried so as to prevent the chamars deriving any benefit from the hide or flesh. There was an exhibition of cattle in 1864 at Belvidere, Calcutta. Disease broke out severely at this exhibition. I have heard several

Prevalence.

Exhibition of 1864.

accounts of the importation of the disease on this occasion; it was said to have been brought up from Madras from Mr. Floyd's farm and to have been owing to the tricks of chamars who are known to cause the infection of cattle in order to get their hides when they die. I was in England during the prevalence of rinderpest there. From what I heard of the disease then, I am of opinion that the *gootee* of this country is the same disease. I believe that the disease has always been in the country. I have heard planters from Jessore and elsewhere say so. I consider this disease to be one of the greatest hinderances to the improvement of cattle in this country. No sooner does a man try to improve the breed of cattle, than the disease comes and sweeps off the greater part of the herd. I consider the disease highly contagious. I consider all the diseases which affect cattle in this country identically the same as those which prevail in Europe. As regards the measures which I think ought to be adopted, in order to prevent the origin and spread of cattle diseases, I have put down

* Printed above.

my opinions on the subject in a letter which I now hand to you. This letter contains all the suggestions which my experience in India has forced upon me. The butchers are driving the Brahmini bulls to Calcutta for slaughter. The ryots are thus compelled to employ very young bulls for breeding purposes, and even get them with difficulty. This deteriorates the stock. I advocate the system of "parish or village bulls", and I think that these should be bred and fed by the villagers. The people in my neighbourhood very frequently apply to me for the services of my bulls. Formerly there was an excess of Brahmini bulls, and they were a curse and nuisance to the country. Now there is scarcely one remaining in the district. I am satisfied that the ryots would gladly avail themselves of the service of special bulls. I do not advocate the introduction of English breeds into India; but rather the improvement of the country breeds. The Brahmini bulls of these parts used to be uncommonly fine animals. A bull can serve 50 cows in the year.

Question.—How would you propose to prevent the removal of the Brahmini or village bulls?

Answer.—Formerly the people were better off and able to afford the damage which the Brahmini bulls committed, and they were only driven off when there were too many of them, or became very mischievous; now the people are poorer and the Brahmini bull is driven off from every village and at last finds its way to Calcutta. There is no pasture, not even for cattle. I would have a certain proportion of the land retained for as a common pasturage, and the bulls and cattle generally grazed upon this land. I think there ought to be an agricultural Secretary or Department to look into this and kindred matters and protect and improve the agricultural interests of the cultivators of the soil. I think a small fee should be charged for the village bulls to defray the cost of their feed and forage. The three great points I would strongly urge are:—

1.—That the ryot should be secured and protected in the peaceable enjoyment of his land.

2.—That zemindars should be prevented from breaking up pasture land.

3.—That the cattle should not be driven off the ryots' lands.

The old grazing grounds only brought 4 annas an acre. Now, as arable land, they are much more valuable.

I think there ought to be an inspector of stock for each district, or at any rate for every large district. Suitable men might be obtained from the medical schools. They might be sufficiently educated in veterinary matters, and have a small staff of *goallas* attached to them as an executive.

Evidence of RAJAH NARENDRA KRISHNA BAHADOOR, recorded in Calcutta, 15th November 1870.

MOORAGATCHA.
Narendra Krishna.

Locality.

My estate at Mooragatcha, 24-Pergunnahs, consists of 40 or 50,000 beegahs, and the soil is generally alluvial and fertile.

The cattle on my lands are of the Bengali breed only, and their average value is about Rs. 15. The value of cattle in Bengal has risen nearly 25 per cent. during the last 10 years. Cattle on my estate are used for agricul-

Breed and value.

ture and burden, the agricultural season extending from April to July. Bullocks only are employed in agricultural operations, and cattle are on the whole well treated, being housed at night in thatched sheds raised about 1 foot from the ground, with mud walls and grass roof. A few cows are kept to supply milk for private use. The cattle are watered from tanks and fed on rice straw, chopped up with some oil-cake, and inferior rice pounded. The common grasses are called *khar* (খড়) *khol* (খোল) and *kumro* (কুড়ো).

Uses of cattle.

Feeding and watering.

MOORAGATCHA,
Narendra Krishna.

Cattle are herded by day only in all seasons except during the rains when they are kept tied up. They are not driven for pasture to other districts, as there is a sufficiency of pasture in this district. The cattle are generally in good condition.

Special bulls are not retained for the purpose of keeping up stock, but there are Bengali bulls in every village. Cattle are occasionally imported from the Midnapore side of the river at a cost of from Rs. 10 to 40. Purchases are made privately and also in hâts (markets) within the district.

Cattle are exported to Calcutta for slaughter by the butchers. The number of dealers in hides is about 200, but their number has decreased since the villagers were ordered by the police to bury their dead cattle. Hence moochees and others cannot now readily get hides. Hides are sold in the country for 1 rupee each, and the trade is conducted by moochees who take the hides to Calcutta, though sometimes purchasers go to them direct. My impression is that hide merchants make advances to the moochees in order to ensure a supply of hides against a certain date.

Cattle murrains have always existed more or less in this country but never to such an extent as in 1868, when a very severe plague raged in Diamond Harbour.

Bussunto (Rinderpest) first breaks out spontaneously and then spreads by infection. This disease does not prevail in any particular season, but often appears in March. There has been none this year.

In the year 1868, 75 per cent. of the cattle on my estate which were attacked with *bussunto* died, and only 25 per cent. recovered.

Strong healthy cattle were in 1868 most liable to be attacked with *bussunto*. Young and old animals were alike subject to the disease.

The symptoms were:—ears drooping when the animal was first attacked; appetite and rumination lost; when cattle began to eat they were out of danger; the tongue swelled. There was purging, the evacuations being mixed with blood and mucus; the milk was suppressed.

This disease is in my opinion contagious.

The native treatment consisted of sugar water, boiled rice in a liquid state, and green grass. I can't say what medicines were given. No sanitary measures were adopted, and the carcasses of dead animals were buried only when special orders were issued through the police in the latter end of 1868.

Sick and healthy animals were kept in the same shed, as no one had two sheds. Hides were at first taken by moochees and sold, subsequently hides were not allowed to be taken.

Other animals were not affected with cattle plague and men are not liable to contract the disease. No disease prevails at present.

Ryots in 1868 could not pay full rent, but next year the crops were good and they were able to pay the arrears. I got 15 or 16,000 rupees less income in that year from my zemindary; some ryots did not pay any rent. No ryot was obliged to give up the land altogether. I did not press for payment when a true report of great loss was ascertained. In only one or two villages was there less land cultivated than usual. There used to be a great many mahajuns (money-lenders) on my property; but the ryots are better off now, and they are not so many. I don't encourage mahajuns. The rise in the price of paddy has enriched the ryots and enabled them to throw off the mahajuns to a great extent. The mahajuns advance money and take it back in paddy with great interest.

I charge no *Bhagaria jumma* (rent for right of skinning).

Question.—Is there any tradition or written notice of cattle disease in the old Hindoo writings?

Answer.—We have read of cattle disease, but I can't give the reference; I shall however inquire and endeavour to trace it.

Question.—What are the religious feelings of the people with reference to cattle?

Answer.—The cow is a sacred animal, and still worshipped by Hindoo females. If a Hindoo kills a cow he is liable to penance and has to expend money in feeding Brahmins. This feeling is gradually vanishing, but the Hindoos would still strongly object to any compulsory slaughter of cattle.

I believe that the disease springs up separately in each village, and that an adjoining village may escape infection. I would thus hesitate to recommend any measures for preventing the entry of disease into a village, as far as I have had means of judging; but when disease does appear in a village, I would have the diseased and healthy cattle kept separate. I would have a separate house in the village in which the sick cattle should be placed and treated, and every cattle owner compelled to remove the sick to this house. I would have the carcasses burnt or buried.

Means of segregation.

Question.—How would the expense of this system be met?

Answer.—By subscription among the villagers; one or two cottahs in each village would no doubt be given up by ryots and zemindars for this purpose, and this would have to be enforced by some law. I think that the land should be permanently kept apart for this purpose, and perhaps enclosed, and a temporary shed erected whenever the disease made its appearance. No zemindar would object to giving a small patch of land for this purpose. If there was any difficulty about the matter, the ryots might pay the rent of this. The village mundul might be made responsible for the immediate erection of a hospital shed on the appearance of disease. The mundul of the village should also be responsible for immediate report of the outbreak being given to the Police. If he does not give immediate notice, a small punishment would make him more careful.

Information furnished by BABOO DEGUMBER MITTER,—Calcutta, 16th November 1870.

MOORAGATCHA,
Narendra Krishna.Bahoo Degumber
Mitter.

I have estates in Cuttack, Jessore, and 24-Pergunnahs, of which the area is as follows:—

40,000 acres in Cuttack.
7,000 „ „ Jessore.
13,000 „ „ 24-Pergunnahs.

The soil varies, being clayey, sandy, mouldy, or alluvial.

The number of cattle on my estates can be roughly estimated if we suppose that 10 beegahs (= 3 acres) of land can be cultivated by a pair of bullocks. The cattle are only of one breed, viz., Bengalee. Their average value varies from Rs. 5 to 30 or 35. During the last 10 years the value of cattle has increased by 25 to 30 per cent. The causes of this are—

1. The increased use of cattle for food.
2. Money has become cheaper and the value of all produce has increased.
3. Agricultural operations have been extended.
4. The demand for cattle has increased.

I do not think that disease has affected the market generally or permanently, though it may do so locally.

Uses. Cattle are mostly used for the plough; three-fourths are used for agricultural purposes, and one-fourth for gharries, pack, and dairy.

Mode of housing. Cattle are always housed at night in sheds with mud walls and thatched roofs.

Cattle used for agriculture are stall-fed. They get rice, straw, and oil-cake three times a day. There are grazing grounds, namely, paddy fields, when the crop has been removed. During the rains also they are stall-fed. There are no common grazing grounds kept specially for grazing purposes. This is only possible in high lands; cattle are let loose and herded during the day, and those of different villages mix together.

Cattle are not herded and driven for pasture to other districts. Their general condition is good. During the rains, however, while they are confined and stall-fed they fall off.

Stock, how kept up. Every village breeds its own cattle, there is no system of breeding. Brahminee bulls are let loose and they serve the cattle.

Cattle are locally purchased by the people, but not imported from other districts, or at least very seldom.

There are cattle markets in the neighbourhood of Calcutta, but not in the interior of districts. Private purchases take place at village punchayets. This is the case all over Lower Bengal.

Goallahs collect cattle from country districts and sell them to the butchers. Beparees also collect cattle for sale at markets.

Baboo Degumber
Mitter.

Carcasses are thrown into the *bhagar*. The moochies remove the hide and make shoes, &c. The surplus hides are sold by them to local dealers. These sell to pykars, who are general agents working on a large scale. These men advance money on a *hâi chita* (note of hand). I am not aware that any poisoning of cattle goes on in my zemindary. No complaints have been made to me on that score, and I have issued a circular to my naibs that no *Bhagaria jumma* is to be taken.

The moochi of the village, who has a right to remove the skin of dead animals, is expected to make a present of a pair of shoes to the head man of the village.

I cannot say exactly what the mortality from plague generally is, but I should say that in a shed or portion of a village attacked by plague, two-thirds of the cattle are lost.

History of plagues. My memory does not carry me back beyond 20 years. I think cattle disease is worse of late years, that is, more frequent, tedious, and widespread.

The only plague I am acquainted with is *bussunto*. *Aishoo*, or foot and mouth disease, breaks out in the beginning of the rains, and embarrasses the operations of the ryots greatly.

Bussunto generally breaks out in February and March.

All kinds of cattle are equally liable to be attacked with *bussunto*.

Symptoms. In *bussunto* an eruption breaks out on the skin, and the more copious the eruption, the greater the chance of recovery.

Blood is passed from the bowels, and a copious discharge marks a severe type of disease.

I consider the disease to be contagious, but I am not quite certain about it. I think there is something arising from the soil which contaminates the atmosphere and so gives rise to the plague.

Treatment of *bussunto*. Ghee is generally given to animals attacked with *bussunto*, and conjee and other soft food is also administered.

No medicines are employed. Ghee is considered beneficial.

No separation of sick and healthy cattle is allowed in Cuttack on principle. This principle is a religious one. They are afraid that by separating the cattle they will offend *Silla*.

As regards separation, in order to secure the good will and co-operation of the villagers, the practical advantages of separation would have to be proved and demonstrated to them. There would be no difficulty in getting a little land for the purpose of erecting a hospital or place for housing sick cattle. In the other districts separation to a certain extent is practised.

Sanitary measures. The carcasses of dead animals are not buried.

Horns and hoofs. The horns of dead cattle are sold. There is a large trade in buffalo horns, but none in hoofs.

Other animals are not liable to be attacked with *bussunto*, and I have never observed the coincidence of epidemics and epizootics.

There is some disease at present in Cuttack. Two or three villages were attacked severely in March, and I have had reports of its having again broken out lately.

Mr. R. Sheriff.

Information furnished by MR. R. SHERIFF regarding the cattle disease at Port Canning (21 miles from Calcutta) and its vicinity during 1868-69.

The Port Canning Zemindaree includes a large tract of land in the Soonderbuns, but I cannot give its exact extent. It contains over 7,000 cattle, chiefly of the Bengalee breed, and worth at the present time about Rs. 10 each. Ten years ago they were worth about Rs. 5 each only. There are no chamars on this land; no hides are sold, the animals being disposed of with their hides. The cattle above referred to are used for agricultural and dairy purposes, and also for burden, but not for draught purposes, as there are no carts.

They are worked hard from June till September in mud or water, over six hours a day in the *Amun Dhan* cultivation, when they are turned loose to feed themselves as best they can. They are not brought in for the night, and no food of any sort is given them.

Agriculture.

No sheds of any sort are put up for cattle as a rule; indeed it is the exception if there are such. Mr. R. Sheriff.

From January till June cattle are allowed to go about at will; from June till September they are hard at work. From September till January they are sometimes fed a little, so as to prevent them going into the paddy. The grass on which they feed is for the most part rank *dhooob*, and no grain of any sort is given them; the water they drink is all obtained from rivers or tanks, as there are no wells of any sort. Cattle also feed on *Buksah* grass, which is nutritious, but the early shoots after the rain are purgative.

The cattle during the rains get into deep water, and feed on the shoots of the grass which float on the top.

The cattle are herded in lots of 2 or 300, and remain in the locality all the year round, but no herds from other parts are brought to graze. They are for the most part in good condition, except after the hard working time, i. e., after September, when they are in bad condition from work, and when there is, to a certain extent, a scarceness of food, owing to the extent of land under cultivation.

The stock is kept up partly by breeding, but the number reared is not sufficient to meet the demand, and many are imported from the *hâts* in the vicinity of Calcutta. In the last two years 1,000 to 1,500 have been so imported at an average of Rs. 10 each. Cows are not put to any particular bull, and no selection of males is attempted.

There being no markets in the locality, cattle have to be bought elsewhere, though there is an interchange amongst the ryots themselves. Cows are used as much for agricultural purposes as bullocks, and can do as much work; whilst a barren cow is worth twice as much as a bullock, and will do twice as much work.

Exportation. No systematic exportation of cattle is carried out.

As a rule, the cattle are very healthy, but during the plague from 38 to 40 per cent. died of *puschima* and *gootee*. From *gootee* alone only 5 per cent. died. No deaths occur, or hardly any, from foot disease.

Plagues prevailed both in 1868 and 1869, but no other disease occurred except *puschima* or *gootee*.

Plague always followed a fresh importation of cattle, even if two or three new ones came in. Though there was nothing the matter with them when they came, they were always the first to show disease, and it then spread to the others if those affected were not at once removed.

No disease breaks out except when imported cattle come.

Disease shows itself from May to July, as that is the time during which the fresh cattle are imported. They are rarely imported at any other time, but if they are, though they come from the same markets, no disease seems to follow.

Puschima and *gootee* appear at one and the same time, i. e., from May to August: not one without the other. *Puschima* shows itself by swelling of the tongue and throat, whilst in *gootee* an eruption appears on the body. An outbreak will last from May to August, i. e., during the time of importation.

Of those attacked with *puschima*, not 10 per cent. recovered. In 1868 about 500 out of the 7,000 were attacked with either *puschima* or *gootee*, and in 1869, 800 out of the same number.

Both sexes were equally liable to be attacked, but young stock are not so liable to contract the disease as those from two years old and upwards.

Condition did not seem to have any effect either way. Calves were in some cases apparently affected by their mother's milk.

The symptoms of *gootee* are—rough coat and body covered with pustules, which contain matter after the third day. These pustules appear chiefly on the stomach and udder; eyes, nose, and mouth water; gums are inflamed or tender and ulcerated; body very hot 24 hours after first attack; bad cough; when mouth was opened a great deal of panting; great restlessness; quick breathing; did not notice any shivering; no swelling of the throat visible; breath and discharge from the mouth

Mr. R. Sheriff.

very offensive; diarrhoea after third day: faeces pultaceous foetid, green (like chopped grass), and discharged with great force (3 or 4 yards sometimes); the more advanced the case, the further the ejection; did not observe blood.

Cows wish to drink, but cannot; no appetite, no chewing of cud from first day; symptoms of hoven about third day severe.

Puschima is characterised by exactly the same symptoms as *gootee*, except that the throat swells internally; there is no eruption; diarrhoea sets in sooner and the disease proves more rapidly fatal (4th or 5th day, *gootee*, 8th to 11th.)

I am of opinion that both *gootee* and *puschima* are very contagious; I know of two healthy grants of land where disease broke out on the introduction of a single bullock, which first took ill, and then infected others, which died.

Imported cattle did not get the disease so severely as the old stock. No treatment was attempted except in five cases, where brandy and pepper were given, in the proportion of a handful of black pepper to half a bottle of brandy.

No sanitary measures, such as burial or disinfection, were adopted, and not even segregation. Hides, horns, and hoofs were not removed, no Chamars being allowed in the place.

Sheep and goats were not affected, nor buffaloes; no more were horses. I am not aware of human beings ever being affected. I have not heard of the existence of any cattle disease at present.

There are no high lands in the neighbourhood, and the country is inundated for at least five months in the year.

The diseases above referred to do not seem to be affected by changes in the climate.

Diamond Harbour, 4th November 1870, 2 p. m.

Diamond Harbour.

BROJO KISSORE GHOSE, 25 years old, a resident of Korojolee in Diamond Harbour Sub-division, says:—I am a cattle owner, and always keep 30 to 35 head of cattle in my house. I know the disease *gootee*, which is also called *bussunto* when attacking cattle. I saw

Rinderpest in 1867-68.

he has seen the disease from his boyhood, and that it has been in this part of the country from time immemorial. There are always one or two scattered cases here and there, but the only severe outbreak that I met with

was in 1867 and 1868, and on account of this severe murrain a six-anna portion (37 per cent.) of arable land could not be brought under cultivation during these years. At this time I heard that two or three families

belonging to the village of Bopor (I forget the names of the people) were totally ruined partly from loss of stock and partly from their inability to sow their land. These families had either to sublet a portion of their land or relinquish it into the hands of the landlord. The death-rate at the time of

the severe outbreak was 80 per cent. of the number attacked. In those cases which occur sporadically, when the disease has not assumed an epizootic form, I do not think more than five or six per cent. die. Generally speaking, in the sporadic form, or in those cases occurring at a time when the disease has not assumed an epizootic form, very often the cattle affected do not entirely lose their appetite, and do not, as a rule, purge, but in such cases eruptions on the skin are almost sure to make their appearance. The animal generally gets well. When purging takes place and there is no eruption it is nearly always fatal. I am inclined to believe that cattle poisoning was not practised here during

the outbreak of murrain in 1867 and 1868, but I have heard of cattle being poisoned occasionally by the moochees. Cattle owners can easily detect the difference between the symptoms of cattle poisoning and *gootee*. Cattle die in from four to five hours from the effects of poison, whereas a case of *bussunto* dies in from three to seven days. I have heard of a disease called *puschima*, but it comes on rarely. I have never seen it.

The deponent concludes.—I am thankful to Government for sending the Commission in order to prevent, if possible, future losses.

NOBIN CHUNDER CHATTERJEE, 28 years old, a resident of Dhera, states:—I am a cattle owner, and have always in my house five or six head of cattle, partly for milk and partly for cultivation. I have had *bussunto* among my cattle in the year 1868

and the year previous. I never saw the like disease on a previous occasion, but I have heard on good authority that there were scattered cases of *bussunto* here and there before 1867. Now there are one or two sporadic cases of purging here and there at times. We consider *bussunto* to be an infectious disease, and therefore we have been separating the sick from the healthy cattle by removing the sick from the common cow-house to another building in the same compound. I had at the time of the outbreak of 1867-68 six head of cattle, all of which took ill, but I lost two head of cattle. I fed the sick cattle with buttermilk, and rice gruel; they could not eat grass or straw. I am aware of no cases of total ruin falling upon a family from loss of cattle.

Rinderpest in 1867-68.

Infectiousness.

Separation.

Treatment of sick.

STOUBOR CHUNDER SIRCAR, 51 years old, a resident of Malloo:—I am a farmer and hold 7 to 800 beegahs of land. I have always kept 28 to 30 head of cattle in my house. I have seen the disease *bussunto* that raged among cattle in this sub-division in 1867 and 1868.

Foot and mouth disease in 1867-68.

were sore feet and sore mouth.

BHABOO KHAN, 60 years old, resident of Hogela, Debeepoor:—I am a cattle owner and have always had a large number of cattle. In 1867 and 1868 there was an outbreak of *gootee* amongst the cattle in our part of the district: one of my cows took ill, and soon after I separated it from the herd. That animal died, but the others escaped; these I had also removed to a house 100 feet distant from my place. The cow that died had bad cold at the first, and then purging watery stools, refusal of food, and death ensued on the second day.

Rinderpest in 1867-68.

after I separated it from the herd.

Segregation.

Effect of the measure.

SHOBANUNDO PROMANICK, 27 years old, a resident of Poroolia:—I own 30 head of cattle and am a farmer. Last year my cattle suffered from *bussunto*, and the four that had the attack recovered. All had eruptions on the skin, and they did not purge much. My village cattle did not suffer from the murrain of 1867 and 1868.

Rinderpest in 1869.

Mild form.

DWARIKANAUTH HALDAR, 58 years old, an inhabitant of Mothoorapoor:—I am an agriculturist and own eight head of cattle. In the years 1867, 1868 and 1869 my cattle had the disease called *bussunto*; they had sore feet and eruptions on the skin; all my cattle recovered.

Rinderpest in 1867-68.

they had sore feet and eruptions on the skin; all my cattle recovered.

TOMEZOODDEEN JEMADAR, 35 years old, a resident of Chundnuggur:—In the year 1867 there was an outbreak of a disease which we call *bussunto* among my cattle, six in number, of which four died and two recovered; the symptoms were dullness, drooping of ears, purging blood and watery matter, coat staring, and death in seven days. After recovery the skin peeled off. I have owned from the time of the outbreak 29 beegahs. In consequence of the loss of my cattle, five beegahs of land remained fallow: my relatives also lost about seven head of cattle from the same disease.

Rinderpest in 1867.

Symptoms.

Effect on cultivation.

MOTHOM WODOCK, 38 years old, a resident of Compoor, states:—At the time of the cattle disease, i. e., in the year 1868, I had 18 head of cattle, of which 17 took ill of *bussunto*, 9 died within a fortnight, each case lasting for 4 or 5 days, and the remainder recovered. The symptoms of the disease were drooping of the ears, body cold, mouth and eyes watering, purging after 2 or 3 days blood, and very offensive stools, refusal of food, and eruptions on the skin. I have never seen the disease called *puschima*, but I have heard of its appearing occasionally in the village and killing the affected animal in a day. There are no other symptoms except swelling out of the stomach, and when purging sets in the animal recovers.

Rinderpest in 1868.

Loss.

Puschima.

DOORGARAM SIRDAR, 50 years old, a resident of Ramchunderpoor, says:—In the year 1868 my cattle, consisting of 4 animals, took ill of *bussunto*; 2 died and 2 recovered. I have never seen any previous outbreaks of the like disease; the symptoms are drooping of ears, eyes and mouth watering, body cold, purging and death in 5 or 7 days. I have seen the disease *puschima*; it consists of a swelling of the belly. In such a case the affected animal dies within the day. I cannot say whether *puschima* is infectious or not; it appears on some rare occasions, but *bussunto* is infectious.

Puschima.

Infectiousness.

DIAMOND HARBOUR.

MADHUB CHUNDER BABOO, aged 48 years, a resident of Potduta, says:—I and my brother have always had 10 or 12 head of cattle. In 1868, 6 of these took ill of *bussunto*, of which 2 died and 4 recovered. The disease prevailed in my village, but not very severely.

DINONATH BOSE, 45 years old, a resident of Rutnessurpoor, deposes:—In 1868 cattle disease named *bussunto* made its appearance in my village and in the very many villages around me, and killed a good many cattle. I had 9 head of cattle, all of which took ill, but only 2 died; the remainder recovered. The symptoms were refusal of food, purging bloody stools, drooping of the ears, and death in 5 or 6 days. I have never seen *puschima* disease.

VISITED PAROOLIA VILLAGE, two miles distant from Diamond Harbour. Saw a cow 5 years old (2 calves) ill 7 days, discharge from eyes, nose, and mouth, particularly viscid from nose, congestion of gums and buccal papillae, 2 or 3 faint streaks of excoriation, and in one streak a very slight appearance of aphtha, coat staring and here and there eruptions, but not well marked. The discharge from the nostril is so viscid that the animal experiences great difficulty in breathing; mucous membrane of vagina congested, but no aphtha; udder and inside of thigh and arms carefully examined, but no eruption found. Has been purging watery stools for three days; the bowels have somewhat improved since yesterday; no blood has been observed. In another house in the village four others had been affected with a like disease, but they recovered a month ago. In another village, Abdolpoor, the disease called *bussunto* is still raging, and it has been so for the last three months. The number of deaths is upwards of 100. There is also disease in the village of Macalal, one mile distant from this place. The cattle of Kustcofot are still suffering; the Cofots have lost 5 or 6 head of cattle. There was disease in the neighbouring hamlet. The loss of cattle there can be estimated at 100, if not more. The disease prevailed there two months ago, and was bad in August and September last.

The informant Ramdhun Mandal gives the above information.

VISITED MACKALAL, one mile distant from Diamond Harbour. Saw a bullock 7 or 8 years old, condition fair, 4 days ill; commenced purging from this day, liquid stools, no blood, slight discharge from eyes and nose, borders of gums around teeth congested and slightly excoriated, eruption on the body, coat staring, not eating anything. Giving ripe plantains and sugar water. Disease commenced in this village from September last, and one man has lost 6 head of cattle; others have lost their cattle also; one Soorjee Coomar lost 2 and Mullick lost 3 head.

Information furnished by the people of Kulpee on the subject of recent and past Murrains, recorded by BABOO R. D. MOOKERJEE on the 9th and 10th November 1870.

1. RAMDHONE MONDUL, of Doorganuggur, near Kulpee, caste Koyburto, aged 36 years, a cultivator of land and cattle owner, says:—

I have six head of cattle, all of which were attacked with *bussunto* in 1868. One only died and the rest recovered. The symptoms of the disease were—skin cold, bloody stools, shivering, drooping of ears, &c. The duration of the disease was between 10 and 15 days, and the deaths above-mentioned occurred within 6 days. I have 15 beegahs of land. Of this, one beegah and a half remained *poteet* (fallow), owing to disease having attacked my cattle. In my village about 300 cattle were attacked with disease in 1868, and of this about 80 or 90 cattle died, but none of the villagers were wholly ruined on account of the loss of cattle. Before 1868 I never saw any cattle disease, but I have heard that such disease broke out among the cattle before that year, though the deaths were not so numerous. No disease occurred in our village after 1868. The death-rate among the cattle in our quarter in the above year was 25 per cent.

2. BHOYRUB MISTREE, of Doorganuggur, caste Dhupi, aged 60 or 65 years, cultivator of land, washerman, and cattle owner, says:—

I had eight head of cattle in 1867-68, all of which died of *bussunto*.

I have 15 beegahs of land, half of which I cultivated in 1868 and the rest remained uncultivated. After half of my land was ploughed, my cattle fell sick and died, and I could not cultivate the remaining land for want of cattle. The symptoms of the disease were,—coldness of the skin, bloody stools, shivering, &c. The sick cattle did not eat anything during the period of illness. In my neighbourhood about 40 or 50 cattle fell sick, and nearly all died, with the exception of from 5 to 10 only. I bought only one bullock afterwards and sublet my lands, having no means to buy cattle or carry on cultivation. Balukdas Byragee lost all his cattle in the above year, and is now in jail.

History. I never saw or heard of *bussunto* disease among the cattle before.

3. MADHUB SADOOKHAN, of Kulpee, caste Kulloo, aged about 45 years, cultivator of land, and oilman, says:—

In 1868 I had nine head of cattle, all of which died of *bussunto*. The deaths took place within from 7 to 12 days. The symptoms were,—watery and bloody stools, skin cold, watering from mouth and nose, &c. I estimate the number of cattle in my village at 300 or 350, out of which 150 or 200 fell sick, and about 100 died. Few lands remained fallow, as the people bought new cattle for agricultural purposes. I never saw the diseases *puschima* or *bussunto* before, but I have heard that these diseases did occur before, though to a smaller extent, and the death-rates were not high. No ryot in my neighbourhood was ruined on account of the loss of cattle.

4. KALLY SHEIK, of Kulpee, aged about 50 years, cultivator of land, and cattle owner, says:—

Two cattle died in my house in 1868 of *bussunto*.

There were in my village about 300 or 350 cattle, out of which about 150 fell sick and about 100 or 125 died, and the rest recovered. I have 14 beegahs of land, out of which about 3 beegahs remained fallow owing to the sickness and death of my cattle. No ryot was wholly ruined by the loss of his cattle. About $\frac{1}{16}$ ths or $\frac{1}{8}$ ths of all the land in my village remained uncultivated in the above year. I never saw or heard of *bussunto* before in my neighbourhood. I have seen *puschima* disease before. The chief symptom was swelling of the belly. The present disease *bussunto* is of a different kind, its symptoms were bloody stools, watering of mouth, skin cold, disinclination for food, &c.

5. OBHOY HALDAR, of Kulpee, caste Kyburto, aged about 30 years, cultivator of land, and cattle owner, says:—

In 1868 I lost four head of cattle by *bussunto* and two recovered. The symptoms were,—bloody stools, watering of mouth, skin cold, &c. The deaths happened within from three to five days, and the recovery was effected in from 20 to 25 days. There were about 300 or 350 cattle in my village that year. Nearly all fell sick, and about 150 died and the rest recovered. I had 11 beegahs of land, half of which I could not cultivate owing to the loss of cattle. No ryot was wholly ruined in our quarter. About 4 or 6 annas of land remained uncultivated in my village. I never saw this disease before, but I heard that rare cases of *bussunto* did occur among the cattle, and the mortality was small. I never saw the disease called *puschima*. No particular treatment was adopted, but the goddess *Shitolah* was worshipped.

6. PROBHORAM HALDAR, of Bhogobanpore near Kulpee, caste Koyburto, aged 60 years, cultivator of land, and cattle owner, says:—

In 1868 I had ten head of cattle; about six fell sick and died, and the rest, though also attacked, recovered. The symptoms were bloody stools, watering of mouth, skin cold, &c. The disease was *bussunto*. I have about 60 beegahs of land, out of which about 5 to 7 beegahs remained uncultivated in 1868. There were about 200 or 250 cattle in my village, out of which about 150 or 175 fell sick, and about 100 or 125 died, and the rest recovered. No ryot in my village was wholly ruined owing to the loss of his cattle, but about $\frac{1}{16}$ ths of the land was left fallow for want of cattle. When I was 15 or 16 years old, I saw one or two cases of cattle disease, but the symptoms were not at all the same. The cattle did not eat, and there were no eruptions on the skin. I did not see any eruptions on the skin in 1868. I never saw *puschima*. In 1868 I did not try any regular treatment, but worshipped the goddess *Shitolah*.

DIAMOND HARBOUR.

7. KARTICK HALDAR, of Bhogobanpore, caste Kyburto, aged about 36, cultivator of land, and cattle owner, says :—

In 1868 I had six cattle, two of which died of *bussunto* and one recovered; the remaining three did not catch the disease. There were in my village that year about 200 or 250 cattle, out of which about 150 fell sick and about 90 or 100 died, and the rest recovered. The symptoms of the disease were,—general aversion to food, watering of mouth, nose, bloody and loose stools, skin cold, &c. The deaths took place within five or six days of first attack, and recoveries in 20 or 25 days. No treatment was attempted. I had ten beegahs of land, out of which about three beegahs remained uncultivated for want of cattle. About $\frac{1}{16}$ ths of all the land remained uncultivated for loss of cattle. No ryot was wholly ruined in our village from the loss of his cattle. I did not notice whether there were eruptions on the skin of sick animals; I did not see them. I never saw any such disease before, but I heard that there were rare cases in past times. The past disease was also called *bussunto*, but I cannot say what were the symptoms.

8. PRETRAM HALDAR, of Kamarchuck, about one mile on the east of Kulpee, caste Poda, aged about 60 years, cultivator of land, and cattle owner, says :—

I had eight cattle in 1868, out of which four fell sick and died, and the remainder did not catch the disease. The disease was called *bussunto*; some called it cholera. The symptoms were,—watering of mouth and nose, loose and sometimes bloody stools, skin cold, &c. There were no eruptions on the skin. The diseased cattle did not eat anything. There were about 50 or 60 head of cattle in my village, out of which 25 or 30 fell sick and 28 died, and two only recovered. I have about 12 or 14 beegahs of land, out of which about 2 beegahs remained uncultivated for want of cattle. No ryot was wholly ruined in my village from the loss of his cattle. About 25 beegahs of land remained uncultivated out of 100 or 150 beegahs in the whole village. I never saw any such disease before, nor did I ever see *puschima*.

9. BODON HALDAR, of Kulpee, caste Koyburto, aged 60 years, cultivator of land, and cattle owner, says :—

I had 16 cattle, 15 of which died in 1868 of *bussunto*, the symptoms of which were,—aversion to food at first, swelling of the belly, and then watery and bloody stools, shivering, and skin cold. The remaining one was diseased also, but recovered. The symptoms were the same, and yet it recovered after a month and a half. My cattle died in from 6 to 10 days. I have 30 beegahs of land, half of which I cultivated in 1868 by borrowing cattle, and the other half remained fallow. I have since bought one bullock, and relinquished a greater portion of my lands. In my village there were about 300 or 350 cattle, out of which about 200 or 250 fell sick, and about 150 or 175 died. No ryot was wholly ruined, but many became poor owing to the loss of cattle. About $\frac{1}{4}$ th of the entire lands of the village remained uncultivated. There were no eruptions on the skin. I never saw any such disease before, but I heard from my father that *gootee* broke out among the cattle before, though the cases were rare, and there were not many deaths. I never saw *puschima* before.

10. LOLLCHAND HALDAR, of Kulpee, caste Charal, aged about 50 years, cultivator of land, and cattle owner, says :—

I had four cattle, three of which died in 1868 of *bussunto*. There were no eruptions on the skin, and the symptoms were,—watery stools, watering of the mouth and nose, and general aversion to food. The remaining one of my cows was also diseased, but it recovered after a month's illness. The deaths occurred within six to eight days. I had 10 beegahs of land, two of which I could not cultivate on account of the sickness and death of the cattle. About $\frac{1}{4}$ th of the whole land remained fallow for want of cultivation, owing to the loss of the cattle. About 300 cattle fell sick in my village and adjacent places, out of which 150 or 175 died. No ryot was wholly ruined owing to the cattle disease, but many suffered a good deal. A portion of land belonging to each ryot remained fallow. I never saw this disease before in my life. I have heard that occasionally such cases did occur, though very seldom. I never saw the disease called *puschima*.

11. MJDHOO CHRISTIAN; of Kulpee, convert, aged about 45 years, cultivator of land and cattle owner, says :—

I had four cattle, three of which died in 1868 of *bussunto*. The symptoms were,—general aversion to food, watery and bloody stools, watering from the mouth, and cold skin, no eruptions appeared on the skin. I held 8 beegahs of land, 6 of which I cultivated and 2 remained fallow for want of cattle to plough it. About $\frac{1}{4}$ th of all the land remained uncultivated owing to the sickness and loss of cattle. There were in Kulpee about 300 or 350 cattle, out of which about 200 fell sick and about 150 or 175 died of the disease. No ryot in my village was wholly ruined by the loss of his cattle, but every one suffered from not being able to cultivate all his land, and several ryots' holdings were taken from them by the zemindars and re-settled with others. I never saw this disease before in my life, nor the disease called *puschima*. *Bussunto* is not called by any other name in our neighbourhood.

Evidence of BABOO SUMBHOO CHUNDER GHOSE, recorded by BABOO HEM CHUNDER KERR on the 20th November 1870.

BABOO SUMBHOO CHUNDER GHOSE, of Ceronjolee, in 24-Pergunnahs, states :—I am a land proprietor and an agricultural farmer.

I have always owned 30 to 35 head of cattle. In the month of Falgoon (February) or Cheyt (March) 1273 B. S., the Tewars of the village of Boshor, about two miles distant from my house, purchased 12 or 13 bullocks at Oslooberiah haut, and four or five days after their arrival at home, one of the new batch showed symptoms of the disease known in this part of the country as *bussunto*, and the other cattle in their house, both new and old, then got ill, and gradually the disease spread from one place to another. The symptoms of the disease are,—first, fever and refusal of food, then watery discharge from eyes, nose, and mouth, coat staring, excoriations in the mouth, and purging watery stools mixed with blood and pus-like matter and small bits of flesh. In some cases I have seen eruptions of the size of a pea on the body, and in others the hair merely stood on end, and if any of the affected animals got better, the outer skin, in some cases, would come off. A sick animal generally sank in five to seven days, and if it recovered, it would take 15 to 17 days. The outbreak continued for upwards of two years, and the agricultural masses suffered much, inasmuch as they not only lost their cattle in numbers, but had to give up cultivation of one-fourth of their holdings.

The disease is infectious, and yields to no medicine known. I myself took much care of my cattle at this time, and out of 20 head of cattle attacked, I lost only three. I used to feed my cattle with green and soft *culmee sak*,* and drenched three or four times with rice gruel. I used to clean the cowshed twice, and I removed the healthy to another room, though in the same compound. I did not use any medicines, nor did I know of any. People in every part of the country knew the disease to be contagious, and the disease was everywhere, and they could not think of separating the healthy from the sick. Besides, they had no means of doing so. The cattle, as a rule, graze during the day in the fields, and are kept in the house at night; but during the epizootic, people did not follow this practice freely, and sick cattle were never taken out of the house. At the commencement of the disease, carcasses were thrown into the village *bhagar* as before, but latterly on receipt of orders from the authorities, those who could afford, buried them, and those who could not, threw them into the river or canal. The moochees, in the event of the dead bodies being thrown into the *bhagar*, took the skin as they had always done. I am not aware of any assessment upon the *bhagars*. The moochees make no returns to the zemindars. I did not suspect any cattle poisoning at the time of the plague; but six months after the disappearance of the disease cattle poisoning was suspected, but the villagers and zemindars watched the moochees, and the suspicion was removed. In fact, a few cattle died of what I think to be poison.

The moochees use either *sunko* or *darmoj* poison, and they tie it up within plantain leaves, the poison being first rubbed in oil. The hides are sent to the Calcutta market by the *pykars* (dealers or

* *Ipomoea Grandiflora*.

DIAMOND HARBOUR. rather brokers), who make advances to the moochees for a stipulated number of hides within a certain time. The horns and hoofs are not used. In the year 1857 cattle murrain (*bussunto*) prevailed amongst cattle in this part of the country, and proved destructive to a good many cattle; but it was not so severe as the last one. *Bussunto* is not a new disease, and it comes on after an interval of four, five, and six years, but does not cause much loss of cattle. There is another disease called *puschima* which attacks cattle rarely, but it is not contagious. In this disease the eyes, mouth, and nose water. There is no hoven, and the cattle never leave off food. It is not very fatal. There is also another disease called *aishoo*, it is not fatal also; and when the feet and mouth get sore, we wash them with alum water. Recently, the price of cattle has been steadily on the increase, because they are becoming few, the number being reduced from disease, and from slaughter by the butchers. The animal that fetched Rs. 16 ten years ago, costs now Rs. 23, if not more.

There is little pasture land in this part of the country, and this is owing to the zemindars letting all their lands to ryots for cultivation on high rents; consequently, poor tenants cannot afford to keep any portion of it fallow. Our supply of cattle is chiefly from the Oolooberiah haut, and the dealers now and then bring some to the village for sale. We keep no sheep, but I have seen goats and buffaloes get *bussunto*. In Mud Point there are some buffaloes belonging to some European, and they were ill during the last outbreak. I am not aware of any case in which a family has been ruined from total loss of cattle. This would have been the case, but the neighbouring people assisted such of them as could not afford to buy cattle. The recoveries in the last outbreak were from 15 to 25 per cent.; more than 60 per cent. of the cattle kept up in the affected place were ill.

F. H. Dobson, Esq.

Information furnished by F. H. DOBSON, Esq., Depy. Supdt. of Alipore Jail,—
Calcutta 6th December 1870.

I have resided at Alipore for upwards of 11 years. The soil in the vicinity of Alipore is sandy, and the cattle are of the Bengal and Hurreeand breeds, with a very small proportion of Australian and English stock.

The average prices I pay for cattle may be stated as follows :—

About Rs. 25 to Rs. 50 for Bengal milk cows; about Rs. 75 to Rs. 100 for up-country milk cows; about Rs. 200 for English and Australian. The prices of country cattle have not varied during the last 10 years.

Cattle in the neighbourhood are used for milk and draught purposes, ploughing bullocks only being employed for agricultural purposes; no cattle are used in this neighbourhood for burden.

Housing. My cattle are housed in long thatched sheds.

I always stall-feed my cattle with rice straw and oil-cake, and plantain trees passed through a chaff cutter. Valuable cows get gram besides, but the cows which get no gram are in as good condition as the others.

As a rule, the people in the neighbourhood put out their cattle to graze during the day and give them one meal in their sheds at night. My cattle are watered from a tank. They are never herded or driven for pasture to other places.

The cattle of neighbouring villages are very poor generally, but mine are in a very good condition, which I attribute to stall-feeding and the addition of plantain trees.

My stock is kept up by breeding, and I always keep special bulls. I have now a thorough bred Australian bull. The up-country, English, and Australian cattle are the only ones I import.

Cattle are bought and sold chiefly at hâts, such as Oolooberia, Kidderpore, and Chitla. The up-country cattle are bought at Chitpore, where they are brought every cold season: cattle are not exported from this part of the country.

The mortality among cattle is ordinarily very small, but the loss from plagues is very heavy. The first outbreak I recollect was that which occurred immediately after the Agricultural Exhibition at Belvidere in January 1864. The plague at that time broke out in the Exhibition, and it was probably brought there. I lost on that occasion nearly 30 head of cattle. The next outbreak which I recollect was about four months ago, but I only lost 2 on this latter occasion, and both within 24 hours of being first attacked. Cattle murrains prevail generally, I believe, in the cold season and the rains. The first outbreak of murrain I recollect lasted over six weeks. On the first occasion above referred to, four-fifths out of my whole herd were attacked, and about one-fourth of those attacked recovered, three-fourths of them died. The symptoms I observed were,—animal restless, total loss of appetite, skin hot, hair slightly on end, no eruption or shivering, swelling of tongue and throat not noticed; breathing slightly laboured, apparently from exhaustion; violent watery purging, but no blood or mucus was observed; milk totally gone, but in the case of those that recovered the secretion of milk returned after the lapse of three weeks.

Contagiousness. I am of opinion that the murrain *bussunto* is decidedly contagious.

At first I allowed the natives to adopt their own remedies, but finding that I lost every case, I gave half a pint of turpentine to a quart of linseed oil with a pound of oatmeal; all well mixed together and warmed. In most cases this was administered only once, and in some cases twice. The second dose was given about 30 hours after the first.

The diseased cattle were removed to a distance of 35 or 40 yards from the others, and the sheds were fumigated with "dhuna" and sprinkled with lime.

The carcasses of animals dying from disease were invariably buried, and hides, horns, and hoofs were all buried with the carcass. There is no disease at present among my cattle.

Information furnished by LIEUTENANT W. PRITCHARD, R. A., Depy. Commissary-General, W. Pritchard, Esq.,
Calcutta.

Locality and number of cattle. I live at No. 16, Alipore, and had about 16 head of cattle in 1865. This year (1870) I have 22.

Three of my cattle were English, 3 Australian, and 14 Bengalee and Hansi. This year I have 3 English cows, 3 Australian, rest Bengalee and half breeds.

Uses. I keep my cattle for milking purposes.

Mode of housing. These are housed at night in a shed with brick walls and thatched roof.

Mode of feeding. I feed my cattle with crushed barley, Indian corn, *mutti kalye*, paddy straw, *doob* grass, and also Australian hay.

Water whence obtained. My cattle are watered from a tank on the premises. My cattle are generally in good condition.

Stock how kept up. I purchase my native cattle at auctions in Calcutta, and obtain others from the Dum-Dum market.

Average price paid. Bengalee cattle cost on the average Rs. 40 to Rs. 50, Australian Rs. 250, English Rs. 300.

Mortality. In 1864 I lost 8 out of 16 head of cattle from the Calcutta epizootic. In August last I lost 8 out of 22 from "inward pox."

In 1864 I purchased a bull at the Alipore Exhibition, apparently quite healthy; 2 others were first attacked and died, and the bull was the third to be attacked and die. These 3 died in one day and two died afterwards; two cows were attacked, but recovered after being treated with medicine.

Season in which plague prevailed. Murrain prevailed at Alipore in the month of January 1865.

The symptoms of the cattle murrain of 1865 were as follows:—A white viscid discharge from eyes, nose, and mouth; mouth sore; purging; mouth and stools very offensive; dull eye; shivering; appetite and rumination gone; hair on end; eruption not noticed; one had swelling of the back of

W. Pritchard, Esq. tongue. In the outbreak of 1870 the symptoms were:—hanging head, dulness, shivering, ears cold, lying down; no appetite, no thirst, die in about one or two hours, no sore mouth, no purging, long breathing, weak cough, blood with purging not noticed, secretion of milk stopped. The murrain which broke out in January 1865 was infectious, while that which attacked my cattle in August 1870 did not appear to be so. I moved the remainder to Barrackpore, and then no more cattle were attacked, and they were grazing with other cattle near Barrackpore, but not one of the others were attacked. In 1865 I gave to two of my cattle (the two which lived) half a pint of turpentine mixed with a quart of linseed oil (and I gave this to all the rest not attacked) twice in 13 hours, and in about 9 or 10 hours afterwards I gave one dose of linseed oil without the turpentine.

I buried all my cattle that died; indeed I make a rule of burying all animals which die in my possession. I did not separate my sick and healthy cattle. I am not aware that other animals are attacked with cattle murrain.

I deem it right to bring to the notice of the Commission the fact that, during the last few days, I have seen large droves of Bengal cattle standing in flocks on the *maidan* of Calcutta; these were not the usual cattle seen on the plain, but the large excessive number was due to cattle dealers having brought them probably from up-country. It struck me that these cattle might be bringing disease with them, and there ought to be some law to prevent cattle entering Calcutta or other large towns without being first inspected, and their owners obtaining a certificate of their being free from contagious disease.

Kombhar Alli.

Information furnished by KOMBHAR ALLI, Meat Agent, Fort William, dated 8th December 1870.

I have been Government Meat Agent of Fort William and Dum-Dum for the last eight years. I purchase on the average from 300 to 400 head of cattle each month. They are chiefly cows, in the proportion of three cows to one bullock. The bullocks are required for work, hence I don't get many of them, and only those which are too fat and lazy are brought for sale. Bullocks cost on the average Rs. 16, 17, 18, and cows Rs. 12, 13, 14. I purchase them at the fairs of Dum-Dum, Oolooberia, Baraset, Bakhra, Gowripore, Ranaghat, Jessore, and Kidderpore. My servants purchase cows even at greater distances from Calcutta. I am in the habit of seeing sick cattle at the fairs, some affected with *gootee*, some with *simla* and *khoorah*.

Symptoms of *gootee*.

The symptoms of *gootee* are:—

1. Loss of appetite.
2. Cold ears and cold body.
3. Coat staring.
4. Purging, with blood, and very offensive.
5. Inside the cheeks and on the sides of the tongue sores, and very offensive.
6. Watery discharge from mouth and eyes; sometimes that from the mouth is red.
7. When sick animals get eruptions, they sometimes recover and sometimes die; about 20 to 25 per cent. of animals attacked show eruptions.

Contagiousness.

The disease is very contagious.

Diseased cattle exposed for sale.

When animals are sick with *gootee* they are sold in the fairs at a cheaper rate for native use. I never purchase sick animals. The owners of hâts, even if they know cattle are diseased, do not object to their being brought to the hât, as they receive from three to nine pies for each animal sold. A new comer to the fair would be charged 3 annas to 4 annas. Both buyer and seller have to pay toll. The farmer of the Kidderpore cattle fair pays Rs. 275 a month for his lease. The Oolooberia farmer pays, I believe, Rs. 300 to Rs. 400 per month. The Dum-Dum farmer pays Rs. 125 a month. When *gootee* is prevalent, some 20 to 30 cattle affected with this disease are often sold to the native butchers; some diseased cattle die in the fair.

Puschima symptoms.

The symptoms of the disease *simla*, also known as *puschima*, are as follows:—The belly is very much swollen, and the swelling increases as the animal gets worse. The animal stands quite stiffly, not able to move. His nose is poked straight out and his jaw appears closed. There is dribbling of water from eyes and mouth. An animal attacked with *puschima* seldom recovers.

Khoorah.

The symptoms of *khoorah* are, first, discharge and soreness of mouth, afterwards the feet become affected.

The mortality is very small indeed. Cattle affected with *gootee* sell cheap at the fairs, being bought for Rs. 2, 3, or 4. Ten years ago cattle were very cheap; five years ago they rose very considerably in price, and now they have got rather cheaper again. The reason for their being cheaper again is:—

1. That troops are landed at Bombay instead of at Calcutta as formerly.
2. Not so many ships come to Calcutta as formerly, and consequently there are fewer sailors. In fact the demand for meat is not so great as it used to be.

(N. B.—The evidence of this witness appears to be most trustworthy).

Information furnished by W. C. HANNAH, Esq., Hide Broker, Calcutta, 5th December 1870. W. C. Hannah, Esq.

The trade in hides in the Bengal Presidency has increased very much of late, *i. e.*, during the last two or three years. The export from Calcutta for the last three years has been about 4 lakhs per month. Previous to this, an export of 2½ to 3 lakhs was considered a good average. The reason for this increase is the increased demand for hides in Continental Europe. About two-thirds of the whole export is to London direct, but in many cases the cargoes of hides are transhipped to Bremen and Hamburg. The remaining one-third goes to America. The trade has been encouraged by the opening of new lines of steamers *via* the Suez Canal, and freights have been considerably reduced even by the Peninsular and Oriental line of steamers.

In the hide trade several descriptions of hides are known, *viz.*, A. *slaughtered hides*, which may be sub-divided as follows:—

1.	Calcutta	Slaughtered	...	...	Rs. 57	per score or corge			Prices.
2.	Dacca	"	...	...	" 48	"	"		
3.	Burdwan	"	...	...	" 51	"	"		
4.	Patna	"	...	...	" 48	"	"		
5.	Durbhunga	"	...	...	" 55	"	"		
6.	North-West	"	...	...	" 53	"	"		
7.	Cuttack	"	...	...	" 47	"	"		

N. B.—The price depends upon weight.

Slaughtered hides are those of animals in good condition and *well grown*, but not necessarily of animals which have been slaughtered.

B. *The dead green* or "*murdari*."—These hides are thin, marked, or branded, (*daghies*) or "*rubbed*," and not well grown, being generally taken from animals in bad condition. In this class animals dying from *gootee* would be included, but very few such are ever brought down country. The skins of animals dying from *gootee* are easily detected by careful inspection in the case of light-cured hides on the flesh side, in the heavy-cured hides on the hair side. *Murdari* or dead green hides may be sub-divided as follows:—

					Rs.	As.			
1.	Dacca	...	...	(6½ lbs. each)	per score.	...	38	8	
2.	Burdwan	...	...	(6½ lbs. "	"	...	27	0	
3.	Patna	...	...	(8 lbs. "	"	...	33	8	
4.	Durbhunga	...	...	(9 lbs. "	"	...	41	0	
5.	North-West	...	...	(7½ lbs. "	"	...	32	0	
6.	Cuttack	...	...	(6½ lbs. "	"	...	27	0	

C. *The rejections* are any not included in the above two classes, and vary exceedingly in weight and price.

The prices above enumerated are all for cow hides. The buffalo hides form a totally distinct branch of the trade and are chiefly shipped to America. The North-West buffalo hides being light-cured are not sent to America, but to the Continent, where they are highly prized. The trade in buffalo hides from the North-Western Provinces has sprung up during the last two or three years only. The prices are as follows:—

1. Slaughtered buffalo hides, averaging 24lbs. each, Rs. 105 per corge, *i. e.*, score.
2. Light slaughtered, averaging 20 lbs., Rs. 95 per corge.
- B. Dead green buffalo hides, averaging 18 lbs. about Rs. 85 per corge.
- C. Dry buffalo hides, average weight 16 lbs. about Rs. 75 per corge.

I am of opinion that hides have decreased in quality of late years, although the export is now so much larger than formerly. We could not say by seeing a hide whether it belonged to an animal that had been poisoned or to one which had died of disease, but hides taken off by regular butchers can generally be distinguished from those which have been taken off by moochees, owing to the more careful way in which the former do the work. I and the other

CALCUTTA. hide brokers do not advance money for the purchase of hides, but merely make purchases at the godowns (stores) of the local dealers or agents, such as Ameer Khan, Hasmadad Khan, Jeebun Bux, Ally Bux and Faiz Ullah, &c., who act simply as agents to the district *beparies*. These *beparies* make advances to the local moochees in each village, but, so far as I am aware, the agents in Calcutta do not make advances, though they discount bills. The local agents, such as Ameer Khan, sell the hides for the *beparies*, charging the fixed rate of 1 Rupee a *corge*, and are responsible to the *bepari* for the price which the hides realize. Never having travelled about in the districts, I am unable to say how the trade is carried on locally.

Advances. Hides are cured with common salt, and Patna salt, "kala neemuk," is the best curing salt. Arsenic is never used, as far as I know, in the curing or preparation of hides, and indeed I believe it would injure the hides. Hide cuttings as well as hoofs of cattle are used for making glue, but there is no trade in hoofs, as the natives won't collect them. I myself have an order from home for one or two thousand tons per annum, but can't get any. Moreover, hoofs being of small value would not stand a higher freight than 15 shillings a ton. A very large business is done in buffalo horns, and this trade is increasing. Horns require no preparation, but require to be kept dry. The best buffalo horns come from Patna, Bhaugulpore, Soori, and Cuttack. The Meerut horns are inferior and the Cawnpore horns are of an intermediate quality. The prices of horns are 10 Rupees 4 annas per 100 pieces, weighing 3 maunds.

Curing.

Cuttings.

Hoofs.

Horns.

...	9	"	12	"	"	100	"	"	2½	"
Horn tips	...	8	"	8	"	"	maund.			

There is no trade in cows' horns, as people would not bring them in at the price which they would fetch in Calcutta, which would probably not exceed 1 Rupee 4 annas per maund. In the case of Meerut hides, the skins to the extent of 15 to 20 per cent. are injured with the *warbles*.

Burdwan hides have been very scarce this year in the Calcutta market, notwithstanding the cattle disease which has been prevailing there. This is an exception to the general rule, for when disease is raging in a district we look for an increase in the number of 'dead' hides from that district. I myself personally inspect every hide I purchase, as I cannot trust my subordinates to detect the various tricks of the trade. Scraps of hides from the size of one's two hands sell from 8 to 12 annas per score.

DISTRICT OF NUDDEA.

H. J. S. Cotton, Esq. From H. J. S. COTTON, Esq., Assistant Magistrate of Chooadangah, to the Magistrate of Nuddea,—(No. 83, dated Jibonnuggur, 11th February 1870.)

As I rode to this place yesterday from Kurulgatchi, I made personal inquiries about the cattle disease, and find that it has broken out in a degree for which I was not at all prepared, by the information I had already received from the Police.

2. In Ramnuggur, Damoorhooda Thanah, more than 50 cows have died, and cows are dying every day. In Jeret in the same Thanah at least as many have died.

3. In Akondobaria, Thanah Jibonnugur, at least 100 have died; in Johwar Chundropore about 20; in Oottuli large numbers; in Madhabpore about 200; in Mohunnuggur about 100; in Sontoshpore about 25.

4. All these cows have died from *bussunto* disease, which appears to have exhibited the usual symptoms.

5. A full report will follow, as promised, but in the meantime I think it might be well to acquaint the Commissioner with the facts reported in this letter.

From H. J. S. COTTON, Esq., Assistant Magistrate of Chooadangah, to the Magistrate of Nuddea,—No. 102, dated Chooadangah, 22nd February 1870.

In continuation of my memorandum, dated the 10th instant, I have the honor to submit the following report upon the cattle disease in this Sub-division.

2. *Thanah Chooadangah*.—The Darogah of this Thanah has been culpably remiss in his inquiries. Though I knew from my own observation that both *bussunto* and *khoor* were abroad, he persisted in reporting that his beat was free from disease. Ultimately, he has furnished a certain amount of information. In the village of Dowlutdyar, both *bussunto* and *khoor* broke out about a month ago; 18 cows have died, three have recovered, and four are still unwell. There are upwards of 200 cows in this village. In Chooadangah itself eight or ten cows have died from *bussunto*, and eight are said to be still unwell. In Katly village more than 100 cows have died, and many are still suffering. There are at least 1,000 cows in

this village. In Hoguldanga *bussunto* broke out about the same time, and 12 cows are said to have died; in Kozlehali 10 or 11 have died; no less than 40 are said to have recovered in this village. Lastly, five are said to have died in Bheugsrulla of the same disease. CHOOADANGAH. H. J. S. Cotton, E

3. In all these villages the disease is reported to have broken out about the 20th or 25th of January, and to be highly infectious. In the opinion of the Darogah, death ensues within three or four days: so far, however, as I know, this is entirely incorrect, for few animals die within a fortnight. The Darogah records as symptoms, first, abstinence from food, then roughness of skin and erection of hair, and, lastly, the small-pox marks break out.

4. The above analysis is an abstract from the Police Reports, but, in my opinion, the mortality is understated.

5. *Thanah Damoorhuddah*.—I beg to subjoin an extract from a letter received from Mr. Glascott, of Lokenathpore, dated the 1st instant. This gentleman has been very willing to give me every information in his power. He says:—"The cattle sickness has not been bad this year in any of our villages, except Ramnuggur, where a great many cows have died, but none for the two last weeks. The pest is called *bussunto*, and shows itself by sores and maggots in the mouth, and I cure a good many cows by cleaning these sores and extracting the maggots, and then putting a little coal-tar on the place; also by putting ghee in the mouth, which softens the tongue and enables them to eat grass. They generally appear to die from exhaustion from not being able to eat. The other plague that we have at present, to a small extent, is *khoorah* or sore feet, which I treat in the same manner with coal-tar; if it is neglected the cattle won't move about to feed, and die in consequence. The great cattle disease here, and the one for which there seems no cure, is *puschima*; but I am glad to say that we have not had it this year in any of our villages. I believe it is brought on by eating rank grass after an inundation."

6. I ought to add that since the date of this letter *bussunto* has much increased among the villages of the Lokenathpore Concern.

7. The Darogah states that *puschima* has broken out in the village of Hurryrampore, where it is two months old, and in Kalabari, where it is one month old, and that 22 cows have died altogether in the two villages; but his description of the disease, as well as the fact that five cows are said to have been taken ill and recovered, make me doubt whether the disease was really *puschima* at all. He then describes symptoms,—a stupefied appearance, frequent evacuations, rheum in the eyes, and fever. He describes it also as being infectious.

8. Of *bussunto* disease five cows have died in Bastapore, two in Bhagdanga, 80 in Khadiopore, from 50 to 100 in Ramnuggur, 5 in Dadpullia, and about 50 in Jerat.

9. The disease broke out in most of these villages in December last, and still continues.

10. The Darogah with much confusion, describes the symptoms in this way. After passing through the same symptoms as I have described of *puschima*, the cow has shivering fits and passes blood with the faeces.

11. *Khoorah*, it appears, has broken out in the villages of Sultanpore, Capasdanga, Dinonathpore, Gobindohadda, and Uzeerpore, but no mortality is reported.

12. The symptoms are described as sores in the mouth and feet.

13. The people are said to be without remedy for *bussunto* and *puschima*; in *Khoorah* it is found beneficial to keep cows' feet in mud, or to apply pitch to the sores.

14. The average duration of attack before recovery or death is stated in all three diseases to be 15 days, and in *Khoorah* sometimes a month.

15. The Darogah of Damoorhuddah is also to blame for the unquestionably perfunctory manner in which he has carried out my instructions.

16. In *Jeebunnughur Thanah* the Darogah has done a little better.

17. *Puschima* is said to have broken out in Medinapore: but, strange to say, out of 25 cows attacked only 12 died, 13 have recovered. The date of the outbreak is recorded as the 27th of December.

18. The symptoms are as follows:—coat dry, no water trickles from the eyes or mouth, the body is alternately hot and cold; the breathing is laboured, the throat remains unswollen, shivering fits follow, and the animal passes watery stools and scanty bloody urine.

19. The average duration of attack before recovery or death is 10 or 12, or as many as 25 days.

20. The remedy resorted to appears to be a concoction of hemp seed, onions, and eggs.

CHOOADANGAH.
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21. *Bussunto* has broken out in the village of Srirampore, where two cows have died; in Dhoba Khali, where 40 have died; in Utteli, where 150 have died; in Koya, where 5 cows which were attacked are still suffering; in Nischindpore, where 7 have died; in Taltola, where 10 have died; in Mondhopore, where 100 have died; in Sontoshpore, where 40 have died; in Madhubpore, where 20 have died; in Naryanpore, where 2 have died.

22. In these villages the disease mostly broke out towards the end of January, and it still exists; some cows having recovered, but more being still sick.

23. The disease is considered infectious; its symptoms are,—coat rough and changed in appearance, small-pox pustules come out on the body, the eyes water; as the disease breaks out the animal is said to be cold; as it gets better it gets hot; the cow breathes with difficulty, though the throat does not swell; it suffers from shivering fits and the hair stands erect; the urine is bloody, and the faeces watery and mingled with blood. The evacuations do not appear to be so offensive as in *puschima*.

24. The duration of attack is from 12 to 15 days.

25. The remedial measures are similar to those resorted to in *puschima*.

26. *Khoorah* exists only in the village of Sontoshpore. The coat becomes rough, ulcers appear on the feet, the mouth and eyes water, fever and shivering fits ensue.

27. The sore lasts from 14 to 18 days.

28. The remedies applied are similar to those resorted to at Damoorhooddah.

29. In *Kaloopole Thanah* the cattle disease has appeared but slightly.

30. *Bussunto* appears to have broken out in Belikhandi village; ten cows have died, and there were four still suffering.

31. The symptoms of the disease and the remedies for it are similar to those of Jeebunnuggur.

32. *Khoorah* infects the villages of Titadobe, Halimari, and Chandpore, but it seems without mortality, although no less than 125 cows are recorded as being diseased.

33. In *Allumdangah Thanah* the Darogah has made a careful inquiry.

34. *Bussunto* is rife: 5 cows have died at Nundobor, 10 at Bondipore, 43 at Kudasnughar, no less than 265 at Belgatchi, five at Khas Kotia, four at Buxipore, seven at Gurgorei Govindopore (the incredible number of 147 are recorded as having recovered in this village), three at Chilamari, seven at Gobindpore, and two at Nowda Vaudobie.

35. At Kumri, Senaton, and Poltadanga the disease has just shown itself, and none have yet died.

36. In all the villages already mentioned the disease has broken out during the last three weeks.

37. The symptoms and remedies are the same as elsewhere.

38. *Khoorah* infects a large number of villages, viz., Nimtolla, Bhalypore, Rungpore, Ramnuggur, Sulika, Dooli, Enayutpore, Nonda, Durgapore, Bondolil, Hasdi, Poltadunga, Patidgapore, Gangrie, and Gobindpore.

39. Fifteen cows are recorded as having died from *Khoorah* and 74 are still suffering; a total of 271 are said to have recovered.

40. The symptoms present the features already described.

41. It remains only for me to excuse myself for the delay which has occurred in the submission of this report. I cannot delay it further, or I would wait a few more days for the reports which have been promised me by several European gentlemen of the sub-division.

42. Perhaps if you forward the present report for the information of the Commission, it might be considered desirable in me to submit supplementary reports from time to time.

RANAGHAT.
From BABOO RAM SUNKER SEN, Deputy Magistrate of Ranaghat, to the Magistrate of Nuddea,—No. 173, dated the 5th March 1870.

On the 1st of January last I reported that the cattle disease known by the name of *puschima* had made its appearance in some of the villages of the Ranaghat Thanah.

I am glad now to be able to state that since the date of that report the disease disappeared from the villages where it had shown itself without causing any further loss to the cattle owners.

In the Santipore Thannah out of 12,063 head of cattle, 235 appear to have died in the course of the present Bengalee year from various sickness known by the names of—

1.—*Tuti-fula*, produced by grazing on moistened grass in the month of Kartick (October).

2.—*Khor-rog* attended with swellings in the mouth and different parts of the body and an ague. The disease is considered as catching. It occurs in the month of Pous (January).

3.—*Puschima*, attended with discoloration, flatulence, and looseness. It occurs in Falgoon (February) and Cheyt (March), and is infectious.

4.—*Bussunto*, or cow-pox, prevailing in Falgoon and Cheyt (February and March).

None of these diseases are now prevailing to any great extent.

In the Chogda and Jagooly Thannahs no cattle disease has yet made its appearance.

Information given by three inhabitants of Dowlut Dyar, taken on the 5th March 1870.

We have got the cattle plague in our village. We call the disease *bussunto*. There are 40 houses in our village, and the number of cattle will be from 200 to 300. We should think that $\frac{3}{4}$ ths of the cattle in the village have been attacked during the present outbreak, but only about 10 out of that number have died.* The disease showed itself at the commencement of Falgoon (February), but we cannot say whence it came, or whether the surrounding villages or our village had it first. (An old man, one of the witnesses, about 70 or 75 years old, says that he remembers the disease having occurred when he was 12 years old; that outbreaks have not been of yearly occurrence, but they generally have one outbreak every 3rd, 4th or 5th year; though it is much worse in some occasions than on others,—for example, in the outbreak which took place 4 or 5 years ago, $\frac{3}{4}$ ths of the cattle in the village were attacked, and $\frac{1}{4}$ th of those attacked on that occasion died. Another of the witnesses, a man of about 40 years of age, states, that when he was a boy his family had a herd of about 50 head of cattle, all of which were attacked with the plague, and 9 or 10 of them died, of it, the remaining 40 which recovered have never been attacked since, though there have been several outbreaks). This and other instances of a like nature lead us to conclude that an animal which has been once attacked, and which has survived, is not liable to catch the disease again; but we do not think that the value of an animal is enhanced from the fact of its having had and survived the disease; on the contrary, for some time it is worth much less, as it has lost condition, fighting with the disease. Though these frequent outbreaks may not diminish the amount of cultivation in the village, taken as a whole, yet there are individual cases in which a man has either to lessen the amount of his jote, or even in some cases leave it uncultivated altogether, his only means then of recovering his former position is by going to his *mahajun* and borrowing money at a high rate of interest with which to purchase new bullocks. There is a cattle market near here at Padah Billa, 6 miles from this, which is held twice a week. The rate of interest here is 6 annas a rupee in the year. We breed a certain amount of cattle in the village: about 40 or 60 a year, which is generally sufficient to carry on the cultivation of the village, though on certain occasions purchases are made, and on the other hand from time to time sales are made if the owners are hard up and are being pressed by their *mahajuns*. These sales are for the most part made to beparies, who come from other villages in the district, and take the cattle away to sell them in Calcutta or elsewhere; large herds of from 200 to 300 being taken off at one time; only ten days ago such a herd passed here on its way from Jenida to Calcutta. Some of the cattle in these herds are doubtless ill, though we have never heard of these herds bringing the disease into any place. We consider the disease to be infectious, but we are of opinion that the infection is in the air, and do not think that it is necessary that an animal should carry it. The disease *gootee* or *bussunto* generally comes on in Maugh or Falgoon (January or February). All the cattle that die in the village are skinned by *sadoo moochees*, no matter what they have died of; he pays a certain *jumma* to the zemindar—about 2 or 3 rupees a year, which gives him the right to the skins of all the cattle which die in certain villages. The moochee does not pay the owner of cattle anything for the hides: he sells the hides to Poran moochee, *mahajun* of Alookdia, and gets from annas 10 to Re. 1-4 for each hide, according to the state of the hide. The *mahajun* advances money to the moochee to get skins, but we do not know if any agreement is drawn up between them. The moochee is not bound to supply a certain number of hides within a certain time. There is no suspicion that any poisoning is going on here now; but 8 or 10 years ago there was a moochee here, of the name of, Sital, who poisoned 3 head of cattle, and they

* Can only give the names of two men whose cattle had died, and whilst in the village this morning we heard that no cattle had died of the disease during the present outbreak.

RANAGHAT.
Baboo Ram Sunker Sen.

Dowlut Dyar.

Stock.

Mortality.

History.

Second attack.

Cultivation.

Breeding.

Beparies.

Export.

Infection.

Hides.

Poisoning.

DOWLUT DYAR.	all died: the man was had up for it and punished, and since that time we have had no poisoning; cannot say what sort of poison was used. It is easy enough to distinguish between a case of <i>bussunto</i> and poisoning, because in the former case there is no swelling of the stomach; but it would not be so easy to distinguish between a case of poisoning and <i>puschima</i> , because in both cases the belly swells. There is no trade in the horns of cattle here, though the horns of buffaloes are sold. Each person has his own cowherd; though the herds are often mixed up with one another, they are sent out to graze in the morning, and at night are fed with <i>bhoosee</i> and straw. I do not know that goats or sheep ever get <i>bussunto</i> , though goats get it, and I have also seen dogs have it, but not jackals. The cattle are watered at the tanks and rivers, and are never driven to other districts for grazing.
Diagnosis.	
Horns.	
Herding.	
Goats, sheep, &c.	
Symptoms.	The symptoms of <i>bussunto</i> are—the animal first begins to shiver and gets into the sun to bask; it then gradually leaves off feeding; its mouth then gets sore, and its breath gets very offensive to the smell. Diarrhœa sets in, the stools being slimy, watery, and of a reddish color, this occurs on the 5th or 6th day of the disease,—and the animals die in from five to ten days; there is a sloughing from the mouth and discharge from the eyes: in some cases an eruption appears on or about the seventh day, at first in the form of spots, and then the skin peels off: the eruption is like that which the commission saw on a buffalo this morning. There is another disease called <i>khoorah</i> , which is an affection of the feet and mouth, but it is not very fatal; it occurs every year, or at any rate, every second year; it was here in January and February last. We apply tar, turpentine, and warm earth to the feet; we wash the mouth with hot water and with <i>hooka</i> water. There is another disease called <i>puschima</i> , and its symptoms are—the belly swells, dysentery sets in, the animal dies in from one to three days. Swelling of the skin appears all over the body, and when the hides are removed by moochees, these swellings are found to consist of congealed blood. This disease comes at all times of the year, at no fixed season, and shows itself even twice in the same year. There is no swelling of the throat, no sore mouth; there is a discharge from the eyes, and a very copious discharge from the mouth; the animal gets stupid before death.
Eruption.	
<i>Khoorah</i> .	
<i>Puschima</i> .	

RAJ CHUNDER MOOCHEE, of Alookdia, nearly 2 miles distant from Camp.

Raj Chunder Moochee.	Has lived at Alookdia since his boyhood. Is an agriculturist and deals in hides, Has been dealing in hides for the last three years. Sells 50 to 60 hides to the <i>pikars</i> of Kishennuggur and Calcutta yearly. A hide sells from Re. 1-8 to Rs. 4, according to its size and quality. Does not receive anything in the shape of advance from the <i>mahajuns</i> . The <i>pikars</i> come to him periodically and take away the skins after making cash payment. Sells the hides to one Nemye Sircar and Cazeer Tohurally of Kishennuggur; goes round and buys hides from Chooadangah, Koolpala, Boalia, and Horokandee, where the chumars, who have " <i>bhagarai</i> " jummahs, keep them for him and for other <i>pikars</i> . Also makes shoes for the people and sells the same. The hides are generally carted to the station and thence conveyed by the railway. Purchased only a limited number of hides this year. Pays from Re. 1-4 to Rs. 4 for each hide to the chumars. Has never signed an agreement for the supply of a stipulated number of hides.
Local hide trade.	

Examination of MENDAI MOOCHEE, of Belgachee village, about 1½ mile to the south of Chooadangah.

Mendai Moochee.	I was not born at Belgachee, but I have resided there for the last 22 years. My brother, who died 20 days ago, used to get the hides of all the cattle that died in the village. He used not to pay the owners of the dead cattle anything for the hides, but he got them for the mere taking. He used not to carry on a trade in them, but used to make sandals for the villagers out of them, getting two or three annas a piece for them. I was not engaged in trade with him. Since my brother's death none of the cattle of the village have died, with the exception of one, and that was brought into Chooadangah to the commission for the purpose of a post-mortem examination.
Local hide trade.	

Examination of BISHNATH MOOCHEE of Taltollah.

Bishnath Moochee.	Has lived at Taltollah since he was a boy. Carries on a trade in hides, and has the <i>jumma</i> of eight villages, for which he pays Mr. Sheriff a yearly rental of Rs. 35. Has let the Belgachee <i>jumma</i> to Mendai for Rs. 2 or Rs. 2-4; does not remember which. Has let the Chooadangah <i>jumma</i> to three other men for Rs. 18. He still keeps a share in it. Keeps two villages out of the eight for himself, from which, on the average, he gets 6 or 7 hides in the year. With the chief part of them he makes shoes for the ryots and sells only a few to the <i>pikars</i> , for which he gets from Re. 1 to Rs. 2 a piece. Pays Rs. 10 for the two villages—Taltollah and Hazrahatee, which he keeps for himself. Cannot explain how he makes this pay him. As a last resource, he says that in some years he gets as many as 40 hides from the villagers. During the present year has got 18 skins from the two villages. Pays his <i>jumma</i> in three <i>kists</i>
Local hide trade.	

(instalments. Has paid two *kists* for the present year, i. e., Rs. 20 for all the villages, out of which Rs. 8 are for the two villages in his own management. Cannot explain how he has paid such a large amount as Rs. 20, when Sadoo has paid Rs. 12 for Chooadangah, thus making out that Rs. 32 out of the Rs. 35, the annual *jumma* of the 8 villages, has been paid in two *kists*, thus leaving only 3 for the remaining *kist*. Sells his hides to Shrishtidur Moochee of Belgachee and Sooroo Churn and Ray Churn Moochee of Alookdia; also to other *pikars* from Calcutta. Does not get any advance from them; does not know whether they get advances from the *golahdars*. Before Mr. Sheriff took the farm he paid the zemindar Rs. 5 for the two villages he now holds; he then had nothing to do with the other 6 villages. Is not able to say how many classes of hides there are. Does not ever remember hearing of any case of poisoning.

TALTOLLAH.
Bishnath Moochee.
Local hide trade.

Examination of SADOO MOOCHEE of Chooadangah.

Has lived in Chooadangah since his birth. He with three other men, Bishonath Moochi, Sindur Moochee, Tabee Moochee, have the right to all the skins of the cattle which die in the village of Chooadangah, for which they pay Mr. Sheriff, the farmer of the village, a yearly rent of Rs. 16. Before the village was in farm, i. e., when it was under the *khas* (immediate) management of the owner, they used to pay him Rs. 4 a year, but then they were required on certain occasions to supply certain of the ryots with shoes. In the village there are four places where the bodies of dead animals are thrown. The people of the village generally tell us of the death of an animal. We do not give the ryots anything for the skins, but it is generally the custom for us to give those from whom we have got a skin or skins, a pair of shoes when he wants them, or we repair his baskets for nothing. With the skins we get we make shoes for the people of the village, and the surplus skins we sell to *pikars* who send them to Calcutta. Gooroo Churn Moochee and Rajh Chunder Moochee of Alookdia are the *pikars* about here, and Budun Moochee of Belgachee. On an average we may get about 20 hides in the year. We get the most during the cold weather, at which time the old animals generally die. We do not make any difference between the skins of animals which die of disease or of old age, or any other cause. The price we get for the hides depends entirely on the state of the hide, and not on what the animal died of; that is to say, whether the hide is entire or not. There are four classes of hides, the prices of which vary according to the state they are in—1st quality is worth from Re. 1-8 to 1-12; 2nd quality is worth very nearly the same; 3rd is worth about 6 annas; and 4th are the hides of calves, which are worth about 4 annas. We do not get any advance from the *pikars*, and I do not know whether the *pikars* get any advance from the *goladars* or not. Cannot explain how they make it pay, when they have to pay Rs. 16 a year as *jumma* to the farmer, when on the average only 20 cattle of all sorts die in the year, and many of their skins are only worth from 6 annas to 4 annas a piece. Cannot say how they will make it pay; but the rent has only been raised this year. There are about 500 or 600 cattle in the village. We have no special name for the different classes of hides. We pay Rs. 16 in three *kists*, out of which, for the present year, we have paid two *kists*, in all Rs. 12. One of our partners, Bishonath, has in his own account the *jumma* of several other villages, for which he pays some Rs. 40 or Rs. 50. Three or four years ago some moochees in the village were punished for poisoning cattle, since which time there has been no poisoning going on. We have had more skins during the present year than we get on the average. Four years ago there was a similar disease among cattle as at present, and the deaths were great. We have not as much this year as we ought, as all the cattle that die now are being buried. I know Nundai Moochee; he lives in Belgachee, and is a labourer, and also has the *jumma* of the hides in that village; he took it from Bishonath, and I think pays Re. 1-8 or 1-12 for it.

Sadoo Moochee.
Local hide trade.

Varieties of hides.

Advances.

Poisoning.

Examination of GOOROO CHURN MOOCHEE, of Alookdia, *Pikar*.

Has lived at Alookdia for the last 10 or 15 years. Is an agriculturist and deals in hides. Does not himself skin the dead animals, but buys from those who do, and sells to Tobar Al-Kazi and Nemai Sirkar of Kishnaghur, and to Naniahdi of Kolootollah in Calcutta. Sometimes he takes the hides to them, and sometimes they send for them to him. He sometimes takes an advance from the *goladars*, but as a rule not: if he has taken an advance he has to pay Re. 1 a score for the hides; but if he has not taken an advance he has only to pay 8 annas. No document is drawn up between us. The sum advanced is repaid in hides. There is no stipulation that a certain number of hides should be provided within a certain time. Disposes of about 250 hides a year on the average, and gets Rs. 30, 15, 10, and 7 a score according to the quality of the hides. Goes round to the different villages to the moochees for the hides and pays ready money, but does not give advances. Pays from Re. 1-6 to 4 annas a piece for the hides. Has traded in hides for the last 7 years. In the year 1271 (1864) a great many cattle died after the cyclone. There is not much sickness within his jurisdiction during the current year, though

Gooroo Churn Moochee.
Local hide trade.

Advances.

ALOOKDIAH.
Gooroo Churn
Moochee.
Advances.

some of the remaining *pikars* have got more skins than usual. They first wash the skin in water, then rub the inside of the skin with vitrified bricks, and then sprinkle from half a seer to one seer of black salt over each hide. The price of skins has not changed, owing to the late plague. When the skins come to them they are dry, and they cannot say whether the animal has died of disease or not.

N. B.—These five witnesses were evidently prevaricating largely.

CHOOADANGAH.
Godie Joardar.

The evidence of GODIE JOARDAR, a resident of Chooadangah, agriculturist and farmer, aged 67 years,—dated Chooadangah, 21st March 1870.

Cultivation.

I have been born in the village of Chooadangah and have ever since resided here. I hold 40 beegahs of land, and I grow paddy, indigo, mustard, *kalye* (pulse) and chilly thereon. I have two ploughs and 4 pairs of plough bullocks, as also three cows. This number of bullocks is quite enough for the cultivation of my land. Short of this number will not suffice for cultivation. These bullocks cost me from Rs. 10 to Rs. 20 each, and they are employed on the fields at plough or harrow nearly every day in the year, from morning to 11 in the forenoon, because my land yields different crops in different seasons of the year. A bullock in this district generally commences to work from the fourth year of its age, and goes on working till it is 22 years old. I commenced farming when I was 20 years old. I have four farm laborers on my farm. I cannot say with any degree of certainty, but I must have lost some 60 or 70 head of cattle during the time I have been farming, from diseases known by the names of *puschima*, *gootee*, *khoorah* and *altara*, as also from old age. I also lost one bullock from eating the linseed flowers. Thirty years ago I had a herd of 30 head of cattle, out of which I lost 10 or 12 from *gootee*. Half of the herd were attacked, of which only four or five survived; they were all housed in one shed. All other cattle in the village suffered from the disease in that year; less than half the number attacked having died in the village. We find as a rule that in every two or three years *gootee* breaks out among cattle. In some years 5 out of 20 head of cattle attacked die; in other years half the number attacked succumb, and in some outbreaks only 5 survive out of a herd of 20 head of cattle. The attack 30 years ago was very severe. But the recent outbreak has been mild. In the days of my grandfather and father, these diseases occurred as often as they occur in my days. I have often heard my father speak of the diseases. I do not know the cause of these diseases. *Gootee* generally breaks out in the months of February and March, but it does sometimes break out in other months of the year. *Puschima* seldom attacks the cattle, but when it does appear, it does so irrespective of any particular season. *Khoorah* appears in the months of January, February, March, and April, and disappears with the setting in of the rains. *Altara* attacks the cattle in good condition, and they are suddenly attacked and die instantly. With reference to *gootee*, I have also found that an animal once attacked with *gootee* never gets the disease a second time. The reason why I keep 11 head of cattle instead of 30 is simply on account of the increase of cultivation; i. e., 30 years ago, in this village of Chooadangah, we had 10 annas ($\frac{8}{16}$) of pasture land to 6 annas ($\frac{3}{8}$) of arable ground, and now there is not certainly more than 1 anna ($\frac{1}{16}$), if so much, of pasture to 15 annas ($\frac{1}{2}$) of arable. In those days when pasture land was abundant, other farmers in the village kept a larger number of cattle than now. We kept more cattle in those days, because there was grass in abundance for them: more in fact than was absolutely necessary for the cultivation of our lands. There are many more agriculturists now than before. The rent of a beegah of paddy land, 30 years ago was only 6 annas per annum. It is now 12 annas. The bullock that cost Rs. 10 formerly now costs Rs. 15 or more. I do not know exactly the cause of increase in the price of cattle, but I attribute it in part to the smaller number of cattle in existence. Thirty years ago the Calcutta *pikars* used to take cattle from this district as is done now, and I do not know whether this practice has increased or decreased. The cattle in former days used to get straw and *bhoosee* at home during the night, and were allowed to graze during the day. Now they are stall-fed during night, and in the mornings and evenings with rice straw, *bhoosee* (chaff) and *khulee* (oil-cake). They get very little to eat in the fields, consequently we are obliged to give them better food at home than before, when the pasture was abundant. Cattle are served by Brahmini bulls, which roam about the country at will, and which generally are of a good breed and well conditioned. There are 2 or 3 bulls to 2 or 300 cattle of all sorts. There are generally a greater number of cows than bullocks in the village. Bull calves are castrated at the age of 1½ and 2 years by moochees, who remove the testicles by means of wooden knives. Young bulls seldom or never serve cows. The first calf is generally dropped when the cow is 3 years old. Cows generally have calves every second year. I consider the *gootee* to be infectious; but I do not think that *puschima* is so infectious as *gootee*. I do not know whether *khoorah* is infectious or not, but the villagers do not allow their animals to mix with cattle laboring under *khoorah*. The difference between *gootee* and *puschima* is that in an attack of the former there is running from eyes, nostrils, and mouth; fever sets in, and the animal purges blood and mucus, and dies in 10 or 15 days. In some cases there are eruptions on the body. In the case of the latter, the animal has hoven, its neck becomes stiff

Murrains.

Rinderpest in 1840.

History.

Season.

Second attack.

Pasture land.

Rents.

Price of cattle.

Breeding.

Bulls.

Infection.

Symptoms.

and the rectum is congested. The attacked animal dies generally in 2 or 3 days. We are not in the habit of giving any medicines in cases of disease amongst cattle. We allow rice water, green grass, and *bhoosee* to the sick cattle, but as a rule cattle laboring under *gootee* or *puschima* refuse food. I have never seen either sheep or goats suffering from *gootee* or *puschima*, but they are liable to *khoorah*. I have not seen or even heard of a case of poisoning of cattle in my village. I am of opinion that if the practice of poisoning existed, the people would know it from the diseases I have described, from the symptoms.

The evidence of ASSAN MUNDUL, aged 50 years, agriculturist, a resident of Chooadangah.

CHOOADANGAH.

Treatment.

Sheep, &c.

Poisoning.

Assan Mundul.

Stock.

Sheep.

Goats

I was born in this village, and have ever since lived here. I have 20 beegahs of land and own 12 head of cattle, of which 4 are cows, 4 calves, and the rest bullocks. I have 2 ploughs; in some years I have had 20 head of cattle. I lost one calf from *gootee* this time; all my cattle had the disease in Falgoon (February) last, but they all recovered simultaneously. The 5 sheep I had, got the disease, but they recovered; the sheep looked stupid; were off feed, sloughed from the mouth, and had discharges from the eyes and nostrils. They purged blood and mucus; the sheep were ill 10 or 12 days. I have seen fowls being attacked with *gootee*, and I have seen sheep get the *khoorah* when the cattle were enjoying health. I never however saw sheep suffering from *gootee* when the cattle had not the disease. I have seen sheep escape when the cattle were affected with *khoorah*, and I have seen them get the attack along with cattle. I have not seen any goats being affected, and I never had any myself. I have not seen any case of poisoning, nor have I heard of any.

The evidence of CHAND BISWAS, aged 60 years, a resident of Chooadangah, agriculturist.

Chand Biswas.

Cultivation.

Second attack.

Pasture land.

Infection.

Separation.

Statistics.

Sales.

Diseases.
Symptoms.

History.

Cultivation.

I have been a resident of Chooadangah for the last 25 years. I hold in *jumma* 16 beegahs of land and own 2 bullocks and 2 cows. I have only one plough. I grow paddy, chilly, indigo, *kaley* and mustard, and work my plough bullocks in all months of the year. The cattle I have, have escaped during the recent murrain, and this is owing to the fact that nearly 7 years ago they had an attack of *gootee*. My experience tells me that cattle never get a second attack of small-pox; all my cattle are old, and they had never an attack of *puschima*. Some 8 years ago I had 15 head of cattle, but 4 of them died from *gootee*, and the rest died natural deaths. The reason why I keep a less number of cattle than before is, that there is no pasture in the neighbourhood and the cattle can have no grass in the fields; the pasture has got less, because the people cultivate a larger quantity of land than before. This they do for two reasons, first, that a greater variety of crops is taken off the land; secondly, that the land is not so productive as before. The reason of this is that the rains are not so abundant as they were, and that the circumstances of the people do not permit them to let their lands lie fallow. I consider the disease *gootee* to be infectious, and in that belief we do not allow the cattle suffering from *gootee* to mix with those that have not got it. We do not separate the cattle of the village when the disease breaks out, simply because there is much trouble in doing this. My experience leads me to think that if 20 head of cattle are attacked, some 6 will die and the rest survive, and about 25 per cent. of the whole flock are generally attacked. In our place or in its vicinity there is no place where we can keep our cattle, even if we were inclined to remove them during murrains. I have not got any sheep or goats, and I do not know whether they get the disease or not. In our village the cows are more in number than bullocks. The former comprise a nine anna ($\frac{9}{16}$) portion of the cattle, and the latter a seven anna ($\frac{7}{16}$) portion. We do not sell cattle as a rule, but when pressed hard by the *mahajuns*, we sell one or two. The cattle in our part of the country get *gootee*, *puschima*, *khoorah*, and *altara*. *Puschima* and *gootee* are different diseases. *Puschima* is, in my opinion, equally infectious as *gootee*. The symptoms of *puschima* are hoven and congested rectum, and the attacked animal lies down and dies out from the 1st to the 3rd day: when it recovers, it purges; a few pass blood, the hoven is reduced, and the appetite returns. The diseases I have mentioned have existed from time immemorial, and are not more destructive now than they were in our forefathers' time. There is no tradition amongst us regarding the origin of these diseases. I have never known of any land remaining uncultivated in consequence of the loss of cattle belonging to the owner; for when a man who holds a tenure loses his bullocks, he borrows money from the *mahajuns* and gets new animals, or that he lets it in *blaug* (sublets) to others. We cultivate only paddy. The cultivation commences from the month of Pous (December) till Jyth (May). In the month of April, generally, the seeds are sown, and in the month of Bhadur (August) we reap the harvest. We cart away the grain home. The chilly lands are tilled in Assar and Srabun (June and July), the seeds are sown in June, and the chillies are removed in December, January, and February. We commence turning indigo lands in Pous and Maugh (December and January), and the indigo plants are cut and received in July and August. The indigo plants are generally carted away. In

CHOOADANGAH. Kartick (October) the land is prepared for mustard, and the harvest is reaped in November and December. We sow *kalye* (pulse) in the months of Bhadur and Assin (August and September), and remove the same in Aughran and Pous (November and December). The land for linseed is prepared in October and the crop reaped in Falgoon (February). The cattle have hardly a holiday.

Modibooddeen Joardar. *The evidence of MODIBOODDEEN JOARDAR, aged 34 years, a resident of Chooadangah, 22nd March 1870.*

I am Naib (factor) of Mr. William Sherriff, an indigo planter of this district, and I have been so employed since Maugh (January) of 1275 B. S. (1868). I was born in this village. I hold 40 beegahs of land, and my servants cultivate it. I keep 3 ploughs and 11 plough bullocks, as also 6 cows. Before this outbreak I had 25 head of cattle, but I lost 8 from *gootee* in the months of Aughran (November) and Pous (December) last. All my 25 cattle were attacked. After *gootee* had gone those that survived had the *khoorah*, but they did not die of the disease; they are all right now and in good working condition. I had 12 bullocks and 13 cows. I had always this number of cattle ever since I took the farm from my father. The number of 11 bullocks which I have is sufficient for the quantity of land held by me, but not for more land. Five years ago I lost two or three of my best cattle from *puschima*. There were other cases of *puschima* in other houses at the time. In some years *puschima* appears only in 2 or 3 houses in the village, but at other times it breaks out almost in every house. When a beast recovers from *puschima* it purges violently, and the hoven subsides. There is then running from the mouth, eyes, nostrils, and appetite returns. I am of opinion that a beast once survived from *gootee* does not get it a second time, but I do not know whether an animal recovering from *puschima* gets an attack of *gootee* or not. When a healthy animal in very good condition is attacked with *puschima*, it is sure to die, but weak animals generally survive. I have observed yellow mucus and blood in the stool of animals recovering from *puschima*. Both the dung and breath are very offensive. During or after recovery, no sores or eruptions are observed on the skin. I have known animals die of *puschima* in four or five hours, and in other cases they live for two days, when they succumb; but if they survive the third day, they generally recover.

Poisoning. I have heard, but not seen, that chumars are in the habit of poisoning cattle for the sake of their hides. I do not know what they poison them with. Some cattle get poisoned by eating the castor-oil seeds. When any of the villagers want to buy cattle, they go either to the neighbouring villages or to the *Puddobilla Haut*. The present price of a good working bullock is from Rs. 20 to 25, and of a milch cow from Rs. 15 to 20. I estimate the number of houses at Chooadangah to be 200, and that of cattle to be 4 to 500. Of these a ten-anna portion ($\frac{2}{3}$) were attacked, of which number nearly 40 died from the effects of *gootee*. I have never heard of any cattle being imported from any distant place. We have only the ordinary Bengal breed of cattle here. The price of cattle has risen. A working bullock 20 years ago could be purchased for Rs. 10 and a cow for Rs. 12, and this rise is attributable to the supply being unequal to the demand and to the want of pasture. The cultivation has increased and a great many cattle are now-a-days bought by dealers and taken to Calcutta for being slaughtered. We have about 50 carts at Chooadangah, and they are used generally for agriculture; but in a few instances for the transport of goods in various directions. We keep no bullocks for pack work. About 200 of the 500 cattle at Chooadangah are cows. Our cattle are housed at night and let loose to feed during the day. We feed the cattle with straw, *bhoosee* and *kholie* once in the morning before they go out and once in the evening after they come home. They get a certain amount of water mixed up with their food, but they are watered in the neighbouring tank or river when being driven to the fields. The grasses in this district upon which the cattle feed are *Doob*, *Pantoora*, *Bircing*, *Banspata*, *Shama*, *Bhadhal*, *Manskate* and *Wooloo*. I have named them in the degree of value as food. The young grass that springs up after the first shower of rain generally produces relaxation of bowels, and the grass springing up after inundation causes swelling of the throats of those animals which are not in the habit of feeding on marshy grass. This swelling of the throat, as a rule, lasts for five to seven days, during which time a gurgling noise is heard in the breathing. There is a difficulty of swallowing, but there is no cough, and occasionally cattle die from this disease, which is called *golafoola*. Cattle live on an average 15 or 16 years. I find from my experience that about 10 per cent. of cattle die from ordinary causes. I consider both *gootee* and *puschima* to be infectious. The *khoorah* is also infectious. I do not however consider *golafoola* to be so, and no other disease that I know of, except the above three, is contagious. I have seen sheep suffer from *gootee* during the recent outbreak: four of my own sheep for my own use caught the disease *gootee* from being kept with the diseased cattle, and they slipped their lambs, but they recovered from the disease. When sheep are attacked with *bussunto* or *gootee*, they very often die. If they are attacked in a dry season, one-fourth or one-fifth of those attacked

will die. But if they are attacked during the rains and exposed to the inclemency of the weather, then nearly every one of the attacked will die.

Sheep and goats also get the *khoorah*, but they do not get *puschima*.

Sheep also get the disease *sturdy*.

[Witness here described the symptoms accurately.]

I have never seen or heard of any other animal being attacked by any disease.

I never attempted any medical treatment in cases of *bussunto*, except that I washed the mouth of the diseased animal with hot water. During the disease the animal eats nothing and we give no food, but when it begins to pick up a little, we give him boiled rice, butter-milk, ripe plantains, and soft green *doob* grass. I never heard of any medicine that would cure the three diseases I have mentioned.

I consider that the poison of *bussunto* can be carried by the air, and the disease spread by contagion.

Evidence of W. SHERRIFF, Esq., Manager of the Sindoree Indigo Concern, Chooadangah,— 23rd March 1870.

I have been in this country 15 years, 13 of which I have spent at Joridah, which is partly in Jessore and partly in Nuddea. During the last two years I have had the management of the Sindoree Concern. Having heard the information given by the inhabitants of the village of Alukdia, regarding the diseases of cattle in these parts, read, I consider it correct and applicable to the parts of the country with which I have had personal experience. I think however that *puschima* is infectious, and I have found that when the disease appears among my cattle, segregation has always prevented the spread of it. Where a similar system is possible, I think it should always be practised. I don't see how segregation can be carried out in the majority of villages, on account of the difficulty of obtaining a piece of waste land adjoining, and a convenient separate watering-place. I am of opinion that separating all the healthy cattle of a village by driving them to a distance, leaving the sick behind, is utterly impracticable, and would entail upon cultivators a much greater loss than the death of their cattle. Not more than 25 per cent., at the very worst, of the whole stock die, and the average fluctuates between 5 and 10 per cent. Any system of stamping out by killing the animals first attacked I consider out of the question. The only practicable system of segregation is establishing a hospital on any bit of waste land which may happen to adjoin a village, and placing in it, under special attendants, sick cattle. When a great number of sick cattle exist in a village, I consider even this system one of great difficulty, or even impracticable. Such an arrangement would, in my opinion, be best carried out through the head men of villages, and not through the police, as the latter might not carry out the duty cautiously and properly, and might make it a means of oppression. Such pieces of waste land do exist, but they are not common. They are generally high tracts of land sparingly covered with mould, which has become exhausted, and is left fallow or used for the purpose of growing *ooloo* grass (thatching). They form a part of the ryot's *jumma*, and only a few are held *khas* by zemindars. I have seen a herd of 50 or 60 buffaloes attacked, and of these 15 or 16 die. This was a bad case. I think the disease is more marked in buffaloes than in cows. The expense of maintaining a quarantine establishment or hospital must be defrayed by a special cess, unless the surplus of the pound fund might be devoted to that purpose. There is little or no pasture land for cattle now-a-days, because the land has been taken up for agriculture. This I attribute to more natives having taken to agriculture in recent years. This is owing to the greater demand for oil-seeds and agricultural produce generally. It may also be in part caused by the land not being so well watered by inundations now as formerly, the ground being higher than it was, and the yield in consequence less. Each individual cultivator has fewer cattle now than before, and ryots have not the same appearance of comfort and wealth that they had. I have never known of lands lying fallow from cattle disease, but I have known this to occur after an unusually high inundation.

With regard to *bhagaria jumma*, I am of opinion that if they were considered conducive to cattle poisoning, there would be no zemindar who would object to give them up, the revenue obtained in this way being very trifling; but I don't consider that this system prompts to the commission of cattle poisoning in the least degree. I have known cases of cattle poisoning, but it is not a general practice. Ryots can readily detect a case of poisoning, and are able to protect their own interests. In times of cattle disease, however, it would be as well to put a stop to the removal of hides from cattle in villages where the disease existed. I have always looked upon *puschima* and *bussunto* as different diseases: the former prevails principally in November, December, and January, and the latter in February and March.

I have never known of their prevailing together in any place. I have not made or seen any *post-mortem* examination. I am aware of the practice of Brahminee bulls being carried

CHOOADANGAH. off to Calcutta by the servants of the municipality, and on one occasion interfered to prevent the removal of four animals. I think it is a most objectionable practice, because these are the only bulls kept for breeding purposes.

A. Hills, Esq.

The evidence of ARCHIBALD HILLS, Esq., an Indigo Planter at Nischindpoor,—
Chooadangah, 23rd March 1870.

I have been a resident of this district for the last 7 years, and have got about 200 head of cattle on the factory. During this time I have had opportunities of seeing the diseases known by the names of *bussunto*, *puschima*, and *khoorah*. When an animal gets an attack of *bussunto*, which may occur at any time of the year, he shows the following symptoms:—

Symptoms of *bussunto*.

1. The body is covered with spots on the skin, and on passing the hand over the body, it feels lumpy and feverish. The lumps are about the size of a pea.
2. It has generally running from the eyes, nose, and mouth; there is a thick discharge, specially from the mouth and nostrils.
3. The bowels are generally very much relaxed, and there is sometimes purging blood.

I consider the disease to be infectious.

Symptoms of *puschima*.

The symptoms of *puschima* are:—

1. Swelling in the stomach.
2. Violent passing of blood.
3. Tongue swollen and mouth generally sore.
4. Mouth very much in the same state as in *bussunto*.

Infection.

An animal attacked with *puschima* seldom recovers, the affected animal dies in from 2 or 3 hours to 2 or 3 days. I don't know whether it is as infectious as *gootee*, but I don't think it is. Out of 10 animals attacked, not more than two animals recover. It comes on generally at the beginning of the cold weather, but it is seen at other times too. The disease may possibly be contracted by eating the grass on ground which has been submerged.

Khoorah.

The symptoms of *khoorah* are,—sore feet, and in some cases sore tongue, but not always the latter. The disease generally is not fatal.

Sheep and goats.

I have had no experience as to whether sheep or goats contract these diseases, but I hear that both sheep and goats become affected with *gootee* and *puschima*.

Separation.

Generally speaking, I think the number of cows is greater than that of bullocks in villages inhabited by milkmen. In other villages the number is equal. It would be a very difficult matter to separate the sick cattle from the healthy in the villages about here. What I mean to say is that it will be very hard to induce the tenant to agree to the carrying out of segregation. In the neighbourhood of a few villages there are some patches of waste land, where, putting other considerations aside, a hospital might be erected: thus treatment and segregation of cattle might be carried out. In some cases these waste lands would be the *khas* lands of the zemindar; in others the lands are leased out to ryots. These are used as grazing grounds or for growing thatching grass. If the healthy cattle were to be removed to a great distance from the village, I do not think that the poorer portion of the ryots will be able to do so. The well-to-do ryots may, but not the tenants. I have never known of any instance of lands lying fallow in consequence of loss of cattle; there would always be some means or other found out for the cultivation of the same. It is the custom in all zemindarees to let out in farm the right of removing hides. It is generally put up to the highest bidder, and may fluctuate in price. The amount thus realized is very trifling even in large zemindarees. I have listened to the evidence given this morning by the ryots of Alookdia, and I think it is good and true.

Cultivation.

Koolchara.

Information given by three Ryots of the village of Koolchara, about half a mile to the east of
Chooadangah.

Rinderpest in 1869.

The witnesses have between them 48 head of cattle, out of which 32 are cows. Two of the men are *goallahs* by caste. This year there has been no disease among the cattle of the village, but last year they had *bussunto*, *puschima*, and *khoorah*; one of the witnesses lost 3 out of his herd, another 4, and the other none; cannot say how many cattle there are in the village, but should think about 150; can give no idea as to how many died in the village.

One of the witnesses had 20 head of cattle, out of which 12 were attacked with *bussunto*; and of them 4 died, the remaining 8 of the 12 afterwards all got *khoorah*, but the other 8 which were not attacked with *bussunto* also escaped the *khoorah*; none of the cattle died of *khoorah*. Four years ago they had an attack of *puschima* in their village, and one of the witnesses lost 2 head of cattle, the other two lost none. The symptoms of *puschima* are,—frothing from the mouth, off feed, swollen stomach, purging with blood, cannot swallow, the tongue swollen, offensive breath, dung very offensive, nose poked out, and the animal stiff and swollen about the neck; death in from one to two days. The symptoms of *bussunto* are,—shivering, fever, off feed, sometimes thirst, discharge from the nose, eyes, and mouth, sometimes thin and thick, purging blood and slime, and as offensive as in *puschima*, excoriations in mouth, and offensive breath, eruptions on the skin, they can sometimes be seen, on the ribs and on the dewlap. On recovery there is more or less casting off of the old skin.

CHOOADANGAH.

Puschima in 1864.

Symptoms.

[These witnesses, though of the *goallah* caste, were most uneducated, and could give but little information, so it was thought unnecessary to ask them any further questions.]

Evidence of ESSUR GHOSE, of Chooadangah, 24th March 1870.

Is a *goallah*, resident at Chooadangah, born at the place, age about 55, has generally 20 to 30 cows for milking purposes, gives price about 8 or 10 rupees for a cow, loses about 3 to 5 cows per annum, chiefly from *bussunto*, and some from *puschima*; his cows too are sometimes affected with *khoorah*; they don't die from that disease. If one gets *puschima* it always dies; 3 years ago *puschima* was very prevalent, and he lost 5 cows or more. When *bussunto* attacks his cows, generally more than half become attacked, and about 3 or 4 die; every year *bussunto* attacks his cows. Almost every other year *puschima* occurs amongst his cows, and 6 or 8 get attacked, and about half recover and half die.

Essur Ghose.

Cattle diseases.

The symptoms of *puschima* are,—difficulty in breathing, rattling in throat, fever, gets stupid, falls down; throat swollen; hoven; never purge at first, but if getting better then purge; breath very offensive, they are thirsty, but have a difficulty in swallowing.

Puschima.

Symptoms.

Puschima is infectious. Cows attacked die generally in 6 or 8 hours, but if they recover they are pretty well, eat a little in 5 or 6 days. I give medicine made of coarse roots and barks which are infused in hot water, and I apply a hot iron to their throat.

Second attack.

Puschima may attack cattle a second time. *Bussunto* never attacks cattle a second time.

I have never kept sheep, so don't know whether they take *bussunto* or not. I own the best milch cows in the village.

This year two of my calves that were suckled by their mothers died from *bussunto*, but their mothers did not get attacked, because they had had *bussunto* four years ago.

Evidence of H. J. S. COTTON, Esq., Assistant Magistrate, in charge of the Sub-division,—
Chooadangah, 25th March 1870.

H. J. S. Cotton, Esq.

I have found from a careful census that to every 100 inhabitants of the sub-division, including men, women and children, there are 75 head of cattle. This would give to a total population of 200,000, 150,000 head of cattle. This calculation has been based upon a careful enumeration of about 50 villages, containing about 30,000 inhabitants, in which villages a careful census was made of all animals. I have also found that in this year, throughout this sub-division, there has been a mortality amongst cattle from disease of all kinds of 10 or 12,000, and I do not look upon the mortality this year as exceptionally severe, rather the reverse. It is difficult to say how many head of cattle have been attacked this year, and the disease is still going on. The existence of the cattle disease was for the first time brought to my notice in November last, and my experience leads me to believe that the disease followed no course, but that it broke out simultaneously in different parts. Reports reached me together from all parts of my sub-division. The length of my sub-division may be 35 miles and the breadth 30. I am quite certain that the disease has not proceeded from any one centre towards any one direction or directions. The majority of the inhabitants of this sub-division, say about 65 per cent., are Mussulmans; 99 per cent. of the cattle of this district belong either to them or to *goallahs*, who form about 5 or 6 per cent. of the population. From what I have heard, I think the three diseases *puschima*, *gootee*, and *khoorah* to be infectious. In about the end of January last, I issued an order for the burial of carcasses 3 feet deep in the earth, and I have reasons to believe that this order has been carried out. The moochees petitioned against the order, and the respectable natives objected on the score of not being able to get shoes. I have known of a case of cattle poisoning in the jurisdiction of this sub-division. As far as I have seen, I do not think that there is so much as $\frac{1}{10}$ th of pasture land in the whole sub-division. The land is, in my opinion, over-cultivated. I hear that in the neighbouring district Pubna

Census.

Mortality.

Infection.

Pasture land.

CHOOADANGAH. the pasturage is better, and the cattle looking better. I have never known of land lying fallow anywhere in consequence of loss of cattle and plague.

Segregation. *Question.*—What measures would you suggest in regard to the segregation of cattle in the event of any future outbreaks?

Answer.—There is always a bit of fallow land near almost every village, where a hospital could be erected, but an establishment of this sort would demand the employment of a special staff, and I cannot conceive how that staff is to be constituted or paid. The pound fund might assist, as there is nearly Rs. 500 profit in this sub-division annually. A hospital formed for each village would be out of the question. The villages would not contribute a pice towards the establishment of a hospital, until they were perfectly satisfied as to the usefulness of the institution and recovery of their cattle.

Early notice. *Question.*—How do you think the earliest intelligence of the outbreak of infectious disease in a village might be obtained by the civil authorities?

Answer.—Certainly not through the Police, as they are presently constituted. If an owner of cattle were bound under penal consequences to report the first outbreak of disease in his own homestead, the desired object might be obtained.

Hide trade. *Question.*—Would you impose any restrictions upon the hide trade as at present conducted under any circumstances?

Answer.—No; not in these parts.

VILLAGE VISITS.

Dowlut Dyar.

Village Dowlut Dyar, 5th March 1870.

1. Bhagai Mundel's bullock; village Dowlut Dyar; condition good; dung in good order; Case. breathes hard; mouth healthy; no discharges; does not feed well; no eruption; coughs; ill since 3rd March.

2. Mungle Mundel's bullock; same village; 4 or 5 days ill; mouth quite healthy; did not eat Case. for three days; said to be recovering. Urethra and prepuce inflamed; muzzle moist; no discharges; maggots in urethra.

[Not gootee—urethral disease.]

Case. 3. Another bullock belonging to the same man appears to be ill; natives say it is not.

Case. 4. A cow calf said to have been ill and now recovering; no eruption or loss of hair.

5. Cow calf; 4 teeth; ill 10 or 12 days; now recovered; black specks all over the body; said Case. to be eruptions (*bussunto*) by the natives. This animal was most carefully examined by Mr. Hallen and an intelligent Native, who evidently knows how to recognize the true eruption of *gootee*; the Eruption. spots were all found to be scabs resulting from tick bites, and on removing the scabby spots, no true pit or congested area could be observed in the slightest degree.

6. A Bengali buffalo, male, alleged 20 days ill, recovering; had discharges from mucous Case. orifices, had dysentery; over the back, sides, and hips scabby patches are seen single (small) and confluent (large); two very large ones on the ribs, and besides these a general desquamation of cuticle exists. Eruption.

Some scabs are easily removed, others not so: on removing scabs some leave a well defined deep pit, others are shallow, and are evidently healing up from the bottom, except at the point where the scab remains attached; others on removal leave a large raw congested surface from which bloody mucous exudation oozes; the largest scab is over the last left rib, and measures 6 inches by 1½, and runs in the direction of the rib. On the shanks and inside of hind legs more crusts are seen, none in arm-pits or groins; desquamation and fissuring on ears.

There was an eruption in the clefts of all four feet and sores in the mouth; animal is lame still weak, but is feeding; natives say that he will be well in a month. They gave boiled rice while the animal was ill.

7. A cow, alleged 7 days ill; has patches and hard surfaces denuded of hair all over Case. shoulders and sides; looks just as if the skin had been scalded. On right forefoot on the outside, above the fetlock, is found the remains of scab somewhat circular in form; no scabs or pits or raw surfaces Eruption. elsewhere. Sores are said to have existed between all four feet. This animal had all the other symptoms of *gootee*; had a sore mouth; cow looks weak and in poor condition.

Chooadangah, 6th July, 1870.

1. A fine looking, well conditioned bullock, alleged ill since yesterday; off feed; nose dry; slight thirst; nasal discharge; mouth all right; dung soft, contains a little blood; 5 p. m. eats a little; thirsty; congestion of gum; discharge from mouth, muzzle rather dry, ear and body hot, feverish, dung as usual. CHOOADANGAH.

To have Sulph. Magnesiae oz. vi.
Spirit Ether Nitr oz. i.

Tengra Maree, 7th March 1870.

Tengra Maree.

No. 1, bullock full grown; good condition; 3 days ill; discharge from nose and small quantity Case. from eyes; muzzle dry; coat staring; no eruption; 2 days off feed; thirsty; pulse 54; weak.

No. 2, bull calf; 6 months; condition fat; 5 days ill; discharge from eyes and nose Case. (profuse); mucous membrane of gums much congested; purging; very weak.

No. 3, cow; 2 years old; 1 day ill; in good condition; shivered; off feed; muzzle dry; pulse Case. 64; no fever; dung in good order, but a little slimy; mucous membrane of vagina a little congested.

No. 4, cow calf; 1 year; condition good; ill since yesterday; off feed; shivered; dung in good Case. order; muzzle dry; discharge from nose; mucous membrane of gums and conjunctiva congested; feverish; pulse 90, wiry; vagina congested; is a little thirsty. The people distinguish *gootee* and *puschima*; latter more rapid; die in 3 days, former in 6 or 7 days; greater mortality in latter.

There are 3 or 4 kinds of *puschima*,—1, difficulty of breathing and swelling of throat; 2, dysentery; 3, swelling of hind quarter and rectum; 4, swelling of Varieties of *puschima*. stomach. *Puschima* comes at all times, *gootee* at this season. This Season. disease came from village Ameerpore; contagion goes from village to Source of disease. village and animal to animal: several cattle have died in this village Infectiousness. (6 or 7); *gootee* came in the latter end of November. Old man Date of outbreak. (70 years) states that when he was a boy he remembers the disease. History. It was then looked upon as a usual occurrence; comes every 3 to 5 years. When he was a boy he heard his father speak of it as a common disease. Individuals are sometimes not able to cultivate in consequence of loss by cattle disease; instances one man, Nepal, who lost 4 and has only 1 left, but there is never general difficulty. When a man can't cultivate himself, he lets his land to others on the *bhag* system, or Disposal of carcasses. trenches. When cattle are wanted they take loans and purchase at Segregation. *hâts*, or from neighbours; the carcasses are thrown on the field and the Objection to. hides removed by Gopal Moochee, who pays a *jumma* to the zemindar. Removal of healthy. Can't separate sick, because animals accustomed to association would Objection to. kick up a row if separated. Can't send away the healthy cattle of a Treatment. village, because there is no waste or common land to send them to. No. of houses and cattle. Give no medicine, nor soft mashes. There are 25 houses in the Rate of interest. village, and some eighty or ninety cows; give the same rate of interest Outbreaks differ in type. to *mahajuns*, 2 pice in a rupee. Some attacks are more virulent than others; the severity of this disease is increasing as the weather is Deaths. getting hotter; four died a month ago; one, 5 days ago; and one, 25 days ago.

Price of cattle now—cow and bullock, Rs. 15 or more; when he was a boy, Rs. 10. Price. Price has increased in consequence of deaths and sales of cattle. Increased. They generally buy and sell among themselves, but sometimes a Cause of increase. *bepari* comes and purchases. The moochees from Chooadangah and Belgatchee come now and then and buy cattle and take them Buying and selling. to Pudobela *hât*, where they are bought by dealers for the Calcutta *Bepari*. market; there are 2 or 3 cattle taken annually from each village. Moochees. The *hât* takes place on Saturday and Wednesday. It is about 6 Pudobela *hât*. miles from Chooadangah. No poisoning is going on; it never happened in their village. Goats and sheep sometimes suffer from poisoning; they get ill in October and frequently die. No Cattle poisoning. goats or sheep are ill now. They have never seen *gootee* (eruption) Goats and sheep suffer from purging in October. breaking out. Sometimes the skin peels off when cattle recover. No Eruption. cholera or small-pox exist.

TENGERA MAREE.

Case.

No. 5. Saw a convalescent cow; no crusts; desquamation of cuticle, and loss of hair on back.

Case.

No. 6. A large bullock, full grown, 8 days ill, got diarrhoea and the usual symptoms. In bad condition; being wild, could not examine it.

No. 7. cow; 3 years old; 5 days ill; condition poor; muzzle dry; discharge from eyes, nose, and mouth; mouth in good order; conjunctiva congested; 3 days off feed; very thirsty; congestion of vagina; aphthous deposit;

Case.

diarrhoea; passes bloody stools.

No. 8. Bullock; 7 days ill; 5 days off feed; 5 or 7 years old; condition fair; running from eyes, nose, and mouth; muzzle dry; mouth cold; very weak; aphthous deposit inside and outside gums; lying down; very weak;

Case.

breath offensive; dysentery; conjunctiva congested.

Cattle are driven out to graze along the road sides; no common pasture; they are housed a night. At the cultivating time the cattle are worked from 6 A. M. to 12 noon. Before they are taken out they are fed on *bhoosee*, oil-cake, and straw soaked in water. Cultivating commences in Cheyt (March) and lasts till Assar (June); ploughing has now commenced.

Grazing grounds.

Housing.

Number of hours worked.

Cultivation.

Draught.

Cattle are used in gharries to fetch straw, grain, &c.; they don't leave the village as a rule.

Belgatchee.

Belgatchee Village, 8th March.

Villagers report that the disease is dying out, and that no fresh cattle are getting ill.

No. 1. A cow with calf at foot belonging to Dyal Mondul, about 10 years old, is said to have been 4 days ill, but is recovering, as it began to feed to-day. The present symptoms are,—congestion with excoriations of the lower

Case.

gums, and buccal papillæ slightly congested. Faeces very slimy, and has been purging for four days; dry mouth; discharge from eyes and nose; in weak condition; coat rough, but probably animal is recovering. The calf is said not to be ill by the owner, and to be getting the little milk which the cow has to give. On examination the calf's gums are found to be highly congested, and there is one

Calf.

excoriation under the central nippers. The whole mucous membrane, especially the buccal papillæ, much congested. Calf 13 days old. The owner now states that the calf is purging.

Cow's mucous membrane of vagina much congested.

No. 2. Cow, 5 years old, belonging to Dyal Mondul; 5 days ill; in fair condition, with a calf at foot, 11 days old; latter left at home and reported to be all right.

Case.

Symptoms are,—pulse 76, weak; discharge from eyes and nose; mucous membrane of gums very much congested, with excoriations; purging since yesterday, slimy stools, but no blood; mucous membrane of vagina very much congested with a slight excoriation on edge of labia; muzzle very dry; cow evidently very weak; conjunctivæ very much congested; off feed; great thirst.

No. 3. A bullock belonging to Urjun Biswas, said to be 13 years old; condition fair; rather poor; said to be 3 days ill; purging; off feed; great thirst: pulse 64,

Case.

weak; discharge from eyes and nose. Buccal papillæ congested and two or three excoriations on papillæ, coat staring, and the animal looks generally unhealthy and weak.

No. 4. A bullock said to be 14 or 15 years old, belonging to Tariff Mehter, said to be 4 days ill; picked a little yesterday, but not eating to-day, though it has great thirst; pulse 76, weak; in fair condition; mucous

Case.

membrane of mouth congested, and three well marked excoriations on lower lip; fever; discharge from prepuce; purging; slimy stools; no blood.

No. 5. A bullock said to be 11 years old, belonging to Bikai Biswas, in good condition; said to have got over the disease. Nose nice and moist, but still a slight discharge from nostril; eye nice and bright; has been feeding since yesterday, and has no unnatural thirst; pulse 74. Has been 6 days ill, and three days purged, but has passed no bloody stools; mucous membrane of mouth still slightly congested.

Case.

No. 6. A bullock said to be 7 years old, belonging to Punchoo Biswas, in rather poor condition; has been ill for 8 days; purged for 2 days, but since yesterday purging has ceased; feeds a little and is thirsty, but not to any great extent; pulse very weak, about 65; very viscid discharge from nose; muzzle dry and cracked; breath very offensive; aphthous deposit inside gums and a round nippers; buccal papillæ

congested; animal very weak; and the case is a very bad one. The nasal discharge very sticky and adhering to the nostrils; the animal can scarcely breathe. BELGATCHEE.

No. 7. A cow with calf at foot. Cow said to be 15 years old; the calf 11 days ill and said to have become a little stupid to-day; both the property of Punchoo

Case.

Biswas; cow in poor condition; very weak; is down and unable to get up. Pulse weak and small, 80; fever; discharge from eyes and nose four days old; muzzle very dry; off feed and drink.

Mucous membrane of mouth congested, aphthous deposit on hard palate; patches of congestion on lower gum; udder and vagina very much flushed; udder very hot; milk suppressed; mucous membrane of vagina highly congested, and two large patches of aphtha; no eruption visible.

The disease is called *bussunto*; it is not a new disease, but has always been known

Bussunto.

History.

Season.

Symptoms of *gootee*.

by the present inhabitants to have occurred in the village 3 or 4 times; is said to come on every 5 or 6 years, and generally when there is a want of water and at this time of year. The present generation's fathers spoke of the disease. The symptoms of *gootee* or *bussunto*, or *nara* are,—ears drooping, feels cold, has fever, stands apart and looks dull and stupid, off feed, great thirst, and when it drinks much it commences to purge; at the latter end of the disease it has bloody stools. Has sore mouth and muzzle, but no sores in the feet. Those that begin to eat recover: although the disease is called *gootee*, no eruption can be seen on the body, but sometimes when the animal recovers the skin comes off in places; they have not seen marks of pox on animals as in men, but sometimes the hair comes off. An animal may die in from the third to the tenth day, but if an animal lives till the 12th day it generally recovers. The disease

Infectious.

is infectious, but cannot say where it came from; think that it broke out first in this village.

Previous outbreak.

Type varies.

The last outbreak was 5 or 7 years ago, when, as far as they can see at present, it was worse than it has been on this occasion. It has as yet been 10 days in the village.

The last outbreak began in October and lasted till December. This outbreak is mild at present, but may get as bad as the last. As yet 10 animals have been attacked, but none have died, 2 calves have died, but cannot say if it was of the disease; some say it was from want of milk. When an animal recovers it is weak and does not like the sun, not regaining its strength for nearly a year.

Date of outbreak and duration.

Deaths.

Convalescence tedious.

Symptoms of *puschima*, more rapid and fatal.Varieties of *puschima*.

There is another disease called *puschima*, and it is worse than *bussunto*, as an animal attacked by it very seldom recovers, and it dies in from 1 to 10 days. The animal's belly swells, and it does not pass stools or water, it breathes hard and dies.

In other cases the animal shivers and falls down dead.

In another case the throat swells, the animal can't swallow, and dies.

Khoorah, symptoms.

There is another disease called *khoorah* in which sores came on in the mouth and feet, but this is seldom fatal.

Season.

Puschima may break out at any time in any year and in any month.

Puschima is not looked upon as so infectious as *gootee*. There are about 20 chumar families in the village; no one pays the zemindar for the right to take the hides, though Sisteedhur Chumar takes them. A case of poisoning has never been heard of in this village.

Infection.

Chumars.

Poisoning.

Proportion of cows to bullocks.

Cows used in ploughs.

No buffaloes.

There is about 1 cow to 4 bullocks in the village; the cows do not give much milk, and are used as well as the bullocks in the ploughs. There are no buffaloes in the village, as water is scarce.

In the attack of *bussunto*, 5 or 7 years ago, 120 or 125 were attacked, and out of them about 15 died; there were about 1,000 head of cattle at that time in the village. There are 40 houses in the village. The price of cattle is now double what it was 10 years ago; attribute this to the want of pasture, and the consequent less number of animals. Now there are only about 250 head of cattle in the village, but these are sufficient for the cultivation. No dealers come here, but they buy their cattle from the surrounding villages

Statistics of former outbreaks.

Price of cattle doubled.

Reason.

Buying and selling.

and from the market at Puddobila.

BELGATCHEE.

Sheep contract *gootee*, goats and dogs do not.
Jackals.

Horses.
Treatment.
Number of hours worked.
Feeding.

Difference between *puschima* and *gootee*.
Infection.
Segregation.

There are sheep in the village and they get *gootee*; no pustules appear on them, but they have just the same symptoms as cattle. If 10 or 12 are attacked 1 or 2 would die; have not heard of goats or dogs getting the disease. No pigs in the village. Have not heard of jackals getting it.

Have not heard of horses getting it. Do not attempt to treat animals with the disease, as they know of no medicine, but they give them congee water and plantains. Cattle go to plough at 8 or 9 and come back at 11. There is no pasture land and the cattle are fed on bhoosee and straw.

In *puschima* there is no running from the nose and mouth, which there is in *bussunto*; but there is a swelling of the stomach, which there is not in *bussunto*; know that the disease is infectious, but cannot segregate, as they have not the means.

Taltollah, 9th March.

Taltollah.

Visited the village of Taltollah, in which there are about 80 or 90 houses and about 700 head of cattle; the villagers say that *bussunto* and *khoorah* existed in the village during the months of November, December and January; that nearly all the cattle in the village were attacked with one or other of the diseases, but that only two of them died, both of *bussunto*. Examined some of the convalescent animals, and found some crusts on the back, shoulders and dewlap of a calf; the natives say that these crusts show themselves more on the young animals, and account for this by their skins being more tender. Saw a cow said to have *khoorah* and which had recovered from *bussunto*; the rear hind foot had a sore in the cleft of the hoof, but this was more like rot; it had no sores in the mouth; saw another cow which had recovered from *bussunto* and which had an old sore in the rear forefoot, which was not *khoorah*; this animal has desquamation of the cuticle and loss of hair over the back, and black spots on the neck and dewlap, indicating where crusts had existed; had *bussunto* in January. The Factory Omlah produced a list showing that there are 64 houses in the village and 271 head of cattle; 12 died of *khoorah*, none of *bussunto*. Most of the cattle were attacked with *bussunto*. The disease came to this village from the village of Kadumpore. The greater number of cattle in the village are in wretched condition, recovering from the disease, and many of them exhibit desquamation and loss of hair over the back.

Statistics.
Source of disease.
Condition of convalescents.

Saw another convalescent animal. There is a well-marked pit on the points of the left hip firmly attached, leaving a bleeding surface when removed. There are crusts on the ribs of the left side; no crusts on the udder. The chowkeedar says that in no cases was there an eruption on the udder. The villagers say that the eruption appears on the face, both sides of the withers and shoulders all along the back; they also state that the mouth gets sore. Cow-houses large, well-raised, mud walls, and floors separate, stalls for animals separated by posts, and verandah or porch for the cow-keepers; cows put into house loose.

Case.
No eruption on udder.
Site of eruption.
Cow-houses.

Another cow and calf seen with loss of hair on neck and dewlap; cuticle chaffy and dry. Almost all the cattle of the village had the disease.

Symptoms of *Khoorah*,—mouth sore, also feet; did not eat for 12 or 15 days; had purging, but did not pass blood. Died of *inanition*. Had discharge from mouth, nose, and eyes in *khoorah*.

History of *bussunto*.
Second attack.
Repeated attacks of *khoorah*.

They state now that there is no purging in *khoorah*, but in *bussunto*. Old man, about 70, says that *bussunto* has always prevailed every two or three years, but when an animal has been once attacked it does not have it again. A cow can have *khoorah* more than once.

Puschima not infectious.
No particular season.
Condition as affecting liability.
Varieties.
Treatment.
Second attack.
Puschima and *gootee* don't prevail simultaneously.
Calf infected by mother.
Abortion.
Variety of type.
Mortality of former outbreak.
Disease among men, goats, and sheep.

In *puschima* cattle die in one or two days; no cow escapes this disease. It is not infectious. There is no certain time of its prevalence. The best conditioned cow gets it first. There are 2 kinds,—1, animal stands aloof, drops and dies; 2, belly swells, off feed and drink, dies on 1st or 2nd day. No medicine known. There is purging; can't say whether an animal can have it twice, because few, if any, recover. *Puschima* and *gootee* don't prevail simultaneously, nor *khoorah* and *puschima*. *Puschima* prevailed about a year ago. A calf following its mother always gets *bussunto*. A cow in calf always miscarries. Five years ago *bussunto* was much more fatal than now. Some 50 head of cattle died in the village. Village healthy, no cholera nor small-pox. Goats and sheep don't get *bussunto*. Two brothers had 7 and 5 cattle, they were all ill and purged; no deaths.

Puddobela Hdt, 9th March 1870.

Puddobela.

There were some 25 cattle present; these were carefully examined; some were found healthy (the minority), others were found to have had *bussunto* and partially recovered, one or two were found to be suffering from the disease acutely. One was passing slimy stools. Another—a calf—had an ulcer of the gums in process of healing. The recovering cattle had patches of bare skin and crusts on the back. Both *beparis* and villagers purchase in this hdt. Some 200 or 300 cattle are sent down to the Dum-Dum market for Calcutta consumption. Some of the owners of cattle present had brought them from a distance of 10 or 12 miles. The price asked was from Rs. 6 to Rs. 12. The zemindar's Gomasta stated that the disease *bussunto* appeared every two or three years, always in the hot weather and end of the cold weather.

Puschima.
Greater mortality from *bussunto*.
Khoorah.

Puschima may appear at any time of the year; is a more fatal disease, but on account of the more general prevalence of *bussunto*, more cattle die of this disease. *Khoorah* appears at this season.

A very intelligent ryot, Shaik Sarung, gave the following evidence:—

Puschima is a different disease from *gootee*; there are several forms of it; some times the animal shivers, gets out of sorts, is off feed, and dies in a day or two without any other marked symptoms. Sometimes the belly swells and purging comes on; the stools may contain blood; such cases may recover; sometimes the throat swells and the gums get sore. No eruption appears on the skin and the hair does not separate.

States that *puschima* may come at any time of the year: on being cross-examined he said that the disease more frequently appeared in the cold weather. It is infectiousness; not protective against *bussunto*, nor vice versa, and witness states that an attack of *puschima* is not protective against *bussunto*, nor *bussunto* against *khoorah*, nor *khoorah* against the return of the other two, but *bussunto* was distinctly stated by all present to be protective against itself. Witness' cattle had all *bussunto* last year, and he lost 10 cattle this year, his surviving cows had *khoorah*. This year *bussunto* did not appear in his village; there are very few cattle in this village, but these do not appear to have *bussunto* more frequently than other places.

The villagers state that disease may be conveyed from this hdt to healthy places. States that in *puschima* there is never any desquamation or eruption under any circumstances.

Cattle are thirsty in *puschima*, also in *gootee*, more so in the latter.

Noonnuggur, 10th March 1870.

Noonnuggur.

No. 1, bullock, 9 days recovered from *khoorah*; the mouth first became sore round the roots of the teeth. It looked white, then the white peeled off and left an excoriated surface, then the foot became ulcerated, fluid issued from the cleft of the foot. The animal was 4 days off feed, no thirst, no purging, no discharge, mouth sound now. Has a sore foot, but can't say whether from injury or disease; this animal is said not to have had *bussunto*.

NOONNUGUR.

No. 2, another case of *khoorah*, ill for 4 days, the only one belonging to the owner affected; has 10 or 12 more. Has had no sore mouth; eats; mouth carefully examined; buccal papillæ, floor of mouth, sides and under surface of tongue congested. Sores (ruptured vesicles) on each side of lips, and on tongue a very large well marked one; about the middle of the foot, on all four feet, sores in the cleft, the result of ruptured vesicles; crusts on the back of both ears; on the inside of tip of the left ear a vesicle ruptured in the struggle.

Case. No. 3, another case of *khoorah*; has profuse discharge from nose and mouth, four days ill, mouth very hot.

Said by owner to have little or no discharge, blisters on lower lip and on tip of tongue, also a very large blister, 1 in. by 1½, about 2 inches from tip of tongue; floor of mouth, especially around opening of sublingual ducts, much inflamed, buccal papillæ much congested at base.

In good condition. In cleft of left forefoot a large blister.

Large blisters in cleft of all the feet.

Case. No. 4, seven days ill with *khoorah*.

Slight discharge from mouth, and two or three vesicles healing; feet healing.

No. 5, case of *bussunto*, 10 days ill, recovering 3 days. Had purging, looked stupid, was weak, off feed, a few excoriations in the mouth; buccal papillæ still congested, sores on some of them (vesicles on five of them burst and healed), feet said not to have been sore; all right now, no eruption on skin, udder very healthy. Had purging for two days.

Case.

No. 6, case of *khoorah*; sore on upper lip, sores on buccal papillæ; large sores on side of tongue, burst vesicles. All four feet sore, as in other cases; no discharge, no purging, maggots in cleft of left hind leg.

Case.

Case.

No. 7, cow, poor condition, 12 days ill.

Buccal membrane slightly congested, tongue healthy, had slight purging, feet carefully washed and examined, found all right. Backer Mondle has 12 cattle, 5 of which were ill, 1 of *khoorah*, and 4 of *gootee*; disease came from Belea Kande, near *Podobela Hât*.

Statistics.

Source of disease.

No. 8, a calf said not to have been ill, nor its mother; face, sides, back and thighs covered with crusts of different forms, most of them circular and circumscribed. There are also spots where the hair is coming off, mouth all right. Knows *puschima* rog. Animal very stupid, off feed, great purging, no blood. Stomach swells, neck swells, no discharge from nose, eyes, and mouth, no sores in mouth. Hair does not come off.

Season.

Puschima and all diseases prevail most in the hot weather (this time of year). *Puschima* prevails at all times of year, perhaps less in the rains and cold weather. Another man said that *puschima* was worse in January, February, and March; that *gootee* prevailed at the same time. Both diseases may prevail in the same season, but not in the same place. One village may have *gootee* and another *puschima*.

Puschima is considered to be infectious also: no animal died of *gootee* this year. Only 4 cases have as yet occurred. One man said that a heavy fall of rain would put a stop to all disease.

Infectiousness.

Katchakatta.

Katchakatta, 11th March 1870.

Ryot of village Duleepore, 10 miles north of Chooadangah; 70 houses; 350 cattle, have only *koorah*, about 60 head of cattle laid up. Have sores of the mouth and feet, sometimes one and sometimes another is first attacked. In some cases the mouth is not affected. They are off feed, have fever, and discharges occur from the eyes; breathing rapid, sticky discharge from the nostrils, no swelling of stomach or any other parts. Recover in from 7 to 15 days. Generally recover; few deaths; maggots sometimes form in the mouth and foot; such cases may die; no death has occurred in Pardoor-gapoor nor Duleepore. Animals attacked by *bussunto* may have *khoorah*. *Khoorah* has prevailed for about 2 months, animals may have *khoorah* several times, but not in the same year. The only treatment employed is soft mud and coal-tar. *Khoorah* prevails at all times of year. They consider *khoorah* infectious. It runs through a homestead or village. *Khoorah* and *aishoo* are the same disease. *Khoorah* and *bussunto* may prevail at the same time in the same place. A cow may recover from *khoorah*, may have *bussunto*, and vice versa. One old man stated that *nara*, *bussunto*, and *puschima* are the same disease, that is, a case which may from the strong fever appear to be *puschima*, turns out afterwards to be *bussunto*.

Bussunto not protective against *khoorah*.

Repeated attacks of *khoorah*.

Treatment.

Season.

Infectiousness.

Names.

Khoorah not protective against *bussunto*.

Bussunto and *puschima* the same disease.

Symptoms of *bussunto*.—1, animals look to be stupid and oppressed, and afterwards there is fever; 2, there is running from the eyes and sticky discharge from the nose, sloughing discharge from the mouth. Body gets hot, animal off feed, great thirst, runs to water; when the animal drinks, it purges, pieces of flesh pass with stool, slime and blood also; they boil *kulie* and plantains and treacle and butter-milk with boiled wheat and feed the beast with it; sometimes they recover, sometimes die. A greater number recover than die. When one cow in a homestead is attacked, they all get the disease; some have it more severely, some less severely; those attacked in previous years escape; they never see pustules, but during convalescence the hair comes off. Little dry bits of skin separate, leaving a raw surface; the mouth is full of excoriations. Buffaloes also get the disease (Mr. Scales states that 15 buffaloes of his got the disease and all recovered. Ryots of Mr. Hills state that buffaloes get it worse). Of 16 cattle, 2 or 5 or more may survive; sheep they can't speak about with certainty, but during the prevalence of *bussunto* sheep die with purging, discharge from mouth and nose, &c. *Bussunto* comes every 2 to 5 years, and different outbreaks differ in severity. An old man of 60 or 65 says that he saw *bussunto* in his boyhood and had heard of the disease from his father; they have never heard of its being a new disease. They attribute it to the air. It may be introduced by a sick cow purchased and brought into a village. The disease is infectious. *Bussunto* prevails in January and February.

Puschima.

Symptoms.

Season.

Diseases, different.

Condition.

When the skin is handled there is no shrinking. Die on the first, second, or third day; recover, if they do, after four or five days.

Recovery rapid.

Puschima and *gootee*.

Castor-oil and linseed.

linseed; they die in a day or two; they cannot ruminate or swallow; have hoven and die; no purging.

Poisoning.

Hides carry infection.

Mortality.

statements are obtained come from the villages:—

Basberia	...	...	13 miles north of Chooadangah.
Pardoorgapore	...	...	9 " " "
Duleepore	...	...	10 " " "
Doorgapore	...	...	10 " " "
Chockbondabeal	...	...	10 " " "

and other neighbouring villages. All present agreed in the correctness of the above information, and had nothing more to add.

Dogs and goats.

Dogs and goats have *gootee*; horses may have it.

Information given by ryots living in and about Sindoor Factory.

Sindoor Factory.

This factory is about 10 miles from Chooadangah, to the west.

MEGAI MUNDOL of Mintzapore, SURROOP CHUNDER SHAHA of Sindoori, RAMJAN BISWAS of Kotalpore, KODABOX BISWAS of Kotalpore, DALLOO BISWAS of Hingaparrah, MULLUNG MUNDOL of Kootubpore, and others gave the following information.

No present disease.

Mortality.

All of them state that there is at present no plague among cattle in their villages of any description, though four years ago, i. e., 1273-74 (1866-67), they had *bussunto*, of which 1/6th of the cattle belonging to the different villages died.

SINDOOREE.

Symptoms.—The animals looked stupid, kept apart from the rest of the herd, ears drooped; on the 3rd or 4th day they refused food and had great thirst, after which they had liquid stools mixed with blood and mucus, excoriations on the gums and sores on the tongue, running from the eyes, nose, and mouth, and death generally occurred in seven days: if they did not die in that time, they generally began to recover, the first sign of which was a return of appetite. No eruption appeared on the body, but in some cases, after the animal had begun to recover, the skin came off in patches; whilst ill the animals did not ruminate. No medicines were administered, except warm water, with which the mouths were washed out; also bamboo leaves and green grass and ripe plantains were given to eat, the tongue was also rubbed with ghee. The disease is considered infectious, because if one of the herd gets the disease, the rest generally take it. Although they know that the disease is infectious, they do not generally separate the diseased animals, as they have no means for doing so; if there were means they would do so. Are not of opinion that cultivation, as a whole, has suffered from the visitations of the plague, though there may have been individual cases of hardship. The disease has been known in the country for any number of years, and makes its appearance at various intervals, from seven to eight years apart. The disease generally makes its appearance in October, or if not, then in February or March. The price of cattle has increased in the last 10 years, but not much, *i. e.*, cattle that 10 years ago would have cost Rs. 10, would now cost Rs. 13 or 14, but the price of everything else has increased in a like proportion. Purchases are generally made from the market at Puddobela, but private sales are also made. There are moochees about who rent from the zemindar the right to the skins of certain villages, and they sell the skins to the people, who are go-betweens between the moochees and the Calcutta dealers; they get from Re. 1 to Rs. 8 for each skin.

Treatment.

Infectiousness.

Segregation not practised.

Effects on agriculture.

History.

Season.

Price.

Markets.

Hide trade.

Have heard of cattle being poisoned, but have never seen any cases of it, nor have they lost any cattle by it. Besides *bussunto*, there are two other plagues, *khoorah* and *puschima*: the former is of common occurrence, but is never fatal; the latter is of rare occurrence, but when it does come, it kills every animal that it attacks; *khoorah* comes on in the month of Assar (June and July), and at this time, March. There is no special time for *puschima*; it comes at any time.

Puschima and *bussunto* don't prevail together.

Second attack.

Have never heard of *puschima* and *bussunto* coming on at the same time. An animal that has once had *bussunto* and got over it, never gets it a second time.

***Khoorah* symptoms.**—Leave off food, fever sets in, get sores in the mouth, which cause a running from the mouth, and a sore comes in the cleft of the hoof; after two or three days they feed again, but are ill for seven or eight days. The animals attacked are either tied up in wet mud, or coal-tar is put to the hoof; they are generally not fit for work for 13 or 14 days after being attacked. *Khoorah* is not infectious.

***Puschima* symptoms.**—In some cases the belly swells, the animals are off feed, look stupid, shiver, do not purge, but die on the second or third day; there is no running from the eyes, nose, or mouth, or purging, as in *bussunto*, except when the animal is beginning to recover, and then purging sets in, which is a sure sign that the animal is beginning to recover. Are of opinion that *puschima* is not infectious, though it is more deadly than *bussunto*. Of late the breed of cattle in this part of the country has greatly deteriorated, 1st, because the bulls have been taken away to make the roads; and, 2nd, because there are no pasture lands, all the country being under cultivation. Have never noticed that there was disease among men at the same time as among cattle.

Hatikatta.

Village of Hatikatta, visited 22nd March 1870.

No disease now.

There are some 20 houses and 100 head of cattle. *Gootee* and *khoorah* prevailed here in January. After *gootee* had disappeared, *khoorah* came on. Some of the cattle which had had *gootee* were affected with *khoorah*; about half the cattle were affected, and none died. Had *gootee* about 10 years ago. Had *puschima* in 1266 (1859); about 12 were attacked, and 8 or 10 died.

HATIKATTA.

Gootee came to Alukdia, an adjoining village to the west, first. It appeared there in the same month; two or three cattle died there. The disease proceeded to Taltollah, to the east, after appearing in this place. Some of the cattle which recovered in this place had crusts. They lost their hair however. The cattle are all well now, and have recovered their former condition; they lost condition during the attack. They gave the cattle soft grass and ripe plantains and butter-milk, no medicine. There are no buffaloes or goats in this village; the sheep were not ill during this attack of *gootee*, but in the previous attack sheep suffered; the hair came off during the convalescence. It is the general opinion among the villagers that sheep can get the disease; they have not seen goats and dogs have the disease. *Gootee* is infectious, and when an animal is once attacked it is not attacked again. The price of cattle is not enhanced by the simple fact of their having had the disease before. The price of cattle has risen in common with that of other articles, and there is more demand for cattle. *Puschima* is infectious, but not so much so as *gootee*; it attacks the well conditioned. One villager of Alukdia knows of a case where a cow had had *gootee* one year before, and subsequently died of *puschima*. This is the general feeling. If an animal survives *puschima* (a rare event), it does not have *puschima* a second time. It may have *gootee*. In *puschima* an animal gets stupid and falls down, gets hoven, shivers and dies. When the animal recovers, it purges violently, and sometimes passes blood; no ulcers of the mouth or swelling of neck. When an animal dies it is thrown into the open, and the moochees take the skin. There is a little pasture land in the neighbourhood, but no pasturing fields. The cultivation is now increasing at the expense of pasture land. The cultivated land having become less productive, pasture land was taken in. In this village linseed, mustard, pulses, and indigo are cultivated and sold; they leave land fallow every 5 years; they do not manure. On indigo lands they grow *kullai* (pulse) after the indigo is removed, and on rice land, mustard, teal, and linseed; these are taken in rotation; cattle are employed all the year round in one way or another. The Meherpoor road is close; cattle frequently pass along this road in herds of 100 or 150. When we wish to buy or sell we frequent the hâts of Pudobilla, Pudoa, Jam Jami, Budwa, or Budalia. There has been no cholera or small-pox in this village for 2 years. Small-pox prevails in Alukdia; *gootee* prevailed first; they consider the diseases similar, but men are not affected from cattle, nor *vice versa*. *Gootee* creeps from village to village, and does not appear at once in many villages. In a village many houses may be attacked at the same time. *Alchara* is a disease which occurs occasionally. The animal simply falls down and dies. We have known individuals suffer from loss of cattle and allow their lands to lie fallow, but never a whole village; they are afraid of this disease, as it carries away so many cattle. Cattle are herded and sent to pasture; some of the villagers cultivate land at a distance. The inundations are less severe now than formerly. There was an exceptionally severe inundation a few years ago, and after that subsided, cattle had *khoorah* and swelled neck, which, they say, comes on from eating submerged grass.

Examination of ryots belonging to Alukdia village, about 3 miles to the west of Choodangah, Alukdia.
taken on the 23rd March.

There are from 150 to 200 houses in the village, and about 1,000 head of cattle, of which about half will be cows and half bullocks; we have *bussunto* raging in the village at this present time, and it has been going on for the last month, and up to the present time about 100 cattle have been attacked, and 8 or 10 of them have died. Can only give the names of two men who have lost any; the last died 12 days ago. The symptoms of the disease are that the animal looks stupid, shivers, is off feed, and water runs from the eyes, nose, and mouth, has watery stools, and if it passes blood, it generally dies; if it gets over 7 days of the illness it generally recovers; do not see any eruptions, but if you rub the skin you feel it rough; the hair does not come off, but sometimes little bits of the skin come off, about the size of a 4-anna bit; the skin is then of a

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dark color, and does not look like a sore; there is no hollow, but there is a reddish rim round the place. We had a similar attack to the present one about 4 or 5 years ago; on that occasion the mortality was greater than at the present time, 2 or 3 died then out of each 20. *Puschima* is a worse disease than *bussunto*; we had it in the village last year, when from 20 to 25 head of cattle died; it was in January or February; the symptoms of the disease are,—the animal begins to shiver; is swollen, off feed, and generally dies on the first or second day; there is also purging, which is a fatal sign; it waters from the mouth, and shivers at the time of death; its neck is stiff, and its nose points out; if it is going to recover, the swelled appearance generally disappears; it begins to eat and does not shiver, and its bowels are rather relaxed; if the animal sneeze it is a favorable sign, so also the passing of water. In fatal cases the animal passes blood and slime; the breath of the animal is offensive; its jaws get locked and it has a short sort of cough; sometimes the throat swells and sometimes the hind quarter swells. *Bussunto* is a very infectious disease, and if it comes into the herd it goes right through it. *Puschima* is not infectious. We have not got any places to which we could send the sick cattle, and therefore we do not separate them. In *bussunto* the gums of the animals become sore, and we wash them with ghee and warm water.

There is another disease called *khoorah*, but it is not a fatal disease; the animals are off work from it from 15 to 30 days; we place the feet in mud and water for it. We take the bark of the wild jack tree, and pound it up and make an ointment of it. Some people put tar, but the doctor of the village does not approve of it; if maggots come, then they put tar; do not give any medicine in cases of *bussunto*; in *puschima* give tobacco leaves, turmeric, 21 chillies, and hooka water with the roots of 21 trees, datoorah, sajuah, peepul, (not the tree, but the root of ginger), chultah, madar, dab tree roots, toolsi and others (there must be 21 things, but they include the goor, turmeric, chillies, &c.) We put this mixture to the eyes, nose, and ears of the sick animal; we wet a cloth with the mixture and squeeze it into the nose, ears, and eyes; we do not put it into the mouth.

There is another disease called *badla* which comes in the rains; the animal gets lame. It comes from eating wet grass; the animals do not die from it. There are fewer cattle in the village now than there used to be: the cause is, that there is no grass for them to eat; the cause of this is that the rains are so much less and there are no inundations; the cultivated lands do not give more than half the crops they did; we have hardly any lands fallow. The cattle are now much more stall-fed than they used to be, because there is no grass for them: one man says that 15 or 16 years ago he lost all his cattle, 22 head, and could not cultivate his lands; half of them were taken up and cultivated by other people. Another man, 2 or 3 years ago, lost 8 head of cattle out of 11, and the same took place with regard to his lands. Have never seen that the lands of the whole village have suffered, for if one man loses his cattle his neighbours help him. No doubt the moochees give poison, but none of the villagers know what poison is given; they give it in plantain leaves, or they put it in the grass that the cattle are going to eat.

Two or three years ago there was poisoning going on, and we warned the moochees; one man was caught at the village of Krumpoor, and was put into prison for 2 years. Do not think that there is any poisoning going on now. Can distinguish between poisoning and disease; in poisoning the animal froths at the mouth and its body swells. A month and a half ago one or two men had small-pox in the village, but not now; there has been no cholera. Sheep, goats, and fowls get *bussunto*, but not *puschima*. Dogs get *bussunto*, but we cannot say about jackals.

The moochees claim the right to the skins and send them to Calcutta. *Pikars* come sometimes and buy cattle; the old and lame ones they take to Calcutta, as also some for milk. Herds of cattle pass here from the direction of Meherpoor. In the month of Kartick (October) last, some 400 or 500 good ones passed; do not know where they went, but do not think they

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went to Calcutta as they were good cattle. They came from the north of the district, where there is good grass. Put the cows to the Brahmince bulls, though they are being caught and taken to Calcutta; 6 were taken from this village in December last, and the men who took them had an English order; they were the carters of the Municipality, and took them to work in the carts. By their going some of us are glad, as our crops are not destroyed. We have 5 or 7 Brahmince bulls still left in the village. Cannot say how many young bulls, but they do not cover the cows.

Saw a case. A cow reported very sick, lying down, viscid discharge from nose, eyes, and mouth, especially nose; excoriations of gums, buccal papillae, tongue much furred, 3 days sick, purging blood and mucus, membrane of vagina very much congested, labia swollen, off feed, great thirst, do not give any medicine.

Locknathpore,—visited 25th March 1870.

Locknathpore.

KISTOLAL BOIRAGEE, Gomasta of factory Locknathpore. There are 148 cattle now connected with this factory; 14 buffaloes have died of murrain and 12 cows; all the cows, with probably a few exceptions, suffered from the disease.

Statistics. Gives the usual symptoms of *bussunto*, no eruption on skin; considers the disease infectious.

Mortality. Has seen this disease before, but never lasting so long. There has been a particularly long drought this year; no rain since 10th October.

Symptoms of *bussunto*. Had it about 10 years ago: an animal once attacked does not get it again.

Infectious. This is not a new disease. It has always been known in this part, but has never been so virulent before. In consequence of this, individuals will have to purchase cattle, or give out their land in *bhag jote*. In some way or other the land will be cultivated. He has never seen the cultivation stopped on account of loss of cattle from disease.

The ryots look upon the disease as a serious matter, but are not apprehensive of it, on account of their apathetic character; no medicine is given; no separation is adopted. Mr. Glascott separated his cattle, and attributes his small loss to that circumstance. Does not think that the ryots would separate their cattle by themselves; they throw cattle on the *bhagar*, and the moochees get the *bhagar* *jumma*, or right of removing hides; the hides go to Calcutta. There is pasture land for cattle (fallow land), but less than formerly; the cultivated area has increased at the expense of the pasture land. The ryots keep more cattle now than they used to do. Cattle are taken to Calcutta for the butcher market by *pikars*; when they want to buy or sell cattle they go to Pudobilla; they also purchase and sell by private contract; cattle stealing has prevailed in this quarter, but does not do so now to any extent. It is done by *goallas*, and they carry off the cattle to villages in the direction of Jessore. The thieves do not retain the cattle, they hand them over to other persons. Cattle poisoning is known in this quarter and occasionally suspected. If the moochees are prevented removing the hides where a number of suspicious deaths are occurring, it will put a stop to the mortality.

Can recognise symptoms. The ryots can detect cattle poisoning, and are quite able to protect their own interests.

Puschima. In *puschima* the stomach swells, and cattle die at once. Mr. Glascott says, that it always occurs after an inundation, and from eating rank grass that has been submerged. Is not sure of its being infectious. Cattle having had *gootee* may have *puschima*.

Recoveries from *puschima* are very rare.

Khoorah is a sore state of the clefts of the hoofs (maggots), occurring in the dry weather. It is infectious, and not fatal; sheep and goats get the disease *gootee*. Mr. Glascott has been 9 years in this country, and has never seen *bussunto* so general or fatal as in this year; never seen such a long drought. Has seen *puschima* twice after the severe inundations of 1861 and 1869. The price of cattle has doubled in the last 10 years. This is owing to greater demand for cattle. The circumstances of a cow having had the disease does not enhance the price of cattle. Brahmince bulls are taken away by the agents of the Calcutta Municipality, but enough have been left for breeding purposes. Other bulls (*Arias*) are left entire and worked; they form a small percentage of those castrated.

Price increased.

Reason.

Bulls.

DISTRICT OF JESSORE.

JESSORE.

H. Farrell, Esq.

From H. FARRELL, Esq., *Veterinary Surgeon, on Special Duty, to the Magistrate of Jessore,*
—dated Jessore, the 30th June 1869.

On inspection I find the disease, which is of the same type throughout, is known to the natives as *gootee* or *bussunto*, and in the Soonderbuns as *puschima*, *dukina*. It is a low form of typhoid fever, and similar in every respect to the rinderpest or murrain of Europe.

History.

2. The disease, I learnt, has been known for several years in the district. It appeared as an epizootic five years back, but its ravages were confined to a small portion of the country, and the mortality not very great. It is of yearly occurrence, mostly during the months of January, February, and March, and sometimes in August and September, sporadic cases appearing here and there; nothing to cause alarm, and the loss is said not to be more than 5 per cent.

Murrain in 1869.

3. This year it broke out with great violence about the middle of February in three or four parts of the district simultaneously, spreading very rapidly and causing great mortality. After a duration of some twenty days it met with a check, which lasted for some three weeks, and broke out afresh in April, and has been gradually spreading and raging ever since. In and around Jessore, although a good deal abated, several cases have occurred lately. It has disappeared entirely from the villages in the Sub-division of Jenidah. The mortality, from the information I could obtain, was about 30 per cent. In the Sub-division of Magoorah the disease is raging to a great extent for the last two months in and around the village of Sutrajitpore, extending along both sides of the Nobogunga river to the villages for several miles inland. The villages in the neighbourhood of Nowhatta have suffered severely, and the disease is still raging to a great extent. The mortality in this part alone, within a circumference of ten miles, I should say, was over 1,000 head of cattle.

Mortality.

4. In the Soonderbuns I could find no disease having appeared in an epizootic form this year. In December, January, and February some cases of *gootee* appeared, but the loss was not very great. In April, in some of the Abads, Morrellgunge and Jorahkallee, some sixty odd head of cattle died from another disease which is more prevalent every year in those parts than *puschima* or *gootee*. This disease, as described to me, viz., swelling of the off hind leg, mortification taking place and causing death, appears to me to be the "black leg" or "quarter evil" of Scotland. I had no opportunity of seeing any cases of the kind, but I gained the above information from Mr. Larymore, as assistant of Messrs. Morrell Brothers, who seems to have paid some attention to cattle disease. This disease is not so formidable as *gootee*, and is amenable to treatment and preventive measures. I left directions for the treatment and prevention of both diseases with Messrs. Morrell and Larymore and other gentlemen, who have promised to see them carried out. I have had copies of my instructions distributed to the natives.

"Black quarter."

5. In and around the villages of Phooltullah and Station Doomoria the disease is very bad.

6. I have personally visited all the infected villages, with the exception of Doomoria, which I purpose doing in a day or two. I have placed Salootrees at the different places with medicine and other necessities to attend to the sick, and carry out the sanitary arrangements to prevent the further spread of the disease. I am happy to state the disease has succumbed to a great extent to the treatment and preventive measures adopted.

7. I am unable to give you the exact number of cases treated, cured, and died, as my reports have not been all received, but I hope to be able to do so in the course of a few days.

Extract, paragraphs 6 and 7, from the Magistrate of Jessore's letter No. 98G, dated the 10th July 1869, to the Commissioner of the Presidency Division.

Magistrate.

Para. 6.—"The cattle owners are doing as little as they can for themselves. I was at Sutrajitpore in May and saw some diseased cattle. They were grouped together with healthy ones in the same shed, and at the door of this shed a dead one was buried to keep away the disease. I pointed out to the owner the folly of keeping the healthy and diseased ones together, and he promised to separate them. When Mr. Farrell went there a few days afterwards he found that no such separation had ever been made, and the man had lost every cow he had. Another man rushed to the criminal court to accuse Dr. Farrell of poisoning his cows, because they had died after receiving his medicine. Dr. Farrell complains of the apathy and indifference with which his advice is received, and traces much of the prevalence

Apathy of people.

JESSORE.

and extension of the disease to the absolute avoidance of precautionary measures. Diseased and healthy cattle are mixed; diseased villages are allowed to communicate disease to others; diseased skins are sold far and wide.

Para. 7. It is my opinion that as the law stepped in in England, where people are not so ignorant of their own advantage as here, so here also the legislature should give powers to compel cattle owners to do what they will not do for themselves." Law required.

From J. WESTLAND, Esq., *Officiating Magistrate of Jessore, to the Commissioner of the Presidency Division,—(No. 169G, dated 12th November 1869.* J. Westland, Esq.

I have the honor to forward Veterinary Surgeon Farrell's final report upon his operations in this district.

2. I much regret that I am unable to offer any additional report or information, as I was absent from the district during a very great part of the time Mr. Farrell was engaged in it, and was, therefore, unable to keep up my information regarding the progress of the disease. The information which was continually being submitted by the police is scattered up and down so large a mass of reports, that it would be mere waste of time now to collect it. Mr. Farrell's statistics, I believe, are reliable; he had ample means of collecting them, and nothing that I have heard leads me to imagine the actual loss of cattle to be greater than he reports. The reports usually given by ryots and zemindars are quite unreliable, for every isolated case of disease is with them a violent and extensive outbreak. Mortality.

3. I would endorse what Mr. Farrell says in one part of his report.—We have no reason to look upon these attacks of disease as something new and unheard of. All information of this sort now pours in to us from all quarters; from zemindars, from ryots, from the police, and from doctors, where previously it spread hardly beyond the circle where it was first developed; and I think that the apparent unhealthiness of the present and of a few past years, both in respect of cattle and in respect of human beings, is due at least as much to the extension of improvement of our sources of information as to any real increase in the prevalence of disease. An old disease.

4. Mr. Farrell mentions that he suspects that a good deal of poisoning went on, and I think the item of proof he brings forward is one of no small weight. He does not mention another matter regarding which he enquired, namely, that an extensive system of advances for hides was prevalent all over the district. Some hide traders undertake to supply large quantities of hides to merchants, and spread their advances far and wide among the chamars, who, in this district especially, are a most unscrupulous set of men. Mr. Barton, then officiating as Magistrate, caused some enquiries to be made when the matter was mentioned in Mr. Farrell's reports, but the charges were all vague and nothing definite could be traced. Poisoning.

5. I am well aware that, in times of epidemic, an ignorant populace is apt to attribute to the machinations of individuals what are really natural effects; but I am myself convinced that much of this poisoning system exists, and that the prevalence of a "rinderpest" affords a tempting opportunity to the chamars to exercise their nefarious practices. By every death the chamars are direct gainers, for it is the regular practice to throw out dead cattle to them. The chamars in fact have a sort of traditional right to it, and look upon their right just as a ryot looks upon his holding, calling it their *jumma*, sometimes at any rate paying rent for it, and very frequently bringing it into court in cases where a cow dies in a disputed place.

6. The utterly careless way in which most ryots keep their cattle, allowing them almost to shift for themselves, and leaving them, for long periods, entirely without supervision, ensures absolute impunity to any one who desires to accomplish their death; and it is plain that so long as cattle dying under suspicious circumstances are allowed to fall into the hands of the chamars, so long will they have a direct interest in poisoning them. The proposed rule which ordains the burial of the carcasses of diseased cattle, on sanitary grounds, will be the best possible preventive of the crimes of the chamars. Neglect of cattle.

7. I have to report separately regarding legislative proposals, and therefore say nothing here.

8. I have only to add that, during the past half-year, instructions about the treatment of cattle disease have been spread far and wide over the district, and if the legislature gives us power to enforce what the people should, in their own interest, do, we may expect that the "rinderpest," when it next enters the district, will leave it with inflicting but a small proportion of the loss which it has now caused. Law needed.

JESSORE.
H. Farrell, Esq.

From H. FARRELL, Esq., Veterinary Surgeon, Royal Artillery, on Special Duty, to the Collector and Magistrate of Jessore,—dated 20th October 1869.

In continuation of my progress reports, as per margin, on the subject of the cattle disease prevailing in the Soonderbuns, Jessore District, I have now the honor to submit an embodied report containing the chief points connected with my visits to the places herein named, viz.—

Of 30th June 1869.
„ 21st August 1869.
„ 14th September 1869.

- | | |
|-------------------------------|--|
| 1. Jessore and neighbourhood. | 11. Nowhatta neighbourhood. |
| 2. Chowgatcha „ | 12. Nerail to „ |
| 3. Kotchanpore „ | 13. Jessore thence to „ |
| 4. Kallygunge „ | 14. Koolnah „ |
| 5. Jenidah „ | 15. Bagirhaut „ |
| 6. Hazerapore „ | 16. Morrellgunge. |
| 7. Pulampore „ | 17. Satkeera, 24-Pergunnahs, and neighbourhood. |
| 8. Magoorah „ | 18. Doomriah, Billaghatta, Bagirhaut, and neighbourhood. |
| 9. Sutrajitpore „ | |
| 10. Birendpore „ | |

No. 1, *Jessore*.—Agreeably to instructions received from the Commissioner, Presidency Division, the necessary supply of medicines was obtained from the Government Medical Stores, and having engaged the services of five Salootrees, I proceeded to that place, and reported myself to the Magistrate on the 18th May. I gained some information from the inhabitants of the place, and visited several villages in the neighbourhood, and discovered that, happily, the disease had nearly disappeared, and only a few cases remained. Twenty-seven were attended to and treated, of which 19 were fatal. It appears that the mortality has never been very great in this place and its environs, and that in this year (1869) it has been in excess of former years. I perceived that the owners of cattle are much more careful of them in every respect than they are in most places visited by me, which may account for the disease taking a milder form than usual, and being less destructive; indeed, I believe that much of the loss which has arisen in many parts of the country could have been prevented by ordinary attention to the food, shelter, and cleanliness of the cattle.

No. 2, *Chowgatcha*.—I next visited this place, and found that the disease did not then prevail. In conversation with some of its people, and chiefly with Mr. Macleod, an indigo planter, and resident of 30 years, I learnt that the disease has been known for years past, and that it appears more or less every year. He remembers one year, some time back, when it appeared in an aggravated form; more recently, deaths were so few that they did not attract any particular attention. In 1869 the disease made its appearance in January, and continued during February and March, in some villages on the right bank of the Cobaduck river; the loss was about 57 head of cattle. Here also unusual attention is given to the care of the animals.

No. 3, *Kotchanpore*.—The disease has also been known in this district for several years, but the people with whom I conversed, especially Mr. Newhouse, manager of a sugar factory, state that it generally has taken a mild form. During this year (1869), however, it appeared with greater virulence, about the same time as at Chowgatcha, and along the right bank of the Cobaduck river; the manager lost nine fine cows from a herd of twelve, and many other owners of cattle suffered to a similar extent. Cattle are not numerous here, and there is not much attention paid to them. The chief occupation of the people is, however, attending to the toddy trees, and the manufacture of sugar therefrom. I can only account for the usual mild form of the disease from good water being procurable everywhere, and the land being higher and drier than common; indeed the water of the river is very clear and sweet.

No. 4, *Kallygunge*.—The disease was so slight in this place and around it that the casualties were very few, and I was given to understand that it does not appear every year, most probably on account of the high land and sweet water in and around the neighbourhood.

No. 5, *Jenidah*.—When I visited this place, and the district in the vicinity, there was no disease amongst the cattle: on my way to it, however, I came across two convalescent cases in a small village. I was informed by several of the people, and by the Deputy Magistrate, Mr. Wright, (to whom I am much indebted for a good deal of information and for many hints on the subject of cattle disease and its causes, &c.) that it had been very prevalent during the months of January, February, and March, when three-fourths of the cattle were carried off. For many years past it has prevailed regularly every year, but generally in a mild form, resulting in few casualties. The existence of cattle poisoners was first discovered in this place with the help of the Magistrate, as brought to notice in my report of 14th September.

No. 6, *Hazerapore*.—Found that the disease in this place and its vicinity was somewhat similar in character and appearance to the account given about it at Jenidah. I conversed a good deal with many of the people, and with Messrs. Oates and Tweedie, indigo planters; the

former gentleman informed me that there was much cattle poisoning in the district, and the latter, that the disease during the past cold weather had followed the course of cholera. On this subject I subsequently made many enquiries, and from what I could gather, it appears to have been the case in some villages, but I could not procure any records, or any more reliable information to substantiate the opinion of those who noticed the matter. In future I purpose to attend to this particular point.

No. 7, *Pulampore*.—There was no disease prevalent when I visited this place, but I was informed by many people that it existed to a great extent at the commencement of the year. In the course of conversation with a chamar named Boycanta, a broker in hides, he mentioned that he had sold upwards of 7,000 hides during last cold weather, principally taken from cattle which died from the disease. I am inclined to think that very many of the casualties reported have been caused by posion: but more of this hereafter.

No. 8, *Magoorah*.—the head quarters of a sub-division—was visited several times; there was little or no disease at the place; but I was informed by the Magistrate, Mr. Waller, that it had been very bad in the district during February and March, when it abated for a time, and again broke out with great virulence in the beginning of May, especially at Sutrajitpore, about six miles from Magoorah, and the villages on the banks of the river Nobogunga. I was also informed that the ravages of the disease are great every year, which may be accounted for, in some measure, by the low and swampy nature of the country, bad drinking water, and the great apathy of the cattle owners, who would not listen to any persuasion or argument on the subject of sanitary and other arrangements, and were inclined to kick against preventive or curative measures.

No. 9, *Sutrajitpore*.—This place is referred to in the preceding paragraph. On my visit to it I found that the disease had been raging for some time in and around the villages, and that it had extended to several villages down on the right bank of the Nobogunga river, and others more inland, the deaths averaging 25 to 30 daily. The country is low and swampy, the drinking water is not good, and the cattle owners are most apathetic and superstitious. A case in point will illustrate this, and their great ignorance. Mr. Westland, the Magistrate, on one occasion visited Sutrajitpore some time before I arrived, and observed a sick animal among a herd of about 20 head of cattle, belonging to a prosperous ryot; the Magistrate recommended separation, cleanliness of stall, and other preventive measures, which the owner faithfully and thankfully promised to carry out. It remained for me, however, to discover that the ryot did not pay the slightest attention to the good advice he received from Mr. Westland, that the sick animal had died, and had been buried in the doorway of the cattle-shed, from a superstitious idea that the disease would never again cross the threshold.

When I arrived at the village the ryot had lost all his cattle but one, which was so ill that I recommended its destruction; the owner agreed, and the animal was destroyed. Some days afterwards I was informed, to my great astonishment, that criminal proceedings had been instituted against me by the same ryot for killing animals in the district for their hides. The man had been instigated to the act by the chamars of the place, who found their trade stopped to a great extent by the burial of animals without removing their skins. In Nos. 5 and 6 sections it is noticed that destruction of cattle by poison had been discovered, but it was in Sutrajitpore that the matter first came under my personal observation, from peculiar symptoms in several cases of disease which caused me to suspect that poison had been administered. To verify the suspicion, I had a small portion of the contents of the fourth stomach of two deceased cases given to a common pariah dog and to an ordinary sized Bengalee goat: the dog died within six hours afterwards, the goat the next day, both expiring in great agony.

No. 10, *Birendpore*.—This village is on the left bank of the river Nobogunga, opposite Sutrajitpore on the right bank. During my visit there was little disease prevailing among the cattle, but I learnt that it had prevailed in the early part of the year, and reached to many other villages on the same bank, causing great mortality. The ryots here, for the first time in my hearing, openly expressed their opinion that there was foul play on the part of the chamars.

No. 11, *Nowhatta*.—Eight miles below Birendpore on the same bank of the river. Here the disease appeared in February 1869, extending inland to many villages, and had been raging with great virulence to the time of my visit in the end of May, the deceased cattle numbering thousands. During my visit to several neighbouring villages I found that ryots who had formerly owned three or more hundred head of cattle, had very few left, some of them not five out of their large herds. The information I obtained from the natives was confirmed by Mr. R. Savi, an indigo planter and zemindar, who has been a great loser by the disease. Notwithstanding his great loss of cattle, I understand that the out-turn of indigo in his factories has far exceeded that of any factories in the district.

No. 12, *Nerail*.—Head quarters of a sub-division in charge of Mr. Deare, from whom I learnt that the disease had appeared in the beginning of the year, but was not followed by

JESSORE.
H. Farrell, Esq.
Poisoning.
Cholera.

Hides.

Disease in 1869.

Apathy of people.

Poisoning.

Losses.

JESSORE.
H. Farrell, Esq.
Hides.

much loss of cattle: it was greatest in a few villages situated in the vicinity of a hât for the sale of hides. From this place I returned to Jessore to arrange for proceeding to the Soonderbuns.

No. 13, *Jessore*.—See No. 1.

No. 14, *Koolnah*.—In the Soonderbuns, head quarters of a sub-division, in charge of Deputy Magistrate Gour Doss Bysack, who informed me that there had been very little disease; none came under my observation. I missed at this time the pleasure of a conversation with Mr. H. Rainey from his absence in Calcutta.

No. 15, *Bagirhaut*.—Head quarters of a sub-division, in charge of Deputy Magistrate Srish Chunder Biddharutna, who informed me that there was little or no disease in the early part of the year; it appeared, however, in August and September. See section 18.

Care of cattle.

No. 16, *Morrellgunge*.—A large zemindaree belonging to Messrs. Morrell, from whom I learnt that there was no disease at the period of my visit; that it had appeared slightly in the beginning of the year with little mortality; and that every year there were more or less signs of it among the cattle, but not attended with much loss. The cause of this fortunate immunity from disease and loss is quite visible. The majority of the villages belong to the zemindars: they are kept clean, and the cattle are well cared for and well sheltered, fully exhibiting the humane and liberal spirit which influence the owners of the estate. Well would it be for the ryots, the country, and the Government, were zemindars generally to follow their example in the management of their estates, and in their dealings with the ryots and other people depending on them.

Causes.

No. 17, *Satkeera*.—A sub-division. This place was visited agreeably to instructions received from the Commissioner of the Presidency Division. On the way to it, I called at *Hosenabad* and *Tanke*, where I inspected a few cases. On my arrival at Satkeera I reported myself to the Deputy Magistrate, Poorun Chunder Ghose. I found that the disease had much abated, and that a few cases only remained in some villages about 12 miles distant. The outbreak, as in most cases, had appeared in the beginning of the year. I did not wonder at its occurring in this place, looking at the low and swampy country, and the indifference and utter carelessness of the ryots, who scarcely ever attend to or house their cattle. For the greater portion of the year they are allowed to remain out in the fields, exposed to every description of weather, hot, cold, and wet, and without any food except the scanty herbage which they are able to pick up in their wanderings.

No. 18, *Doomriah, Billaghatta, Bagirhaut*.—The two first places are Police thannahs, under the jurisdiction of the Koolnah Sub-division Magistrate. Having visited each of them and their neighbourhood, I found that in the beginning of the year a few cases were noticed without attracting any particular attention. The disease then appeared to die out, but unfortunately it broke out again in the month of August in a virulent form, when there was much loss of cattle in and around the places mentioned, and the villages in their vicinity, especially in Doomriah and the adjacent hamlets. About the time of the last outbreak, dealers with unusually large herds of cattle for sale came to the district; the animals were weakly and half-starved from travelling long distances and readily took the disease; and as they were nearly all bought by the ryots, the loss was chiefly among the purchasers, particularly in the *Bagirhaut* district. It was at this period I met Mr. Rainey, who appeared to take a great interest in the matter under report. I furnished him with some medicines and instructions for the treatment of cattle. I visited many of the cases above named repeatedly, and many others which require no particular remark; their introduction would swell this report to an inconvenient size, without any commensurate advantage.

I now proceed to briefly remark on the nature of the disease, the symptoms, treatment, &c., with such observations as may occur to me.

Names.

Nature.

Nature of the Disease.—I observed it to be of the same type throughout, and known to the inhabitants as *gootee*, *bussunto*, *puchima*, *dukina*, *googlanee*, &c., names which appear to be given according to the direction taken by the disease, or the severity or otherwise of the symptoms. It has been for several years back known in the country, and in many districts it is of periodical occurrence; many years back it raged as an epizootic. It assumes an aggravated form near or on the borders of swamps and bheels, and in the vicinity of hâts where hides are sold. I am of opinion that it is similar in every respect to the "rinderpest" of Europe, and it is of the same type of disease as that which appeared in the 24-Pergunnahs last year, as reported in the early part of this year; and from communications received from the Commissioners at Patna, Hazareebaugh, Dacca, and Assam, describing the outbreak which appeared among the cattle in their districts. I am convinced that *gootee* or *rinderpest* is the malady which has been reported through the authorities from various places to the Government of Bengal.

On this subject two letters appeared in the *Englishman* in May and September 1869, by Mr. Rainey, a zemindar; the first describing a disease that he supposed was prevailing in the Soonderbuns, the next remarking on my report of 30th June 1869. The characteristics of

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Identity of gootee
and puchima.

the distemper set forth by the writer escaped my observation entirely, although looked for after my perusal of the letter of May. Possibly the information was gained from hearsay, and not from personal inspection. The second letter supposes the existence of two distinct maladies, which is, as far as I can judge, an erroneous impression. I believe them, after careful personal observation and study of the subject, to be one and the same disease. In this belief I am supported by Professor John Gamgee, Principal, Albert Veterinary College, London, in his work on the Cattle Plague, London, 1866. Again, the word *puchima* is incorrect, it should be *puchima*, literally meaning coming from the west. It came from thence on its first appearance as an epizootic, which gave rise to the name. In these outbreaks the symptoms are more aggravated than in ordinary cases. When outbreaks come with great severity, death quickly ensues: not so in milder attacks. The natives call the first *puchima*, and the *gootee*, although they are not two distinct diseases. Were each particular symptom to be dilated on, as attacks occur in different districts, it would be easy to establish many new names according to the nature of each outbreak, &c., &c. In parts of the Soonderbuns the disease is known as *dukina*, because the ryots remember that the first outbreak came from the south; in other parts it is known as *googlanee* from the peculiar grunt of sick animals.

During April 1869, in some of the *abads* of Morrellgunge and Tooskhally, about 60 head of cattle died from another disease, which is more prevalent in those parts than *puchima* or *gootee*. This distemper I did not witness, but it was described to me as a swelling of the off hind leg, rapid mortification taking place, and causing death. According to my belief, it is the "black leg" or "quarter evil" of Scotland, which I have often seen and treated in that country. The information in this matter I obtained from Mr. Larvmore, an assistant of Messrs. Morrell, who is well informed on the subject of cattle. "Black leg" is not so formidable as *gootee*, being more amenable to treatment. It does not appear to be necessary to make any further remarks on the nature of the distemper under report.

Black leg.

Symptoms.—Are fully described in my report from Diamond Harbour, submitted early in 1869.

Causes.—The disease has been known for many years in Lower Bengal: in some parts it has appeared annually, in others at intervals of two or three years. That the outbreaks have become more frequent and virulent there can be little doubt; last year in the Diamond Harbour district; this year, 1869, in Jessore, Soonderbuns, Assam, Patna (slightly), and in Chota Nagpore. I am strongly of opinion that the distemper is of spontaneous development, the virus finding a favorable habitation in the low, ill-drained, retentive soil of the country. Once it springs up, the contagion is propagated in various ways.

Origin.

It is argued by some people that the malady of "rinderpest," and the various names given to it in India, is of recent importation, which I very much doubt: that they are all one and the same as "rinderpest" I am convinced. I could find no trace, record, or memory of the distemper having been imported at any time. It has been known to exist in this country for upwards of fifty years. The first outbreak that was felt severely occurred in 1817, and it has come at intervals short or long ever since. There are many reasons for its increasing virulence, and for its attracting general attention. Of late years facilities of locomotion, and the great and increasing demands for hides, disseminated the disease. A marked decrease in the culture of cereals, to make room for cotton and gunny cultivation for foreign markets, affects the care and food of animals which are neglected by their owners in every way; overwork, scanty food, bad shelter, and utter indifference to breeding, rendering them unable to resist disease of any kind. In fact, I believe the Bengalee ryot of the present day to be the worst cattle-master in the world, from what I have observed in many parts of India, the United Kingdom, and parts of the European continent.

History.

Again, carcasses were scarcely ever buried; they were skinned, and left to the vultures and dogs, thus spreading contagion. The malady always appears in the worst form in the vicinity of hâts for the sale of hides, which are sent all over the country to infect the neighbourhood wherever they go. Stringent rules for preventing the removal of such hides, and for burying carcasses entire, and deep in the earth, would go a great way in stopping outbreaks. An order by His Honor the Lieutenant Governor setting forth this, and directing all district officers to enforce this, has been circulated in the districts of Bengal, and which, I am able to say, has had the most beneficial effect. Instances of gross neglect in the food, shelter, and cleanliness of animals might be noticed by the authorities under the Act for the Prevention of Cruelty to Animals.

Carcasses.

Prevention.—Too much stress cannot be laid on the means to be used to prevent the spread of contagion by good sanitary arrangements, quarantine when absolutely necessary, the segregation of cattle, ordinary attention to their food and shelter, and the free use of disinfectants. Strict attention to the burial of infected carcasses, with the skins, deep in the earth, is also a desideratum. It will not only help to stop the spread of contagion, but it will prevent, to a great extent, foul play on the part of the chamars, who have done so much mischief heretofore.

Prevention.
Quarantine.
Burial.

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Stamping out,
inadvisable.

I believe that the stamping out system will never succeed in Bengal, and that it is in reality not required. As the distemper is not imported, being evidently of spontaneous production, the ignorant and superstitious natives will never understand that it is necessary to destroy these animals; it is opposed to their creed, faith, and prejudices; and I am much inclined to think that the measure, if enforced, would be followed by unpleasant consequences, and that altogether it would do more harm than good. I have before stated, at page 121, that in the one instance in which I carried it out, even with the consent of the owner, a criminal suit was instituted against me in the Magistrate's Court.

The preferable course will be, as far as I can judge, to control and check the malady in the promptest manner according to the means pointed out, and now very well known in various places, especially at the very commencement of the outbreak in any hamlet, town, or place. Mild persuasion and tact with the natives will always have more effect than forcible measures in matters mixed up with their religion.

Treatment.

Treatment.—I still assert my belief that there is no remedy that will prove successful as an antidote to the malady when virulent; and that eradication must take place by prevention, especially in those places where the climate, soil, and bad management of cattle produce the distemper. The chief remedy in prevention will be to bring outbreaks under control by effective sanitary and hygienic measures, to be enforced firmly and gently.

In first stages, I have always found that the administration of saline purgatives, followed by tonics and stimulants, were effective; sulphur fumigation is always efficacious. In letter No. 1503 of 11th August 1869, from the Government of Bengal, the trial of carbolic acid is directed. Last year I procured a small quantity from Messrs. Corfield and Co., and used it partially in the 24-Pergunnahs, but did not give it a full trial. So far, however, it appeared to be a good and useful medicine. When proceeding to Jessore, I obtained a large quantity from the Government Medical Store-keeper, and used it freely in Jessore and the Soonderbuns, and distributed small portions to Messrs. Morrell and Rainey for trial. The chief effect it has is to disinfect the alimentary canal and the excretions, thus rendering the virus of the disease innocuous to the animal by not poisoning its blood, and to neighbouring animals by disinfecting and deodorizing the secretions, which so much extend the contagion. It therefore acts like any other antiseptic, and is, no doubt, a beneficial medicine; but it will never prove a specific for the distemper. I have likewise used it with some effect combined with quinine, chiretta, and bhung. I have in hand a series of experiments with carbolic acid, which I hope to be able to notice at a future period. They require time to carry out.

Carbolic acid.

The treatment adopted by me, and widely circulated in the various districts, is herein abstracted from the printed circular issued in August and September 1869: "When an animal takes ill, separate it immediately from the others. Give as a purgative half a seer of common salt in one seer of rice-water (*conjee*), or 8 ounces Epsom salts; calves, half the doses. If this does not act in six hours, repeat the doses. When the purgative has acted, give the following every three hours:—

Directions for medi-
cal treatment.

Carbolic acid (Calvert's No. 5) ...	...	...	...	...	10 drops
Chiretta or bhung solution ...	...	...	...	...	1 ounce

To make the chiretta and bhung solution put one seer of ether in eight seers of water, boil for half an hour, and, when cold, strain for use.

Carbolic acid with 10 grains of quinine is also good.

In the absence of the above medicine, give—

Asafoetida ...	...	...	...	...	¼ tolah
Bhung or chiretta solution ...	...	...	...	...	1 ounce

To be given every three hours;

or,

Asafoetida ...	...	...	...	...	¼ tolah
Black salt ...	...	...	...	...	1 "

To be given every three hours.

The sheds must be fumigated with sulphur three times a day, morning, noon, and evening; sulphur thrown in the fire will answer; about one-fourth chittack each time.

The animals must be made to inhale sulphur twice a day. This is done by throwing some sulphur on a pan of live coals, and holding it under the animal's nose for ten minutes at a time.

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The disease being of a very weakening nature, the animal must be nourished throughout, and the best thing is boiled rice-water (*conjee*), or *suttoo*, three or four times a day, or oftener if necessary. When dysentery sets in, give the following—

Kuth ...	...	...	...	...	¼ tolah.
Opium ...	...	...	...	...	¼ "

Twice a day in water *conjee*.

As a tonic and stimulant in the latter stages, the common country liquor, in doses of a chittack or so, will be found useful. This is to be recommended in all cases.

The signs of recovery are warmth of the ears and roots of horns and extremities, and return of appetite. When this takes place, let the animal eat sparingly, and not gorge itself, and give green grass in small quantities, and bran mash when procurable, or a little *muskulli* well boiled; in fact soft food of any kind that is easily digestible. The animal must not be put to work too soon after recovery.

It is possible that inoculation of cattle might succeed as a preventive measure, but its introduction would require time, and experiments to ascertain its usefulness or otherwise.

Inoculation.

Observations on the subject of poisoning cattle are fully set forth in my report of 14th September 1869, submitted to the Magistrate at Jessore, for the information of Government. I can only add that the eradication of this vile practice would be attended by the most happy results in respect of the cattle belonging to the ryots in many places throughout the country.

Poisoning.

I give an abstract exhibiting the number of cattle attended to by myself and the *Salootrees*, together with the number of deaths which occurred before my arrival. As the police do not appear to have kept any records or returns, the figures of the latter are given at half the numbers reported to me by the zemindars and ryots concerned. They exaggerate such losses so much that their numbers are not at all reliable.

Casualties from 20th May to 25th August 1869.

	Sick.	Cured.	Died.
Jessore and neighbourhood ...	91	23	68
Jenidah ...	63	28	35
Magoorah and Nerail ...	1,742	734	1,008
Koolnah ...	627	210	417
Bagirhaut ...	147	72	75
TOTAL ...	2,670	1,067	1,603
Percentage of attacked ...	...	39.9	60.1

Deaths before 20th May.

	Died.
Jessore and neighbourhood ...	50
Jenidah ...	37
Magoorah and Nerail ...	1,117
Koolnah ...	84
Bagirhaut ...	67
TOTAL ...	1,355

Finally, I have much pleasure in noticing the cordial assistance given to me and my people by Mr. Westland and the other Magistrates, by Mr. Anley, District Superintendent of Police, and by the various indigo planters and other gentlemen residing in the places I visited.

Information furnished by H. J. RAINEY, Esq., Zemindar, Khoonah, Jessore,
dated 3rd May 1870.

H. J. Rainey, Esq.

My property lies across the sub-division of Khoonah, District Jessore. I have also made observations throughout the district more or less, particularly in the Soonderbuns portion thereof, but not very systematically.

Locality.

My own land extends three or four square miles in the immediate neighbourhood of my residence.

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My immediate neighbourhood is thus situate :—North and east are wide and rapid streams, the Bhoirab and Rupsa rivers respectively; on the south is a rather sluggish and narrow river, the Gupi Nadi; and on the west various villages and paddy lands. Ground to the north comparatively high, and not inundated during the rains, excepting some *chur* or alluvial formations, where paddy is cultivated. To the south the lands are low and swampy, such as are merely adapted for the cultivation of paddy. I have to add that the closing of the aforesaid Gupi Nadi by *bunds* or dams for certain months in the year, during the cold weather and dry season, by order of the Deputy Magistrate of this Sub-division, will contaminate the water therein, which the cattle then drink, as the tanks are dried up about that time, and the other rivers are away some two miles from the villages in its proximity. The soil to the north of the district is more or less sandy, and to the south sandy too, but with a plentiful admixture of saline deposit, which renders the earth, when saturated, excessively slimy. Rice being the staple produce of the district, it is *mainly* cultivated throughout its length and breadth, and miasma is therefore strongly prevalent bi-annually at fixed periods, once at the commencement of the rains, when the grounds are ploughed up, and again *after its close*, when the lands begin to dry: at both these times vegetable decomposition takes place, and the fermentation which thereby ensues causes the emission of sulphuretted hydrogen gas, the presence whereof can be easily detected by that peculiar pungent acrid odour which one occasionally finds tainting the air in marshy localities, and similar to the nauseous smell produced by rotten eggs. If analytical chemistry ever solves the *vecata questio* regarding the constituent parts of that at present unknown compound miasma, the above gas will no doubt be found to be the basis of it, I venture to think, and the true germ of all the so-called zymotic diseases in both man and beast.

I cannot of course be precise as to the numerical strength of cattle, but I should say there is about 100 head in each square mile, which multiplied by 4 gives an aggregate of 400 to my locality.

Number of cattle.

There is only one breed of cattle, the small Lower Bengalee breed, hardy and enduring, but lacking power and bulk. It is however not ill-adapted for the district, while the present primitive state of agricultural cultivation prevails.

Breed and value.

As regards the value of cattle, plough bullocks fetch from Rs. 10 to 15 and more per head; the average is about Rs. 12. Milch cows somewhat less—Rs. 10, I should say.

The present prices have been enhanced 25 per cent., if not more, within the last 10 years.

Bullocks of this locality are exclusively employed for ploughing purposes. Cows are of course kept for the dairy, though a few Mahomedans do not stick at putting these cows to the plough, when hard pressed and unable to afford to purchase or hire bullocks.

Uses for which cattle are employed.

Cattle are employed for the cultivation of paddy from April to September; for mustard, from September to November, according as the rains cease early or late. These are the only two crops extensively cultivated in this district, the former in the low, and the latter in the high lands, which description of lands also produce the *ause* or early crop of paddy.

Cattle belonging to the locality are exclusively employed for ploughing. During the cold weather, when the harvest is off the ground, herds of bullocks are brought from the north of the district to carry the grain from the fields into the houses of the villagers. *In this manner epizootics are easily propagated from the south to the north of the district.*

Cattle employed for the plough are often subject to cruel treatment from Mussulman agriculturists, but none are in any way particularly cared for or tended. Bullocks employed for draught purposes, either in the cart or plough, have invariably more or less galled necks, caused by the sharp edge of the cross pieces of wood which rest on those parts cutting into the skin and flesh. Any simple device, such as a well stuffed pad about that portion of the wood which fits the neck, would remedy this universal evil, but unless authoritatively enjoined, *e. g.* by legislative enactment, no good will accrue. No amount of mere recommendation will do the least good.

As a rule, the treatment cows receive is of course better; but here too neglect is often the case.

About one-fourth of the cattle or perhaps less are employed for dairy, the rest for draught.

Cattle are housed in open sheds, *i. e.*, houses with thatched roofs and unenclosed sides, at night in all seasons of the year, except during the very hot weather, when they are kept in the open to get the benefit of the free air, and which also keeps off the mosquitoes from troubling them too excessively.

Housing.

Cattle get their food by grazing mainly, being supplied with a little fodder, straw only occasionally. They are taken to rivers, tanks, or *khulls*, whichever be closest at hand, for water, utterly without regard to its being pure or not.

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Feeding and watering.

The kinds of grass eaten by cattle are :—

Doob grass in the high pasture lands, *i. e.*, those fields not submerged in the inundation; and, in the low lands, a long and luxuriant species of grass, called by the natives *Uri* or *Ooree*, and in appearance like the rice plant. These two are mainly the kinds of grass used as food, and being well known, I need not enclose specimens of them. The fodder used is exclusively straw. These remarks apply only to my immediate neighbourhood, *i. e.*, within 4 square miles of my residence; but towards the north of the district, the cattle, during the inundation, are fed, I believe, with some species of aquatic or semi-aquatic plants or grass growing in the *bheels* or lakes.

Herding.

Cattle are herded by day only during all seasons.

A cowherd (usually a young lad, who is not old enough to hold a plough) has generally charge of a herd of cattle, numbering from 15 to 20 head, and he takes them to pasture early in the morning, and seldom returns with them before the afternoon, about sunset. The cattle are allowed usually to graze unfettered, unless standing crops are contiguous to the pasture lands, when they are tied with strings round their horns about 12 to 15 feet long, fastened to a peg driven into the ground.

Cattle are never taken from one district to another for pasture.

The general condition of cattle is indifferent. Very little care and attention is bestowed on them, which appears to proceed from a combination of ignorance and apathy so characteristic of the Bengalee

chdsá or agriculturist. Cattle have to depend on pasture for food very nearly altogether *in this locality*.

Stock, how kept up.

The stock of cattle is kept up both by breeding and importation from the north of the district. About one-half is supplied by breeding.

No special bulls are kept. No systematic plan appears to be resorted to, but cows are allowed to be crossed indiscriminately by any stray bull that frequents the same pasture.

The other and remaining half is supplied by importation of cattle from the north of the district, from marts or bazaars near Jessore station, Pulta, Nobutta, &c., &c. The average price paid, Rs. 10 to 15 per head.

Cattle are usually bought and sold in open *hâls* at particular markets, as above indicated.

There is no report of export of cattle from these parts.

Hide trade.

There is very little trade in hides about these parts of the Jessore district, *i. e.*, southern portion thereof.

There are very few traders indeed, and they have not increased to my knowledge. I refer to my locality.

The price of hides has increased, I should say, but no more than proportionately with all other marketable articles, *i. e.*, about 25 to 30 per cent.

Every *moochee* picks up all the skins he can get, and then disposes of them to dealers elsewhere, who send them to the Presidency for sale.

The mortality among cattle is ordinarily about 5 per cent. per annum; in epizootics, according to their virulence, averaging from 10 to 20 per cent., and even more.

Mortality.

Epizootics may be said to break out periodically twice a year within this district, in a mild form, in the same manner as epidemics of fever and cholera. This may be said to be the normal condition, which passes without any special notice, and they only occasionally rage with virulence, when the predisposing causes happen to accumulate.

History of plagues.

They occurred very severely in 1859, 1867, and 1869, as far as I am able to recollect.

Plagues are of various kinds :—Sore-feet, with fever supervening, from hot and parched up ground, before the rains set in. Choleraic diarrhoea and small-pox (called by natives *puschima* and *gootee* respectively), at different times periodically increased by such circumstances as permitting cattle to drink impure and stagnant water, or feed on unwholesome herbage, *i. e.*, pastures inun-

Character of plagues.

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dated for any great length of time. It is spread by herding and housing together all cattle indiscriminately, both healthy and diseased, as well as allowing them to graze in the same pastures. The duration of outbreaks is uncertain altogether. If an outbreak occurs in its usual mild form, it passes away in a fortnight or three weeks: if it assumes a virulent form, it lasts for six months or so, proceeding gradually onwards, *i. e.*, spreading around from its focus.

As regards statistics, having nothing precise to offer, I cannot supply any reliable data, but I give the following figures as approximately correct.

The proportion per cent. of attacked varies considerably from 10, 15, 25, 30 to 50 per cent. and even more, according to the virulence of the plague. When mild, almost all recover; when virulent, hardly any. This applies to *puschima* and *gootee*, in which diseases, when virulent, medicines appear to have no good effect, (at least such as are administered by the natives,) and nature, when allowed to take her own course, does cure at times. Sore-feet, however, seldom proves fatal, unless greatly neglected.

There is only one breed in this district, as before stated. Young cattle and females appear most liable to attack at the commencement, as far as I could judge; afterwards all appear to be seized with it without distinction. But 'sore-feet' draught bullocks appear most liable to attack, as they have to work over hot and dry ground when the rains are late.

The symptoms of the most prevalent cattle diseases are as follows:—

Symptoms. There is shivering in *puschima* and *gootee*.

In these diseases loss of appetite is invariably, and in fact a premonitory symptom of them. In 'sore-feet,' also, fever supervenes, and the mouth becomes sore also.

In *gootee* eruptions are of course invariable. In the other plague, *i. e.*, *puschima*, the skin becomes rough, body hot, and hair damp, &c., &c. Swelling of tongue and throat occur very markedly in the last stages of *puschima*, and is considered a very unfavorable sign.

Difficulty in breathing, cough, &c., are common to both *puschima* and *gootee*.

The bowels are always worked in both the aforesaid diseases. Blood and mucus are discharged in severe cases only of such plagues. The secretion of milk is always more or less decreased: sometimes suppressed almost entirely; certainly invariably altered and unwholesome, quite unfit for food.

Animals find, or appear to find, relief in lying down.

Contagiousness. The three diseases specified are all contagious, but sore-feet less so than the other two.

Treatment. Native remedies are in cases of *puschima*, chillies, pepper, and other irritants. Dr. Farrell appears to have tried carbolic acid to some extent, and he was good enough to give me a small supply, but I could not induce the natives to permit me to administer it to their cattle, so I had no opportunity of testing it.

Native remedies are useless, or rather worse than useless, being positively injurious. Dr. Farrell told me he had some success with carbolic acid, I believe.

No sanitary measures are systematically adopted. Here and there only, segregation is resorted to, under compulsion. Disinfection is utterly unknown. Fires have been recommended, but never practised to my knowledge. Separation of sick and healthy is rarely done. Generally the *chásá* or agriculturist cannot afford to house them separately, and is stolidly ignorant of its obvious advantages. Burial of carcasses is always evaded, except when owners are actually compelled by the Police to do so; and their interference is undesirable, as it affords them an opportunity of indulging in their *penchant*, oppressing and extorting money from the helpless ryot. Hides, if not too putrid, are at once skinned off by the *moochees*, and sold to dealers, as usual, along with other hides. No use whatsoever is made of the horns and hoofs, at least hereabouts, and they remain on the ground where the carcass has been cast, generally in an open field where cattle graze. Here is another prolific course from which the plague spreads.

Poultry suffer occasionally when *gootee* among cattle is very virulent. I have never observed any other tame animals suffer therefrom, not having paid sufficient attention to this part of the subject, but have been told that sheep and goats are not exempt from the contagion. I have once or twice, if not oftener, come across carcasses of deer in my wanderings in the interior of the forests of the

Soonderbuns in quest of *shikar*, evidently destroyed by some plague, and that before the disease had developed, or even shown itself, among cattle. *Puschima* (choleraic diarrhoea) is also designated by the natives *dukhina*, because it travels from the *dukhin* or south; hence may it not be possible that the plague originates with the (wild) deer, and from them communicates itself to the cattle in the Soonderbun grants, and gradually spreads northward and eastward? These designations, to wit, *puschima* and *dukhina* (indicating the directions west and south, from whence the disease spreads), are well borne out, for if it commences in the extreme limits of the western Soonderbuns, *e. g.*, in the Diamond Harbour sub-division, it can only advance northward and eastward (*vide map*), as the wide Hooghly river effectually prevents its progress westward. I would solicit some degree of attention being bestowed upon the circumstances here adverted to, as I think some important inferences might be drawn therefrom, if investigated by such competent authorities on the subject as the members of the Commission.

Coincident epidemics. Though man and beast may and do suffer occasionally together, *i. e.*, epidemics and epizootics have been found to rage at the

same time, I do not think the latter in any way contributes to the production of the former, or *vice versa*; but simply because they are both due to similar causes. As my opinions have been asked, I give them candidly and fully, in answer to this, as well as other questions, but I would add that I do so with extreme diffidence, as being those of a non-professional addressed to professional gentlemen possessed of special experience on the subject. I may add that I think I should have used the terms 'endemic' and 'enzootic' instead of 'epidemic' and 'epizootic.'

The only disease prevailing at present is sore-feet with fever, more or less everywhere, from the ground being hard and hot for want of rain. *Gootee* is said to have exhibited itself to the north-east of the district, but I cannot vouch for the correctness of this statement, being a mere rumour among the lower classes of natives.

Very hot and dry weather always produces sore-feet—a most troublesome disease (though not dangerous), as it disables cattle at the beginning of the period when agricultural operations commence. Sometimes *puschima* and *gootee*, especially the latter, are produced by similar causes. A heavy fall of rain often, but not always, sweeps away every sort of plague.

Bathing, a most wholesome practice, essential in a tropical climate, appears to be systematically neglected, and ploughbullocks, after being hard worked in wet rice-fields, are often, in fact usually, permitted to return without the puddle with which they are thoroughly bespattered being washed off. Cleanliness cannot absolutely, under such circumstances, be expected to exist at all, and the dirt and filth thus engendered on the body conduces to the animal's liability to attack from every form of disease, particularly cutaneous and eruptive disorders, *e. g.*, small-pox or *gootee*, if it does not itself produce them.

Shampooing.—A good rub down after a day's hard work would do a great deal of good in keeping the animal in health and condition, and amply repay the very little extra trouble occasionally required. It is, however, wholly unnecessary for me to refer to and dilate on the advantages to be derived from such a practice, which, I need hardly add, is never resorted to.

JESSORE.

H. J. Rainey, Esq.

ORISSA DIVISION.

COMPRISING THE DISTRICTS OF CUTTACK, BALASORE, AND POOREE.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

District.	From whom received.	Number.	Date.	Reference and Purport.
Orissa Division. Cuttack. Pooree. Balasore. Cuttack. Pooree.	Historical Sketch.			p. 133.
	<i>R. N. Shore, Esq., Commissioner of Cuttack.</i>	14	10th May 1864 ...	<i>Selections, Bengal Government, p. 50. Reports extensive prevalence of cattle murrain in the Division.</i>
	<i>T. E. Ravenshaw, Esq., Commissioner of Cuttack.</i>	539	17th November 1866	<i>Selections, Bengal Government, p. 137. Reports outbreak of gootee disease among artillery cattle.</i>
	<i>W. Macpherson, Esq., Magistrate, Cuttack.</i>	256	26th February 1870	<i>Reports prevalence of gootee in 1869.</i>
	<i>T. E. Ravenshaw, Esq., Commissioner of Cuttack.</i>	539	17th November 1866	<i>Selections, Bengal Government, p. 137. No cattle disease since 1864.</i>
	<i>T. Walton, Esq., Officiating Magistrate, Pooree.</i>	73	26th January ...	<i>Reports extensive prevalence of cattle disease in 1869-70. Appendix No. 3.</i>
	<i>N. Jackson, Esq., M. D, Civil Medical Officer, Balasore.</i>	64	May 1866 ...	<i>Selections, Bengal Government, p. 110. Reports prevalence of gootee in 1863.</i>
	<i>T. E. Ravenshaw, Esq., Commissioner of Cuttack.</i>	539	17th November 1866	<i>Selections, Bengal Government, p. 138. Reports that no disease has occurred since 1863.</i>
	<i>J. Beames, Esq., Magistrate, Balasore.</i>	13	17th January 1870	<i>No cattle disease.</i>
	<i>T. E. Ravenshaw, Esq., Commissioner, Orissa Division.</i>	255	5th September 1870	<i>Report existence of cattle disease in Cuttack and Pooree.</i>
	<i>Baboo Kalinath Bose, Deputy Magistrate, Kendrapara.</i>	160	27th September 1870	
	<i>W. Irvine, Esq., District Superintendent of Police, Pooree.</i>	434	26th September 1870	
	<i>J. Walton, Esq., Officiating Magistrate, Pooree.</i>	600	13th October 1870....	<i>Reports existence of foot and mouth disease in Pergunnah Kotdesh.</i>

HISTORICAL SKETCH.

No early record of murrain in this division exists, and until the year 1864 no attention appears to have been bestowed on the subject.

Disease is said to have "raged fearfully" in 1863 in the Tributary Mehals running west of Cuttack to a distance of 150 miles, and more than half of the cattle in the killahs (forts) south of the river Mahanadi are said to have been lost. An epizootic occurred in 1864 in the district of Balasore, where the disease *gootee* or *bussunto* (rinderpest) was said to be "well known," and to prevail every two or three years and commit great ravages. The characteristic symptoms of the disease are described by Dr. N. Jackson, the Civil Surgeon.

Murrain is stated by the Commissioner, R. N. Shore, Esq., to have "shown itself very extensively" in the districts of Pooree and Balasore in the same year. The Collector of Pooree estimates that the stock of cattle in his district has been diminished one-half.

Up to 1869 no general outbreak of disease is reported, with the exception of an attack of foot and mouth disease, which occurred in 1866 among the artillery cattle in the station of Cuttack. A letter was sent on the subject to the Bengal Government by the Commissioner, T. E. Ravenshaw, Esq., in November 1866, which states explicitly that, with the exception above noted, there was no instance of the recurrence of the disease since 1864.

Another notice of rinderpest among the artillery cattle at Cuttack is contained in one of Mr. Thacker's Madras Reports, dated 31st March 1869. He says :—

"A telegram from the Commissary General on 18th November 1868 informed me that artillery cattle at Cuttack were dying from 'diarrhoea and fever combined.' He requested me to forward instructions to the officer commanding relative to treatment and medicines if necessary. Believing that this was an outbreak of rinderpest, I at once forwarded instructions for segregation and despatched medicine, the successful results of which will be seen in the following letter from the officer commanding :—

"With regard to preventive measures of segregation, I have to report a complete success. Your letter was received on the 29th November, and in a day or two afterwards the bullocks were divided as recommended by you. After the separation of the cattle, one bullock only was taken ill and died in a few days. Since this bullock was taken ill no other animal has shown any signs of disease whatever, and all those in detached parties have remained up to this time in a perfectly healthy condition."

Towards the close of the year 1869 disease broke out in the districts of Cuttack and Pooree, and continued into 1870.

In the former district the nature of the disease was not described, and was reported to be prevalent in nine villages of the Bargong Pergunnah. Later reports show the prevalence of "cattle-pox" in September 1870 in seven villages of the Ramito and Utikun Pergunnahs on the banks of the Noona river.

In Pooree the disease was more widely spread and invaded several villages of five pergunnahs. Both rinderpest and foot and mouth disease appear to have prevailed simultaneously.

HISTORICAL SKETCH.

In this district also, a September outbreak is described in twenty-six villages of the Pergunnah Kodhar and Thannah Gope. A later report, dated 13th October, describes the prevalence of foot and mouth disease in some villages of Pergunnah Kotdesh. Balasore is reported to have been free from disease in 1870.

It thus appears that both rinderpest (called *thakrooni*, *bussunto*, or *gootee*) and foot and mouth disease (called *phatua* and *chowa*, according as it prominently affects the feet or mouth) frequently prevail in the districts of this Division, more particularly, it would seem from information casually obtained, in the breeding tracts on the Orissa seaboard and at the base of the hills. Orissa is one of the great breeding grounds of Lower Bengal for cattle, and on this account the disease has not perhaps obtained in this Division the attention it deserves. No sufficiently urgent or exact information of existing disease was received by the Commission to warrant a journey both long and expensive. The reports forwarded detail the symptoms of both diseases with sufficient precision to leave no doubt as to their identity, but they do not offer any further information which would render their publication desirable. They are therefore omitted.

DACCA DIVISION.

COMPRISING THE DISTRICTS OF DACCA, BACKERGUNGE, FURREEDPORE, MYMENSINGH, SYLHET, AND CACHAR.

Index of Records.

[N. B.—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Dacca.	Historical Sketch ...	...	.....	Page 137.
	F. B. Simson, Esq., Commissioner of Dacca.	154	20th April 1870 ...	Report in Form No. 1 of severe outbreak of "pox" in April and May 1870. Page 140.
	Baboo Kaleenath Ghose ...	235	16th June 1870 ...	
	F. B. Simson, Esq., Commissioner of Dacca.	...	.....	Further report referring to the same outbreak. Page 141.
Backergunge.	Baboo Poorno Chunder Ghose	...	.....	
	C. T. Buckland, Esq., Commissioner of Dacca.	197	28th September 1865	<i>Selections, Bengal Government, p. 63. Describe a severe outbreak of cattle disease in this district, which commenced in April and lasted till September.</i>
	H. C. Sutherland, Esq., Magistrate of Backergunge.	92	29th July 1865 ...	
	Ditto Ditto ...	111	4th September 1865	
	C. E. W. Bensley, Esq., Civil Assistant Surgeon, Backergunge.	108	26th August 1865 ...	
Furreedpore.	C. T. Buckland, Esq., Commissioner of Dacca.	26	17th March ..	<i>Selections, Bengal Government, p. 48. The Civil Medical Officer gives a short sketch of cattle murrain as it prevails throughout Bengal.</i>
	F. B. Simson, Esq., Commissioner of Dacca.	154	20th April 1870 ...	Report in Form No. 1 of the attack of two head of cattle by "Bengachee"—an affection caused by eating poisonous grass.
	N. T. Alexander, Esq. ...	...	.....	
	C. T. Buckland, Esq., Commissioner of Dacca.	26	17th March 1864 ...	<i>Selections, Bengal Government, p. 48. The Civil Surgeon, Dr. Brown, describes the symptoms of cattle disease prevailing in Sylhet.</i>
Sylhet.	F. B. Simson, Esq., Commissioner of Dacca.	87	10th March 1870 ...	Reports severe and widespread outbreak of cattle disease in Sylhet. Page 139.
	F. B. Simson, Esq., Commissioner of Dacca.	129	4th April 1870 ...	Gives additional particulars of the above in Form No. 1. Page 139.
	J. Patch, Esq., District Superintendent of Police	...	.....	
	F. B. Simson, Esq., Commissioner of Dacca.	154	20th April 1870	Gives details in Form No. 1 of prevalence of cattle murrain in 1870. Page 140.
	W. B. Maxwell, Esq. ...	...	.....	
	J. S. Drummond, Esq. ...	380	17th June 1870 ...	Reports in Form No. 1 a further outbreak of cattle disease in May 1870. Page 140.
	W. B. Maxwell, Esq. ...	...	.....	

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Mymensingh.	C. T. Buckland, Esq., Commissioner of Dacca.	26	17th March 1864 ...	Selections, Bengal Government, p. 48. Notes yearly occurrence of <i>bussunto</i> .
	F. B. Simson, Esq., Commissioner of Dacca.	391	26th August 1869	Report outbreak of "smallpox" among cattle in July 1869. Page 141.
	O. T. Stack, Esq., District Superintendent of Police.	624	16th August 1869	
	R. Porch, Esq., Joint Magistrate.	369	18th August 1869	
	F. B. Simson, Esq., Commissioner of Dacca.	154	20th April 1870 ...	Report in Form No. 1 the prevalence of disease in several parts of the district.
	R. Porch, Esq., Magistrate	369	20th January 1870	
Cachar.	Capt. J. F. Sherer, Superintendent of Cachar.	605	7th December 1863	Selections, Bengal Government, p. 5. States that cattle murrain of the kind referred to (Madras murrain) seems never to have raged in Cachar.
	F. B. Simson, Esq., Commissioner of Dacca.	87	10th March 1870 ...	Superintendent reports that cattle disease does not prevail in any part of the district.
	F. B. Simson, Esq., Commissioner of Dacca.	154	20th April 1870 ...	Ditto ditto.
	F. B. Simson, Esq., Commissioner of Dacca.	360	10th November 1870	Reports the existence of disease in Mymensingh and Sylhet.
	Ditto ditto	366	15th November 1870	Reports the prevalence of cattle disease in Mymensingh.

HISTORICAL SKETCH.

A very important and curious glimpse of an early history of cattle disease in this Division is obtained through the results of an effort made by the Medical Department to obtain vaccine lymph primarily from the cow. The details of the experiments, correspondence, &c., in this matter are in part contained in the "Transactions of the Medical and Physical Society of Calcutta," Vol. VIII, Part 2, pp. 94-106 of Appendix.

As the Sylhet experiments have a very interesting relation to the subject of the present inquiry, the following summary of these observations and experiments has been made:—

Dr. Furnell, Civil Surgeon of Sylhet, having read and become interested in Dr. Macpherson's experiments at Moorshedabad (see Rajshahye Division) in September 1833, endeavoured to repeat them. He found that cattle in the vicinity were affected with *matah*, and selected one recovering, which had a number of dry scabs all over its body. Four children were inoculated from this animal without effect. Mr. Brown in Dr. Furnell's absence renewed the trial and inoculated several children, the first four direct from the cow, and many others from these. The vaccine vesicle appeared on the eighth day in all cases. One European child got severe fever on the eighth day, succeeded by an eruption resembling confluent small-pox, which ran through apparently the same course as natural small-pox. In the case of his own child a similar event occurred, but with a fatal result, the mouth becoming so sore that no nourishment would be taken. Another European child suffered severely in a similar manner; but none of the native children inoculated presented any alarming symptoms, and the utmost precautions were taken to exclude variolous infection. The disease is also stated to have prevailed among the cattle of Cachar at the same time. Owing to the result of these trials being so unsatisfactory, no further experiments were made on this subject.

A very interesting notice of *bussunto* by Mr. Lamb, Civil Surgeon of Dacca, is contained in a letter addressed to the Superintending Surgeon of his Circle, on the subject of the regeneration of vaccine. The following is an extract referring to cattle disease, from which it appears that the same disease prevailed in the same manner then as now:—

"The disease among cattle, known under the appellation of *bussunto* or *matah*, *sitlah* or *gootee*, chiefly prevails during the months of December, January and February, though not quite unknown at other seasons of the year. When a cow or bullock is first attacked, there is a discharge of saliva from the mouth; then follows universal tremor, with great heat of the head, chest, and body, as far back as the loins; while the hind-quarters are cold. The whole body then becomes hot, and the animal suffers from intense thirst, the flow of saliva ceases and the mouth becomes dry and hot. After the fever has existed a day or two, the hair becomes so loosely attached, that the slightest rubbing brings it off in handfuls. On the fifth day the eruption appears about the udders, sometimes only a few pustules, at other times they are numerous and confluent; but the result does not seem much dependent on the eruption. Whether the pustules are numerous or rare, the disease is almost equally fatal, and unless measures are taken to separate the infected from the healthy, it speedily runs through the whole herd, sparing few. In those which do escape after taking the infection, the favorable symptom is a spontaneous diarrhoea, in which the dejections are large, watery, and offensive. The treatment is sometimes guided by this indication afforded by nature, and a variety of vegetable purgatives are employed, but more generally is limited to absurd mummeries and fanciful magical incantations.

"When the hair is rubbed off after the pustules have appeared on the udder, the skin is found covered with sores; many die before the eruption makes its appearance, but the fever is known by the discharge of saliva, by the falling off of the hair, and loosening of the teeth. In favorable cases, three or four days after the eruption has come out, the teeth acquire firmness in the gums, and the animal is able to pick up a little grass. Cattle are said not to be subject to a second attack of *matah*; sometimes the disease is exceedingly fatal, at other times it is comparatively slight, without much reference to season or apparent cause; it is, however, at all times greatly dreaded, and with reason, as it is too often the cause of utter ruin to villagers whose whole wealth is in their cattle. I have been unable to discover instances of its frequent co-existence with small-pox among the natives, and the disease is little known in

HISTORICAL SKETCH TOWN. Among the cattle kept by the oil manufacturers or for milk last year, when nearly a thousand deaths from small-pox occurred in Dacca, the disease only appeared in one muhalla, and for a short period; and I was not aware of its presence till it had ceased, after carrying off fifteen or twenty cows."

During a period of 24 years (1836-60) no written record of cattle murrain has been furnished from this Division.

Dr. Brown, Civil Assistant Surgeon, Sylhet, informs the Commissioner in 1860. 1863 that a cattle murrain prevailed in the district in 1860, but that since then no cattle disease has appeared: the symptoms detailed are distinctive of rinderpest.

Captain J. F. Sherer writes in December 1863, that no cattle murrain has ever existed in Cachar; but it will be noted that Mr. Brown states that murrain prevailed in Cachar in 1833.

Mr. C. T. Buckland reports on cattle diseases as known in the different districts of the Dacca Division in 1864. He quotes Dr. Bolanath Bose, of Furreedpore, who states that "the disease is well known in Bengal," and that "there is hardly a year in which one does not hear of some cattle mortality during the hot weather from this source." Dr. Bose is reporting on the rinderpest described by Captain Nelson in Madras (8th July 1863). Mr. A. T. Maclean, Officiating Magistrate of Mymensing (5th March 1864), states that disease somewhat resembling that described by Captain Nelson yearly attacks cattle in Bengal, at the change from the cold to the warm weather. The disease is similar to small-pox in man and is called *bussunto*. It is described as destroying thousands of cattle.

In 1865 a very severe and fatal outbreak occurred in the district of Backergunge. The disease was imported from the adjoining district of Jessore across the Balissur river. It is reported to have raged in several villages on the Jessore side of the river in February 1865, and appeared in the Perozepore Sub-division in April. The disease spread over the Tugrah, Angaria, and Bishkhalee Thannah jurisdictions, and continued to rage till September, when it seems to have declined. The mortality in the whole district is estimated by the Magistrate, Mr. Sutherland, at 30 to 40,000. In the Sub-division of Perozepore alone, 14,399 head died, of which 13,199 are said to have died in the Tugrah Thannah. Mr. Sutherland observes that the loss by murrain has "brought ruin to thousands of ryots." From the careful detail of symptoms given by the Civil Surgeon, Mr. Bensley, it is evident that this murrain was rinderpest.

In 1866, Dr. Brown, of Sylhet, was informed by a European gentleman that the disease was common about 70 miles to the south of the district. Mr. F. B. Simson, Commissioner of Dacca, reports (26th August 1869), that in 1866 a fatal murrain occurred among the cattle of Mymensing in July and August.

An equally fatal murrain broke out in this district in the same months of 1869. In March 1869 cattle disease broke out in the Abidabad Police Station of the Sylhet District, and in September and October in Moolagool, Nowakhally, Tajpore, Chattuck, Lawoor, and Shonamgunge Thannahs, and out of 42,000 attacked, 13,700 are said to have died. The disease seems to have continued to rage in this district up to May 1870, and a subsequent report in November 1870 states that disease was still prevailing in the district. In the district of Mymensing, disease broke out in September 1869 and continued to rage till January 1870. A slight outbreak was again reported by Mr. Simson in the Pingnah Pergunnah in November 1870.

In the Dacca District "small-pox" is reported to have broken out in the Thannahs Ryepoor and Roopgunge about April or May 1869, and in Thannah Manickgunge in March. In March 1870 the disease is reported to have prevailed in the same locality.

DISTRICT OF SYLHET.

From F. B. SIMSON, Esq., Commissioner of Dacca, to the Secretary to the Government of Bengal, Judicial Department,—(No. 87, dated 10th March 1870).

SYLHET.

With reference to the Officiating Junior Secretary Mr. Mackenzie's letter No. 2669, dated the 4th December last, and its annexure, I have the honor to state that the Magistrates of Backergunge, Dacca, Furreedpore, Mymensing, and the Deputy Commissioner of Cachar report that the cattle disease does not now exist in any form in their districts.

2. The Magistrate of Sylhet reports that the disease made its appearance first in Abidabad, and thence gradually extended towards Soonamgunge, Lawoor, Chattuck and other places; that the mortality is very great in Abidabad, Nowakhally and Tajpore; that out of 10,000 cattle attacked in the jurisdiction of these three stations about 8,000 have died, and that the recovery is very good in the jurisdiction of Soonamgunge, Lawoor, Chattuck, and Moolagool.

Information supplied by J. PATCH, Esq., District Superintendent of Police, Sylhet, dated 25th January 1870.

District Sylhet.—The names of the mouzahs cannot be enumerated. The disease is spread all over the jurisdiction of Moolagool, Nowakhally, Tajpore, Chattuck, Lawoor, Soonamgunge, Abidabad Police Stations, and has just made its appearance in the town of Sylhet. The name of the disease is *Batun* বাতুন।

The date of outbreak of this disease cannot be ascertained. In the jurisdictions of Moolagool, Nowakhally, Tajpore, Chattuck, Lawoor and Soonamgunge, the disease made its first appearance in September and October last, and in Abidabad in the month of March 1869.

Statistics. The number of cattle attacked was 42,000, or 42·2 per cent. of stock.

The number of cattle which have died is 13,700, or 13·8 per cent. of stock, and 32·6 per cent. of attacked (taking a proportional number of the cattle still ill, the deaths will amount to 18,477, or 18·5 per cent. of stock, and 44 per cent. of attacked.)

The number of cattle which have recovered is 17,440, or 41 per cent. of attacked (adding a proportional number of the cattle still ill, the recoveries will amount to 23,523, or 56 per cent. of attacked.)

The number of cattle still ill 10,860, or 11 per cent. of stock.

The number of cattle belonging to the villages is 99,500. This is the total number of cattle in all the villages within the jurisdictions of the above Police Stations.

[These numbers are not to be taken as absolutely correct, but they evidently furnish a fair approximation. C. P. C.]

Infectiousness. The disease is supposed to be infectious.
Origin. The natives of this district suppose that cows imported from other districts have brought it with them. They also attribute it to scarcity of rain.
Symptoms. The symptoms of the disease are as follows:—

There are eruptions on the feet and mouth only; the eyes and mouth water; the body is hot; there is labored breathing generally, sometimes accompanied with cough; there are shivering fits; there is difficulty in breathing generally, sometimes accompanied by swelling of the throat; the urine is changed into a dark-yellow colour, the dung is watery, discharged at intervals in small quantities; the coat is as usual; the average duration of attack before recovery or death is five or six days.

The natives generally keep the sick cattle in mud and water continually for four or five days. They use, as a cure, ginger, salt, pepper, neem leaf, *bewadah*, *gooroodah*, and this is often attended with a marked success. They also feed the sick cattle on new green grass, and they curtail their drink.

[N. B.—The two diseases rinderpest and foot and mouth disease—have been evidently mixed up in this statement. C. P. C.]

SYLHET.

The following information regarding cattle disease in Sylhet is furnished in Form No. 1 by MR. W. B. MAXWELL, and forwarded with MR. SIMSON's letter No. 154, dated 20th April 1870.

The parts of the Sylhet District in which cattle disease has prevailed are,—in Pergunnah Juntory, Mouzahs Ryabad, Kanaipore, Adettapore, and Duttgao—Thannah Nobeeunge; and in Pergunnah Baniachung, Mouzahs Makhalia, Murdenpore, Moradpore, Bohampore and Bejoypore—Thannah Abidabad.

Diseases.

The prevailing diseases are small-pox and *naktana*, or swelling of the throat.

These diseases broke out in the Mouzahs of the Nobeeunge Police Station in March, and in Abidabad in February last.

Date of outbreak.

There are 4,600 head of cattle in the Mouzahs of Nobeeunge, enumerated above, and 825 in Abidabad, or 5,425 in all.

Stock.

Number attacked.

Of these, 435 cattle were attacked in Nobeeunge by small-pox, or 9.5 per cent. of stock, and 286 by *naktana*, or 6.2 per cent. of stock. In Abidabad about 400 have been attacked by small-pox, or 48.5 per cent. of stock; 836 have been attacked in all, or 15 per cent. by small-pox, and 286 by the other disease.

Four hundred and fifty-five have died of small-pox in both stations, or 8.3 per cent. of stock, and 54.4 per cent. of attacked; and 115 of *naktana*, or 2.1 per cent. of stock, and 28.7 per cent. of attacked; in all 570, or 10.5 per cent. of stock, and 50.8 per cent. of attacked.

Number died.

One hundred and thirty cattle have recovered of small-pox, and 104 of *naktana*, and 181 are still ill of *naktana*, and 250 of small-pox = 431, or 7.9 per cent. of stock.

Number recovered.

Infectiousness.

The disease is considered infectious, and its origin is attributed to excessive heat and want of rain.

The symptoms are as follows:—*Small-pox*. There are red eruptions on the whole body; eyes and mouth become watery; there is cough, laboured breathing, and swelling of the throat; the dung is watery and discharged in large quantity.

Symptoms.

Naktana.—Skin as usual; eyes and mouth water; the body is hot; there is cough; sometimes laboured breathing; entire stoppage of the evacuations, swelling of the belly, and then death. The average duration of an attack of small-pox is six or seven days.

The treatment employed by the natives for small-pox is,—first ginger, and then jack fruit with *kangee bhat* (rice gruel), and *holoncha* leaves. Particular care is taken to separate the sick cattle from those that are not attacked. The people of this district know no medicines for the other disease.

Treatment.

[N. B.—The statistics in this statement are confused, and apparently not of much value. C. P. C.]

A subsequent report by the same officer, dated 30th May 1870, states that small-pox (*sittah*) has broken out in Pergunnah Begoorah, Mouzah Chundkun Boolah, and that among 400 cattle, 70 (17 per cent.) were attacked, 40 (10 and 57 per cent.) died, 10 recovered, and 20 (5 per cent.) were still ill.

The last report received from Sylhet (F. B. Simson, Esq., dated 10th November 1870) informs that the disease has broken out in the villages Hurripore and Monbeg, Pergunnahs Atoojan and Bajijutooa; that 61 head of cattle died during September.

DISTRICT OF DACCA.

Information regarding the prevalence of cattle disease in the Dacca District, furnished by

BABOO KALLINATH GHOSE, Deputy Magistrate, dated 8th February 1870.

Locality.

Disease prevails in Thannahs Raipoora, Roopgunge, and Manickgunge.

The disease is called pox, *দস্তু*.

The number attacked, &c., is as follows:—

	Stock.	Attack- ed.	Per cent. of stock.	Died.	Per cent. of stock.	Per cent. of attacked.	Recover- ed.	Per cent. of stock.	Per cent. of attacked.	Still ill.	Per cent. of stock.
Raipoora and Roop- gunge ...	About 10,000	1,974	19.7	1,683	16.8	85	215	2.1	10.8	76	7
Manickgunge ...	1,780	820	46.1	452	25.4	51.3	428	2.4	48.6	...	...
TOTAL ...	11,780	2,854	24.2	2,135	18.1	74.8	643	5.4	22.5	76	6

Infectiousness.

Origin.

The disease is supposed to be infectious.

Its origin is attributed to the heat of the weather.

The symptoms are,—coat rough, the usual pox eruption on the skin, eyes and mouth water, body hot, a little cough and laboured breathing, occasionally shivering fits, bowels loose, evacuations red, urine red, duration from 2 to 12 days.

Symptoms.

No remedies have been applied.

Another report from Manickgunge, dated 4th June 1870, by BABOO POORNO CHUNDER GHOSE, Deputy Magistrate, says:—

Disease, small-pox *দস্তু*, prevails in the villages Bundgram, Burdhankandi, and Bhaeca. Among 170 cattle, 86 (50.6 per cent.) were attacked, 46 (27 and 53.5 per cent.) died, and 40 (23 and 46.5 per cent.) recovered.

The disease makes its appearance in the beginning of Falgoun (middle of February), when heat begins. It is supposed that excessive heat causes the disease. From Falgoun to Jeyt (middle of February to the beginning of June), the cattle of the villages suffer extremely for want of good water both for bathing and drinking. Eruptions and swelling of the neck are said to be apparent occasionally.

Season.

DISTRICT OF MYMENSINGH.

Mymensingh.

From F. B. SIMSON, Esq., Commissioner of Dacca,—(No. 391, dated 26th August 1869.)

I have the honor to submit copy of a memorandum, No. 369, dated 18th instant, with its enclosure, from the Magistrate of Mymensingh, relative to a fatal murrain among cattle, and to state that in 1866 the disease prevailed with equal virulence at the same time of the year. It is very difficult to make any proper sanitary arrangements; the whole country is under water, and the cattle only exist on mounds, where they are crowded into far too limited spaces; but seeing that there is no other standing ground, what can be done. I do not suspect poisoning, because in 1866 the carcasses of the cattle were committed to the water unskinned, and the hides soon were useless; the heat and damp prevent successful preparation of hides at this season.

From O. S. STACK, Esq., District Superintendent of Police, Mymensingh,—(No. 674, dated 16th August 1869.)

I have the honor to inform you that the Inspector of Kishoregunge Division mentions in his diary of the 10th instant, that from July up to 9th August 285 cattle have been carried off by small-pox, and the disease is still raging in the under-mentioned villages where the cattle died:—

1, Chotrashote; 2, Kandigao; 3, Majpara; 4, Dareakandi; 5, Chundo Mundul's kandi; 6, Shomarkandi; 7, Lokemonerkandi.

All these villages are situated within the jurisdiction of Bazitpore Station.

Information regarding cattle disease in Mymensingh furnished by R. PORCH, Esq., Joint Magistrate, dated 20th January 1870.

The disease occurred in the following villages within the Attiah Sub-division of the District of Mymensingh:—Chuk Dhun, Porkhi, Berhari, Hatibundha, Barai, Gooatolah, Singar Dāk, and Naikāni.

Locality.

Name.

Date of outbreak.

Statistics.

The number of cattle which have died is 125, or 38.4 per cent.

The number of cattle which have recovered is 200, or 61.6 per cent.

Infectiousness.

Origin.

Symptoms.

The disease is supposed to be infectious; all the above villages are close to each other.

The villagers attribute the disease to the swampy nature of the neighbourhood and bad water.

The symptoms of the disease are as follows:—

The body becomes hot; there are eruptions on the body and feet, &c.; the eyes and mouth water; there is cough and laboured breathing, and shivering fits occur; there is also swelling of the throat; the urine is red.

MYMENSINGH.

The average duration of attack before recovery or death is five days. Native medicines were administered, and some of these were found to be very efficacious.

From F. B. SIMSON, Esq., Commissioner of Dacca,—(No. 360, dated 10th November 1870.)

With reference to your letter No. 474, dated the 20th September last, I have the honor to state that the Magistrates of Backergunge, Dacca, Furreedpore, and the Deputy Commissioner of Cachar report that at present no sickness of an epizootic nature is prevailing among the cattle in their respective districts.

2. The Magistrate of Mymensingh reports that cattle disease made its appearance only in the jurisdiction of Pingnah, but the outbreak appears to be a slight one, and will probably have passed away before the Commission could arrive at the spot.

From F. B. SIMSON, Esq., Commissioner of Dacca, to the President of the Cattle Plague Commission, Calcutta—(No. 366, dated 15th November 1870.)

In continuation of my No. 360, dated 10th instant, I have the honor to forward herewith copy of a letter from Mr. Reily, District Superintendent of Police, Mymensingh, No. 644, dated 5th instant, regarding the outbreak of cattle disease in some villages of that district, and to state that the disease generally appears to prevail about this season, and may abate. But it is to be observed that the inundation this year was higher and lasted longer than was before known in the memory of the oldest inhabitant. All grass has been terribly injured by this inundation, and, as far as I can tell by personal observation and gather from report, cattle have died from starvation, and the survivors are so thin and weak, and still so scantily supplied with grass fit to strengthen them, that future mortality seems inevitable. If disease attacks them, they have no strength to resist it. After the rice now ripening is cut, the cattle will run over the stubble fields and get better food, but I fear the next few months will be marked by an unprecedented mortality which no human measures can prevent.

From H. M. REILY, Esq., District Superintendent of Police, Mymensingh, to the Magistrate of Mymensingh,—(No. 644, dated 5th November 1870.)

In reply to your memorandum No. 248 of the 30th September 1870, I have the honor to inform you that sickness amongst cattle prevails within the jurisdiction of stations Doorgapore, Pingnah, and Jamalpore.

2. The villages in the Doorgapore Station where the sickness now prevails are Kochodhohur, Phoolpore, Bagber, Moro, Baroipara, Ghoraid, Bhowanipore, and Khoojioora. In the Pingnah Station cattle are suffering in the villages of Gopal Dhigha, Malibari, and Meerhainjalli; in the Jamalpore Station in the villages of Bhangabari, Poolalli, Poorkhalli, Goonaritollah, and Bhillamari.

4. In Doorgapore the cattle are said to refuse their food for three or four days, breathe heavily, and waste away.

5. At Pingnah, the throat swells, food is refused, and an eruption breaks out all over the body, to which the cattle eventually succumb. In some instances the stomach simply swells, and the cattle die apparently from not being able to digest their food. Others die from a swelling in the throat and are unable to eat. At Jamalpore the cattle suffer in the same way as at Doorgapore.

From BABOO TARINI PROSAUD ROY, Deputy Magistrate of Attiah, to the Magistrate of Mymensingh,—(No. 273, dated 15th December 1870.)

In continuation of my letter No. 227, dated the 24th October last, I have the honor most respectfully to state that I have received a report from the Pingnah Police, to the effect that the cattle diseases which had lately broken out in some of the villages within the jurisdiction of that Thannah, as mentioned in my letter above referred to, have now ceased.

CHITTAGONG DIVISION.

COMPRISING THE DISTRICTS OF CHITTAGONG, TIPPERAH AND NOAKHALLY.

Index of Records.

[N. B.—Those in Italics are not printed.]

District.	From whom received.	Number.	Date.	Reference and Purport.
Tipperah.	Historical Sketch.	...	.....	p. 145.
	W. Gordon Young, Esq., Commissioner of Chittagong.	11	20th January 1864	<i>Selections, Bengal Government, p. 7. Stating that cattle disease has for many years prevailed.</i>
	J. A. Greene, Esq., M. D., Civil Medical Officer, Tipperah.	106	18th May 1866 ...	<i>Selections, Bengal Government, p. 106. Report on cattle disease which occurred in 1865.</i>
	Baboo Bhogoban Chunder Bose, Deputy Magistrate, Nassirnugger.	...	7th May 1866 ...	<i>Cattle disease which prevailed in Nassirnugger described.</i>
	C. E. Lance, Esq., Commissioner of Chittagong.	259	14th September 1866	<i>Selections, Bengal Government, p. 123. Report on outbreak of cattle disease, and comment on the outbreak of 1866.</i>
	F. Millet, Esq., Magistrate of Tipperah.	669	18th August 1866 ...	
	W. B. Pratt, Esq., District Superintendent of Police.	...	.....	<i>Selections, Bengal Government, p. 135. Reports on the extent to which disease prevailed in 1866.</i>
	J. A. Greene, Esq., M. D., Civil Medical Officer.	153	30th October 1866...	<i>Selections, Bengal Government, p. 136. Offers a few remarks on the 1866 disease.</i>
	Lord H. Ulick Browne, Commissioner of Chittagong.	361	18th February 1870	Reports that no disease exists in Chittagong, but that it has prevailed in Noakhally, Tipperah, and the Hill Tracts of Chittagong, p. 146.
	E. D. Lockwood, Esq., Magistrate of Tipperah.	1227	18th December 1869	Report on the sanitary treatment of epizootics, p. 146.
	Ditto ditto	1266	21st December 1869	Gives the varieties of cattle disease prevalent in the district, p. 147.
	Ditto ditto	22	11th January 1870	Furnishes additional particulars of cattle disease in 1869, p. 148.
	Ditto ditto	57	22nd January 1870	Form No. 1 carefully filled in.
	Ditto ditto	68	26th January 1870	Report of outbreak of small-pox in one village.
	Ditto ditto	103	3rd February 1870	Report of cattle disease, Thannah Goureeparah.

D. Hine, Esq., Magistrate of Tipperah.	903	26th August 1870...	Reports that cattle disease does not prevail in any part of the district.
Ditto ditto	1020	12th October 1870...	Intimates that no disease exists in the district.

District.	From whom received.	Number.	Date.	Reference and Purport.
Noakhally.	W. Gordon Young, Esq., Commissioner of Chittagong.	11	20th January 1870	<i>Selections, Bengal Government, p. 7.</i> <i>States that cattle disease frequently prevails.</i>
	G. H. Whinfield, Esq., Magistrate, Noakhally.	52	21st February 1870	Gives particulars of a severe outbreak of cattle disease which occurred towards the end of 1869, p. 149. Ditto p. 150.
	Baboo Jogodishnath Roy, District Superintendent of Police.	948	28th December 1869	
	Ditto ditto	955	30th December 1869	
	G. M. M. Ridsdale, Esq., District Superintendent of Police, Noakhally.	446	12th November 1870	<i>Reports the existence of small-pox and hoof disease in many villages of the station of Kattia.</i>
	Ditto ditto	478	5th December 1870	<i>Reports that disease had disappeared after 169 cattle had died.</i>
Chittagong.	Ditto ditto	527	28th December 1870	<i>Gootee has again appeared at a village, Kacheekhally.</i>
	W. Gordon Young, Esq., Commissioner of Chittagong.	11	20th January 1864	<i>Selections, Bengal Government, p. 7.</i> <i>States that cattle disease has never occurred.</i>
	F. W. R. Cowley, Esq., Joint Magistrate of Chittagong.	59	21st January 1870	Gives an account of cattle disease which prevailed in the district in 1869, p. 151.
	A. King, Esq., Assistant Superintendent of Police.	7	5th January 1870	
	F. W. R. Cowley, Esq., Joint Magistrate of Chittagong.	73	24th January 1870	<i>Reports that no cattle disease exists in the district.</i>
	H. C. B. C. Raban, Esq., Officiating Magistrate of Chittagong.	1329	17th October 1870	<i>Reports that cattle disease exists in several villages of the Chittagong District, p. 152.</i>
	Ditto ditto	1381	20th October 1870...	<i>Intimates that no epizootic exists in the district.</i>
	Ditto ditto	1394	28th October 1870...	<i>Explains that the last report referred only to the town of Chittagong.</i>
	Major W. M. Graham, Deputy Commissioner of Chittagong Hill Tracts.	383	8th November 1870	<i>Reports that there is no cattle disease existing in the Hill Tracts.</i>

HISTORICAL SKETCH.

W. Gordon Young, Esq., Commissioner of Chittagong, writing in January 1864, states, that in the district of Noakhally cattle murrain frequently appears in September and October, and that in Tipperah "it has been for many years past very destructive among the cattle."

In Chittagong, "where cattle are not numerous, no such murrain has apparently ever prevailed." The disease is called *bussunto* and *Burrapera*.

In Tipperah disease (*matah, sitala or bussunto*) prevailed throughout the district, and in July and August attacked the cattle of the sudder station Commillah. The detail of symptoms leaves no doubt that it was rinderpest.

Rinderpest continued to prevail very extensively in the district up to the month of September, 1866. The mortality appears to have been very great, and type of the disease virulent.

No record of the year 1867 has been furnished, but in 1868 rinderpest is said to have been very prevalent throughout the district of Tipperah, and caused a mortality of three or four thousand.

The disease continued to spring up in different localities throughout Tipperah, and the mortality is thought to have been even greater than in 1868. The district of Noakhally was also this year severely visited, and *bussunto* (rinderpest) was reported to prevail very generally. In Chittagong, also, a partial outbreak of the same disease took place in the sub-district of Cox's Bazaar.

Lord H. Ulick Browne, Commissioner of Chittagong, in a letter, dated 8th February 1870, states that cattle disease does not prevail in the Chittagong District; that in Tipperah there is little disease; in Noakhally it has prevailed largely during the last three or four months, and in the hill tracts of Chittagong it was rather bad three or four months ago. "The truth I believe to be that the disease comes and goes, is virulent and mild at intervals in most districts."

In November a report was received from Tipperah that *gootee* (small-pox) prevailed in many villages of the Station Ballia. A subsequent report, dated 5th December, intimated the disappearance of the disease after 169 cattle had died, and a still later letter, dated 28th December, informed that the disease had re-appeared in one village, where seven cattle had died.

Mr. Raban, Magistrate of Chittagong, reported, on the 17th October, that "small-pox" was prevailing in the Chittagong District, having broken out in September: 107 cattle had died among 130 attacked in a stock of 750 head.

Subsequently, no disease was reported to prevail in the district, but this was afterwards explained to refer to the town of Chittagong. This division was not visited by the Commission, because the reports received were too indefinite to undertake a long and expensive journey upon; but the papers appended to this summary will conclusively prove that the same diseases affect cattle in the districts of the Division, very much in the same manner as they do elsewhere in Bengal.

DISTRICT OF TIPPERAH.

From LORD H. ULICK BROWNE, Commissioner of the Chittagong Division, to the Secretary to the Government of Bengal, Judicial Department—(No. 361, dated 18th February 1870).

With reference to the order of Government, No. 2669, dated the 4th December 1869, enquiring whether cattle disease in any form now exists within this Division, I have the honor to report as follows for the information of the Lieutenant Governor.

The disease is not supposed to be active in the Chittagong District just at present.

The Magistrate of Noakhally says that it prevailed largely in the district during the last three or four months, but it has since abated.

The Collector of Tipperah reports that, so far as he can learn, cattle disease has always been more or less prevalent in the district, but there is little of it just at present.

The disease has only lately made its appearance in the hill tracts, where there are few cattle; it was rather bad about three or four months ago, but no complaints have been heard lately.

The truth I believe to be that the disease comes and goes, is virulent and mild at intervals in most districts.

From E. D. LOCKWOOD, Esq., Magistrate of Tipperah, to the Commissioner of Chittagong, —(No. 1227, dated 8th December 1869).

With reference to your memorandum No. 215, dated 9th November 1869, I have the honor to submit the following preliminary report.

2. I am informed that the cattle disease called *gootee* has always been more or less prevalent in this district, but this year there have been comparatively few deaths from it. Last year a quantity of sulphur (20 seers) for fumigation on the English plan was distributed to the various Police Stations, but the people, with their usual apathy, do not appear to have troubled their heads much about the matter; the experiments made by the Police were received very coldly by the persons interested, and, although the supposed remedy was promulgated as much as possible, I am not able to learn that the owners of cattle have availed themselves of it.

3. The cattle of this district, however, are as wretched specimens of the species as can be conceived,—generally mere skin and bone,—consequently, when seized by sickness, they succumb very quickly.

4. I believe that the race of cattle throughout Bengal has degenerated very considerably of late years in consequence of the absence of the Brahmince bulls which fed on the fat of the land.

Formerly the calves, at least on the father's side, came of good stock, but of late years the custom of dedicating bulls to idols has gone out of fashion, particularly as the fate of such animals now-a-days generally is to draw municipal carts and rollers instead of roaming about the country as they pleased. The wonder is, seeing the present state of cattle in the district, that on the occurrence of an epidemic, such as *gootee*, they are not all swept away. *Gootee* can hardly be called an "epidemic;" however, in this district, like cholera, it is always more or less prevalent, though never assuming the form of a general pestilence.

5. There appears nothing objectionable in the draft Act proposed by Mr. Blechynden, but there would be great difficulty in "stamping out" cattle disease in a Hindoo village by a judicious slaughter of infected cattle. The pious Hindoo would rather see his family perish before his eyes than have recourse to such an unholy expedient. The Mussulman community also would resort to a thousand subterfuges rather than give up the faintest hope of saving their cattle.

6. The only preventive to the disease spreading in the present state of society will be I think, in placing the large cattle marts under the surveillance of the Police and preventing the sale and importation of diseased cattle. Many of the natives are very knowing on the subject of cattle and their diseases, having lived amongst them from their infancy; such persons, not otherwise objectionable, might be selected to report on the cattle at the principal hâts and fairs; at all events the mere fact of the Government taking up the matter would intimidate persons who otherwise would deal in diseased cattle with impunity.

7. The cattle pound fund is in a healthy condition, there being Rs. 3,613 in hand.

8. I will report further on the subject when I can get more information; at present all the likely persons whom I have asked do not appear to know much about it, and the few reports of the Police on the matter are too vague and unsatisfactory to act upon. I will also try and ascertain the mortality from cattle disease during the present year as compared with former years.

From E. D. LOCKWOOD, Esq., Magistrate of Tipperah, to the Commissioner of Chittagong,—(No. 1266, dated 21st December 1869).

In continuation of my report No. 1227 of the 8th instant, I have the honor to inform you that the principal cattle disease in this district is of three different kinds:—

I.—*Joran* and *gootee* জড়ন ও গুটী,

Names.

II.—*Batan* বাতন,

III.—*Golafula* গলা ফুলা ।

Joran (fever) and *gootee* (small-pox) are virtually one and the same disease, of which the former is merely the first and the latter the last stage; many of the natives say that small-pox amongst cattle was originally communicated by man, but on this point I am unable to give any opinion.

Joran.

2. The symptoms of *joran* are,—body feverish, hair erect, drooping ears, excessive thirst, drowsiness and repugnance to food; on the second or third day small-pox supervenes and pustules appear all over the body. The animal passes matter with a very offensive smell, and death soon after occurs.

Symptoms.

3. The chief remedy used is the administration of so-called cooling drinks, such as rice-water and the juice of the plantain tree.

Treatment.

4. The symptoms of *batan* are,—sores in the hoof, in the leg, and in the mouth, which soon generate maggots. The remedy used is bathing the diseased parts with turmeric water, and also keeping the animal tied up in water.

Batan.

5. The *golafula* is the most fatal of all diseases, and carries off the affected animal in a few hours; the symptoms are a boil at the root of the tongue, which is succeeded by a slight swelling in the throat.

Golafula.

6. The mortality from *gootee* alone during 1868 is supposed to be about 3,000; whether the mortality during the present year has exceeded this amount or not I am unable to express a decided opinion, as the accounts which I have received on the subject differ very considerably; probably, however, the mortality has increased, and for reasons which I shall state presently it will continue to increase unless the Government interferes in order to check the disease.

Mortality.

7. The data which I have at present regarding the mortality of cattle throughout the district are necessarily very vague and unsatisfactory, but I suspect that few of the villages have escaped. The sub-division of Brahmenbareah appears to have suffered the most, and particularly Pergunnahs Burdakhat and Sherail, where cattle are said to be most numerous.

8. In consequence of the mortality amongst the cattle, the price of milk has risen very considerably; the chamars* have become prosperous, and the consumption of country spirits which, fluctuates with the condition of these people, has greatly increased.

* Dealers in skins.

9. The cattle market is by no means supplied from the district, but there is a considerable importation from the districts of Dacca, Mymensing, Furreedpore, Pubna, and Rungpore, and, so far as I can learn, there is no exportation of cattle from this to other districts.

Importation.

10. The cattle disease, however, does not appear by any means to be generally imported from other districts, but, so far as the memory of man extends, has been engendered and nourished in the district itself.

11. There can be no doubt after a perusal of the foregoing remarks that the cattle disease has caused considerable anxiety and distress in this district, which is purely an agricultural one. If we ask the most intelligent natives if they can account for the increased prevalence of the disease of late as compared to preceding years, they generally fall back on the answer most satisfactory to their own apathetic nature, viz. that it is the will of God. I

Disease indigenous.

TIPPERAH. think, however, there can be no doubt whatever that the prevalence of the disease arises from the great struggle for existence which is continually going on throughout the entire animal kingdom, including the human race. It may generally be stated as an axiom that where it is not kept down by other external causes, the number of animals in any country depends upon the amount of food obtainable. At the present time in this district a great struggle for existence is going on between man and beast, and the latter being the weakest, naturally has to succumb to his more powerful adversary. Every available beegah, which formerly afforded pasture to cattle, is now being brought under cultivation of rice for man, and even many of the bheels which formerly constituted vast pasture grounds for cattle are now—so urgent is the demand for human food—planted with long stemmed rice, and cattle seeking pasture there are driven away.

Pasture land.

12. The consequence of this is that thousands of cattle are born which cannot possibly exist: instead of dying of hunger, as they certainly otherwise would, their existence is put an end to by disease.

Cow-sheds.

13. I am informed that at some of the bheels in the north of the district *batans*, or long, narrow cow-sheds, are erected by enterprising persons, and into these the cattle are crowded in hundreds, and so full are they jammed that even the avaricious *batan-walla*, who receives 2 to 4 annas a head per month, is obliged to deny many cattle an entrance, and forces them to seek shelter alike from the heat of the sun and night dews under the neighbouring trees.

Remedies.

The chief remedy against the cattle disease, I have no doubt, would be rendering it imperative on all villages to set aside a portion of the village for pasture land.

Encouraging the race of Brahminee bulls so that the calves from their father's side at least may come of good stock.

Stringent orders to chamars regarding the skinning of diseased cattle.

Placing the cattle marts under proper surveillance.

From E. D. LOCKWOOD, Esq., *Magistrate of Tipperah, to the Commissioner of Chittagong*,—
(No. 22, dated 11th January 1870.)

In continuation of my reports Nos. 1227 and 1266, dated 8th and 21st December, and with reference to your memoranda, Nos. 301 and 312, dated 15th and 22nd December, I have the honor to make the following remarks:—

2. (1).—*Name of district*.—Tipperah.

3. (2).—*Name of disease in Vernacular or English*.—*Joran* and *Gootee*, *Batan*, *Golafula* (throat-swelling).

4. (3).—*Date of outbreak of disease*.—So far as I can learn, the above diseases have always been more or less prevalent in this district; the natives say *gootee* was caught from man.

5. (4, 5, 6, 7, 8).—During the past year about 3,000 cattle are supposed to have died in the district from the above diseases; probably double that number were attacked. *Golafula* is considered the most fatal, and few attacked recover.

6. The disease in any form, so far as I could learn in my recent tour in the district, is not very prevalent now. I could not hear of any case during my residence in the villages.

7. The Sub-division of Brahmenbaria appears to have suffered most; the reason of this is, I fancy, merely because there are more cattle in that part of the district.

Separation.

8. A man at Dandkandi told me he had lost 9 out of 20 of his cattle during the past year in Kartick (October) from *gootee*. He said that he attempted no separation of the diseased from the healthy cattle, and that when they died he threw out their bodies on the maidan, where the *moochees* skinned them and sent the skins for sale to Dacca.

9. At Chando-gow, which adjoins the forests of Hill Tipperah, I heard very little of cattle disease; there the cattle find comparatively good pasture in the forests.

10. In the *Khas Mehal* Dularampoor, where many hundred head of cattle are assembled, I was assured that the disease was unknown. I attribute this to the fact that the ryots are well-to-do and can afford their cattle proper food and shelter.

Exportation.

11. I find I was mistaken in a late report in saying that there is no exportation of cattle from this to other districts. I have since observed considerable herds of cattle *en route* to Chittagong. The owners that I have asked told me that they purchased the animals in the

neighbourhood of the Thorlah Thannah of this district, and were taking them, according to yearly custom, to Chittagong. Cattle, they say, are somewhat dear just now in consequence of the ryots ploughing their land. When the ploughing is finished the market will fall. They did not speak of unusual mortality from cattle disease.

NOAKHALLY.

12. To show that cattle are not very dear in this district, one man told me the herd of 90 he was driving to Chittagong had cost him Rs. 750, or on an average Rs. 8-6 a head.

13. *Symptoms. Appearance of the coat*.—Erect.

Symptoms.

14. *Whether there are any eruptions on the body or feet, or not*.—In *gootee* eruptions generally appear all over the body, and have the appearance of human small-pox. The cases in which they do not come out are said to be always fatal.

15. *Eyes and mouth watering or not*.—The mouth waters in *batan*; in *gootee* the eyes water.

16. *Body cold or hot*.—Very hot.

17. *Cough or labored breathing*.—None.

18. *Shivering fits or not*.—None, but the animal attacked becomes very restless.

19. *Swelling in the throat or any difficulty in breathing*.—The throat swells only in the disease called *golafula*, and there is difficulty in breathing.

20. *Appearance of urinary or faecal evacuations*.—Nothing peculiar in urine, but the faecal evacuations have the appearance of human choleraic evacuations, and emit a very offensive smell.

21. *Average duration of attack before recovery or death*.—Five or six days before death, but in cases of recovery the animal suffers for weeks.

22. *Preventive or remedial measures*.—None; the remedies administered are merely so-called cooling drinks, such as rice-water and the juice of the plantain tree.

Remedies.

23. I have at present nothing to add in addition to former reports. I have issued orders with a view to prevent as much as possible cattle which have died from disease being skinned by the *moochees*, and also to urge the necessity of the instant separation of diseased cattle from healthy ones.

24. I may mention that all the persons whom I have asked scout the idea of a general system of cattle poisoning.

Poisoning.

DISTRICT OF NOAKHALLY.

Memo. from E. WHINFIELD, Esq., Officiating Magistrate of Noakhally,—(No. 52, dated 21st February 1870.)

Noakhally.

Begs to forward the accompanying copy under instructions conveyed in Government Circulars Nos. 2777 and 2879, dated 11th and 20th December respectively

Memo. from BABOO JOGGODISHNATH ROY, District Superintendent of Police, to the Magistrate of Noakhally,—(No. 948, dated 28th December 1869).

In reply to his No. 446, dated 22nd ultimo, and Commissioner's No. 301, dated 25th instant, begs to state that cattle disease prevailed largely in the district during the last three or four months; it has considerably abated at present. The symptoms of the disease are about the same. The differences are specified in the replies. The largest amount of loss has occurred in the stations which were submerged in the storm-wave of the 9th May last, namely, Sundeep, Hateah, and Bamnie. The percentage of loss given by the Police is vague and generally somewhat exaggerated. As far as can be gathered from the returns and from personal enquiry, the average loss has not exceeded 10 per cent. in the whole district. The percentage of recovery is about 25 per cent.

The Commissioner's letter, with enclosures, is returned.

Q.—What are the premonitory symptoms of the disease affecting the cattle on the churs at present, and what is it called by the natives?

A.—The disease is generally called *bussunto* or cow-pox. In some places it has been denominated *boropeera* or *joshora* or *khoorapeera*. The premonitory symptoms are, shivering, swollen throat, and hair erect.

Name

NOAKHALLY.
Symptoms.

Q.—Is the commencement of the disease attended with shivering fits?

A.—Yes.

Q.—Is there any increased heat of skin, ears, horns, &c.?

A.—Yes.

Q.—What is the state of the skin, rough or smooth, are the hairs erect, and are the ears observed to be drooping back?

A.—Skin rough and erect, and ears drooping.

Q.—With reference to the respiration, is it hurried?

A.—Respiration hurried.

Q.—Does the animal affected refuse food, and is there absence of rumination?

A.—Refuses food, gnashes the teeth, and does not ruminate.

Q.—Is the disease attended with intense thirst, or does the animal refuse water?

A.—Sometimes thirst, and sometimes want of it.

Q.—Are the eyes inflamed and watering?

A.—Eyes are inflamed and watering.

Q.—Is there any discharge perceptible from the mouth and nostrils, if so, state its appearance?

A.—White, from mouth and nostrils.

Q.—Is the muzzle dry, and is the animal affected with symptoms of cough?

A.—Mouth dry, and with cough, sometimes natural.

Q.—What is the state of the tongue, swollen or natural?

A.—Sometimes the tongue is swollen.

Q.—Are the bowels constipated or relaxed, if so, state the appearance of the evacuations, whether watery and slimy or bloody?

A.—Bowels sometimes constipated and sometimes relaxed with bloody evacuations.

Q.—Are there any eruptions about the body, if so, state how many days after the first symptoms does it make its appearance?

A.—In small-pox the eruptions make their appearance on the second or third day.

Q.—Is there any marked alteration about the mouth and throat, and is the latter swollen?

A.—In cases of *foshora* and *boropeera* the mouth and throat are swollen, the skin coming off from the mouth and tongue.

Q.—How long does the disease last before it proves fatal? and if recovery takes place, in how many days does it do so?

A.—The disease lasts in *foshora* two or three days, in *boropeera* four or five days, in cow-pox a fortnight or 20 days.

Memo. from BABOO JOGGODISHNATH ROY, District Superintendent of Police, to the Magistrate of Noakhally,—(No. 955, dated 30th December 1869).

In continuation of No. 948, dated 28th instant, and with reference to his remarks on Commissioner's No. 312 of 22nd idem, begs to state that the prevalence of cattle disease has been general throughout the district, being virulent in some and of a milder description in other portions. The names of stations and outposts in which it has appeared are given below. The disease is not supposed to be infectious; at least it has not been reported as such. Its origin is not known. The places submerged in the storm-wave of 9th May have suffered most, and the rainy season appears to be the time during which the largest loss occurred. With regard to preventive measures, the orders of Government regarding segregation of diseased animals and their burial have been generally promulgated, but no remedial measures, to the best of my knowledge, are availed of, as the people of the district do not seem to be aware of any, and cow-leeches (chiefly *goallas*) are not to be found as in other parts of Bengal.

Storm-wave.
Prevention.

Information in Form No. 1 regarding the prevalence of cattle murrain in the District of Noakhally, furnished by BABOO JOGGODISHNATH ROY, District Superintendent of Police, dated 29th January 1870.

The stations and outposts of Noakhally District where cattle disease has prevailed are Sherdhoram, Ameergong, Bamai, Sundip-Hatia, Moonshihat, Lidhi, Nalchira, Lockhipur, Begumganj, Ramgong, Raipur, and Phorasgong. The diseases are called *bussunto* or cow-pox, *barapira* or *phoshera* or *koorapira*. They prevailed in the rainy season.

There are about 6,222 head of cattle in each station, about 50,000 were attacked, about 25 per cent. died, and about 75 per cent. recovered.

These diseases are probably infectious.

The symptoms are,—rough coat; eruptions on the body; eyes and mouth water; body hot; cough; shivering fits; swelling of throat, evacuations bloody.

Phoshera lasts two or three days, *barapira* four or five days, and *bussunto* a fortnight or twenty days.

No remedial measures are resorted to.

DISTRICT OF CHITTAGONG.

From A. KING, Esq., District Superintendent of Police, Chittagong, to the Magistrate of Chittagong,—(No. 7, dated 5th January 1870.)

With reference to your memorandum No. 1417 of the 27th ultimo, with enclosures, and requesting to be furnished with the information required in para. 2 of the Commissioner's memorandum relative to the prevalence of the cattle disease in this district, I now have the honor in reply to report as follows.

2. The principal disease to which cattle—cows and buffaloes—are subject in this district is known to the natives as *bussunto* or small-pox, the first symptoms of which are ushered in by fever and a partial loss of appetite, which continue for about 24 hours, when the animal refuses all food, but has great thirst, after which the breath becomes very offensive, and the animal is affected with a constant watery sort of diarrhoea, which is also most offensive; when the evacuations have a mixture of blood, then it would seem all chances of recovery are nil.

3. The pustules are said to appear about the sixth or seventh day, which is looked on as the crisis of the disease, and if an animal survives for a day or two after recovery may be looked forward to.

4. The only remedies used by the people of this district are, to rub the tongue occasionally with pepper, and, when possible, to introduce boiled rice and small portions of ghee into the stomach by forcing the mouth open. It is believed that not more than 25 per cent. of those attacked recover.

5. A large number of buffaloes and cows died in the sub-district of Cox's Bazaar last year, as well as at the opposite or left bank of the Kurnofoolee river. The disease is believed to prevail more during the rainy than any other season. At the present time, and for two or three months past, there have been no reports of any cattle having been attacked.

6. During the last rainy season, one of the residents here lost two fine cows with this disease, having left them to the care of native servants; both died within five days. Another was then attacked, when the owner determined on trying what effect aconite and belladonna would have, both of which medicines were administered alternately for five days; the result being the disappearance first of the fever, and subsequently of all other inflammatory symptoms. The cow perfectly recovered and since then calved and gave milk as usual.

7. The enclosures of your letter are herewith returned.

No. 59.

Copy forwarded to J. H. B. Hallen, Esq., President of the Commission deputed to enquire into the subject of cattle disease, with reference to the Government letter No. 2777, dated the 11th December 1869, to the address of the Commissioner.

By his obedient servant,

CHITTAGONG MAGT.'S OFFICE;

The 21st January 1870.

F. COWLEY,

Offg. Joint Magistrate in charge.

CHITTAGONG.

Locality.

Statistics.

Symptoms.

Chittagong.

Symptoms of *bussunto*.

Remedies.

Season.

CHITTAGONG. From H. C. B. C. RABAN, Esq., *Officiating Magistrate of Chittagong*,—(No. 1329, dated 17th October 1870.)

I have the honor to report for your information that cattle disease is reported to be prevalent at the villages noted in the margin.

Idulpore.

Mohadebpore.

Doorgapore.

Goriaish.

Meetaserra.

In Seetakund.

In Meerkaserai.

2. The information required with regard to the symptoms of disease, &c., are given below.

2. The disease is called small-pox, বসন্ত.
3. Date of outbreak, 20th September 1870, in Idulpore and Doorgapore, 10th September 1870 in Mohadebpore, and 15th September 1870 in Goriaish and Meetaserra.
4. Cattle attacked, 18 in Idulpore, 50 in Mohadebpore, 3 in Doorgapore, 46 in Goriaish, and 13 in Meetaserra.
5. Of which 14 died in Idulpore, 37 in Mohadebpore, 3 in Doorgapore, 40 in Goriaish, and 13 in Meetaserra.
6. None recovered except 6 in Mohadebpore.
7. Four still ill in Idulpore, 7 in Mohadebpore, and 6 in Goriaish.
8. About 80 cattle in the village Idulpore, 70 in Mohadebpore, 100 in Doorgapore 300 in Goriaish, and 200 in Meetaserra.
9. The disease is infectious.
10. How originated, not known.
11. The following are the symptoms as described by the Police :—

Hairs erect ; no eruptions on the body or feet in the Seetakund villages, but eruption is said to mark the disease at Meerkaserai ; eyes and mouth watering ; body hot ; labored breathing ; shivering fits ; difficulty in breathing ; swelling of the throat in the Meerkaserai, but apparently not at Seetakund ; urine reddish and fecal evacuations light.
12. Duration of attack, five or six days.

* * * * *

BURDWAN DIVISION.

COMPRISING THE DISTRICTS OF BURDWAN, BANCOORAH, BEERBHOOM, HOOGHLY, HOWRAH AND MIDNAPORE.

Index of Records.
[N. B.—Papers in Italics are not printed.]

Statistics.

Origin.

Symptoms.

District.	From whom received.	Number.	Date.	Reference and Purport.
Hooghly.	Historical Sketch.	...	.....	Page 159.
	Circulars of the Medical Board.	14	24th Dec. 1834 ...	{ Requesting information regarding vaccinia and the small-pox affecting cattle, p. 161.
			16th Feb. 1836 ...	
	S. Ludlow, Esq., Superintending Surgeon, Barrackpore.	271	29th March 1836 ..	{ Regarding the <i>matah</i> or <i>gootee</i> of cattle, pages 161 & 162.
	Dr. T. Wise, Civil Assistant Surgeon, Hooghly.	...	12th March 1836 ...	
	R. P. Jenkins, Esq., Commissioner of Burdwan.	141C	1st March 1866 ...	<i>Selections, Bengal Government, p. 126. States that gootee and puschima prevail every year in Hooghly.</i>
	C. T. Buckland, Esq. ...	95	9th March 1870 ...	<i>Reports outbreak of cattle disease in village Foolooe.</i>
	F. H. Pellew, Esq., Magistrate of Hooghly.	83	21st February 1870	{ <i>Form No. 1, relating to same outbreak.</i>
	<i>Ditto ditto</i> ...	...	15th March 1870 ...	
	<i>Ditto ditto</i> ...	113 & 341	9th and 26th March 1870.	<i>Reports outbreak at Akna and Dalimba.</i>
	<i>Ditto ditto</i> ...	286	19th March 1870 ...	<i>Ditto ditto at Pandoogram.</i>
	<i>Ditto ditto</i> ...	305	22nd March 1870...	<i>Reports disappearance of disease at Foolooe.</i>
	<i>Ditto ditto</i> ...	332	25th March 1870 ...	<i>Ditto ditto at Pandoogram.</i>
	<i>Ditto ditto</i> ...	333	<i>Ditto</i> ...	<i>Reports outbreak at Bagdunga.</i>
	<i>Ditto ditto</i> ...	334	26th March 1870 ...	<i>Ditto ditto at Dengal (Ghoghant.)</i>
	<i>Ditto ditto</i> ...	752	15th July 1870 ...	<i>Ditto ditto at Obrampoor (Hurripaul.)</i>
	<i>Ditto ditto</i> ...	754	18th July 1870 ...	<i>Ditto ditto at Uttermansri, &c., (Khanakool.)</i>
	<i>Ditto ditto</i> ...	954	9th September 1870	<i>Reports prevalence of bussunto in 8 villages of the Chundeetullah Station, Pergunnah Baha.</i>
	<i>Ditto ditto</i> ...	990	13th September 1870	<i>Reports outbreak of disease in Serampoor Sub-division.</i>
	<i>Ditto ditto</i> ...	...	19th September 1870	<i>Reports outbreak of bussunto in Jekanabad.</i>

District.	From whom received.	Number.	Date.	Reference and Purport.
Hooghly,—continued.	<i>F. H. Pellew, Esq., Magistrate of Hooghly.</i>	...	25th September 1870	Further report of disease in Chundeetollah.
	<i>Ditto ditto</i> ...	1052	11th October 1870...	Reports disappearance of cattle disease from Hurripaul.
	<i>Ditto ditto</i> ...	1177	21st November 1870	Reports on a case of Gharmoo-gra at Cheenamore.
	<i>W. F. Meres, Esq., Officiating Joint Magistrate of Hooghly.</i>	1287	27th December 1870	Reports the occurrence of a case of Jenea Puschimā at Chumapore. [The foregoing reports are given in a tabular summary at p. 163.]
	Village Akna, including evidence of Modoo Soodun Chatterjee, Izardar.	...	9th April 1870 ...	Evidence regarding cattle disease recorded by the Commission on the occasion of their visit to Mugrah in the Hooghly District.
	Evidence of Baloregunge villagers.	...	11th April 1870 ...	
	Evidence of Jagessur Koloo of Dalimba.	...	13th April 1870 ...	
	Evidence of Koylas Chunder Ghose.	...	Ditto ...	
	Evidence of Bungshee Ghose	...	Ditto ...	
	Evidence of Banessur Khara.	...	Ditto ...	
	Evidence of Gopalkristo Banerjee.	...	Ditto ...	
	Evidence of Umbicachurn Ghose.	...	Ditto ...	
	Evidence of Gobordhone Ghose.	...	Ditto ...	
	Evidence of Nuffer Ghose...	...	Ditto ...	
	Evidence of Sreenath Ghose	...	Ditto ...	
	Evidence of Villagers of Milchee.	...	14th April 1870 ...	
	<i>Ditto ditto</i> Joypore ...	...	13th April 1870 ...	
	<i>Ditto ditto</i> Bagatty ...	...	Ditto ...	
	<i>Ditto ditto</i> Sultanpoor..	...	Ditto ...	
	<i>Ditto ditto</i> Bycantpoor..	...	Ditto ...	
	<i>Ditto ditto</i> Kochaty ...	...	Ditto ...	
	<i>Ditto ditto</i> Durah ...	...	Ditto ...	
	<i>Ditto ditto</i> Notoongram.	...	Ditto ...	
Burdwan.	<i>Ditto ditto</i> Bashdebpoor.	...	Ditto ...	
	Evidence of Pormanund Ghose.	...	15th April 1870 ...	
	Villagers of Bagdanga near Chandernagore.	...	31st March 1870 ...	
	Information furnished by Baboo Joykissen Mookerjee.	...	12th December 1870	
	<i>A. Sawers, Esq.</i> ...	...	16th December 1863	
	<i>C. F. Montresor, Esq., Officiating Commissioner of Burdwan.</i>	13	3rd February 1864	
	<i>R. P. Jenkins, Esq., Officiating Commissioner of Burdwan.</i>	141 C	1st November 1866	
	<i>C. T. Buckland, Esq., Officiating Commissioner of Burdwan.</i>	112	1st March 1870 ...	
	<i>W. E. Ward, Esq., Magistrate of Burdwan.</i>	20 P	19th February 1870	

District.	From whom received.	Number.	Date.	Reference and purport.
Burdwan,—continued.	<i>Enclosure Form No 1, with statistics of 29 villages.</i>	...	19th February 1870	The symptoms are carefully described.
	<i>W. E. Ward, Esq., Magistrate of Burdwan.</i>	53 P	7th April 1870 ...	Further report of disease in Burdwan, Cutwa, and Bood-Bood.
	<i>Baboo Protabnarain Singh, Deputy Magistrate of Bood-Bood.</i>	32	25th April 1870 ...	Further report of cattle disease in Bood-Bood Sub-division.
	<i>Baboo Chundranarain Singh, Deputy Magistrate of Cutwa.</i>	68	6th June 1870 ...	Reports an outbreak of small-pox at Arjoon Dihī, 7 miles south of Cutwa.
	<i>W. E. Ward, Esq., Magistrate of Burdwan.</i>	104 P	15th June 1870 ...	Directing the Police to make more careful inquiry into cattle disease.
	<i>Ditto ditto</i> ...	105 P	16th July 1870 ...	Reports outbreak at Nogundihi, Cutwa.
	<i>Ditto ditto</i> ...	112 P	2nd July 1870 ...	<i>Ditto ditto</i> Fuorgachy, Cutwa.
	<i>Ditto ditto</i> ...	123 P	22nd July 1870 ...	Statement of mortality up to 15th July 1870.
	<i>Baboo Chundranarain Singh, Deputy Magistrate of Cutwa.</i>	104	25th July 1870 ...	Reports outbreak of cattle disease in villages Dhona and Guffolia, Cutwa.
	<i>S. Kean, Esq., Officiating Magistrate of Burdwan.</i>	131 P	12th August 1870...	Fortnightly report from 16th to 31st July.
	<i>H. F. J. Kean, Esq., Officiating Magistrate of Burdwan.</i>	137 P	30th August 1870...	Fortnightly report from 1st to 15th August.
	<i>Ditto ditto</i> ...	151 P	28th September 1870	Report of cattle disease in villages Majigram, Shimoola, and Amadpore.
	<i>Ditto ditto</i> ...	156 P	Ditto	Fortnightly report from 1st to 15th September.
	<i>Ditto ditto</i> ...	156 P	15th October 1870	Fortnightly report from 16th to 30th September.
	<i>Ditto ditto</i> ...	157 P	Ditto	Report of cattle disease in village Gobindpore.
	<i>Baboo Protabnarain Singh, Deputy Magistrate of Bood-Bood.</i>	90	18th October 1870...	States that murrain does not prevail in his Sub-division.
	<i>Baboo Chundranarain Singh, Deputy Magistrate of Cutwa.</i>	149	Ditto	<i>Ditto ditto ditto.</i>
	<i>H. F. J. Kean, Esq., Officiating Magistrate of Burdwan.</i>	189 P	20th October 1870...	Reports disease in villages Borshole and Kuorka.
	<i>Ditto ditto</i> ...	182 P	22nd October 1870 ..	Reports disease in village Shunkur.
	<i>C. D. Field, Esq., Officiating Magistrate of Burdwan.</i>	192 P	4th November 1870	Reports that disease has ceased in Amadpore, and that an hospital cannot be established there.
	<i>Officiating Magistrate of Burdwan.</i>	197 P	8th November 1870	Fortnightly report from 16th to 30th October 1870.
	<i>Ditto ditto</i> ...	206 P	12th November 1870	Forwarding Police memorandum No. 87, stating the increase of cattle disease in 4 villages.
	<i>Baboo Protabnarain Singh, Deputy Magistrate of Bood-Bood.</i>	101	16th November 1870	Reports prevalence of cow-pox in Barkhona village and suggests opening an hospital.
	<i>Officiating Magistrate of Burdwan.</i>	214 P	18th November 1870	Fortnightly report from 1st to 15th November 1870.
	<i>Ditto ditto</i> ...	224 P	...	Forwards a Police letter reporting the disappearance of cattle disease mentioned in p 206 of 12th November 1870, and reporting fresh outbreaks.

Index of Records.

District.	From whom received.	Number.	Date.	Reference and purport.
Burdwan,—concluded.	Officiating Magistrate of Burdwan	226 P	6th December 1870	Fortnightly report from 16th to 30th November 1870.
	Ditto ditto ...	237 P	21st December 1870	Fortnightly report from 1st to 15th December.
	Ditto ditto ...	240 P	26th December 1870	Reports disease in Ramnugger, Jhama and Gungooria villages.
	Ditto ditto ...	239 P	28th December 1870	Reports disease in Culna, and gives the number of deaths which occurred.
	[The information contained in the foregoing reports is given in the summary table at p. 173.]			
	Evidence of villagers of Taleet.	...	16th April 1870 ...	Evidence recorded by the Commission at the several villages in the neighbourhood of Burdwan visited by them. p. 177
	Ditto of Katgora ...	...	17th April 1870 ...	
	Ditto of Palla Pooker. ...	...	18th April 1870 ...	
	Ditto of Gangpoor and Bam.	...	19th April 1870 ...	
	Ditto of Mirzapore and Kamnara.	...	20th April 1870 ...	p. 181
Howrah.	Ditto of Issur Chunder Gangooly of Kalekote, Bood-Bood.	...	19th April 1870 ...	Evidence recorded by the Commission on the occasion of their visit to Bood-Bood and some of the surrounding villages. p. 181
	Ditto of villagers of Beer-shinnie.	...	20th April 1870 ...	
	Ditto of Dakhan Khara. ...	...	Ditto ...	
	Ditto of Bood-Bood ...	...	Ditto ...	
	Ditto of Dignugger ...	...	Ditto ...	
	Ditto of Racona ...	...	21st April 1870 ...	
	Ditto of Noboy Bhuttacharjee of Gor.	...	Ditto ...	
	Ditto of Jodunath Roy and Sham Churn Roy of Putney.	...	Ditto ...	
	Ditto of Lall Behary Roy of Satnundee.	...	Ditto ...	
	Ditto of Inayut Oollah and Dyrustoolah of Amor	...	Ditto ...	
	Ditto of Ramjewan Roy of Musnapore.	...	Ditto ...	
	Ditto of Woollayut Hossein of Keera.	...	Ditto ...	
	Ditto of Bama Churn Dutt of Amorpore.	...	Ditto ...	
	Ditto of Jadobundo Mozomdar of Dooarmurree.	...	Ditto ...	
	Ditto of Ketoo Moechie of Bood-Bood.	...	Ditto ...	
	J. Stalkartt, Esq. ...	...	12th January 1864.	Selections, Bengal Government, p. 17. Gives particulars of gootee in the Howrah District.
	R. P. Jenkins, Esq., Officiating Commissioner of Burdwan.	141 C	1st November 1866	Selections, Bengal Government, p. 126. States that cattle disease has not prevailed to any extent in Howrah.

Index of Records.

District.	From whom received.	Number.	Date.	Reference and purport.
Midnapore.	C. F. Montresor, Esq., Commissioner of Burdwan.	13	3rd February 1864	Selections, Bengal Government, p. 13. Cattle disease said to be very common in the district.
	J. W. Terry, Esq. ...	...	25th January 1864	Selections, Bengal Government, p. 16. Gives particulars of gootee and homsa.
	R. P. Jenkins, Esq., Officiating Commissioner of Burdwan.	141 C	1st November 1866	Selections, Bengal Government, p. 126. States that cattle disease has been severe in the Bishan-pore Pergunnah.
	Commission's visit to Woolloberia.	...	6th March 1870 ...	An inspection of the cattle market, p. 188.
	J. R. Hallet, Esq., Joint Magistrate, Midnapore.	215	28th July 1870 ...	States that no disease exists at Jallamooto.
	J. R. Hallet, Esq., Joint Magistrate, Midnapore.	214	Ditto ...	Gives particulars in Form No. 1 of a severe outbreak of cattle disease in Tumlook, p. 190.
	Baboo Juggeshur Mookerjee, Deputy Magistrate of Tumlook.	D. O.	4th August 1870 ...	Describing route to affected villages.
	Ditto ditto	111	26th October 1870...	States that there is no murrain prevailing in Tumlook.
	C. F. Montresor, Esq., Commissioner of Burdwan.	13	3rd February 1864	Selections, Bengal Government, p. 13. Reports that four years ago cattle disease was violent in Bancoorah.
	R. P. Jenkins, Esq., Officiating Commissioner of Burdwan.	141 C	1st November 1866	Selections, Bengal Government, p. 126. Stating that no disease has prevailed since 1864.
Bancoorah.	E. J. Roberts, Esq., Civil Medical Officer, Ranee-gunge.	...	29th May 1866 ...	Selections, Bengal Government, p. 111. Gives a description of gootee, and states that the neighbourhood has been free from it for many years.
	J. P. Grant, Esq., Magistrate of Bancoorah.	18	6th January 1870	Reports of cattle disease in the village of Janjoory, p. 190.
	V. Richards, Esq., Medical Officer, Bancoorah.	...	2nd January 1870	
	C. F. Buckland, Esq., Officiating Commissioner of Burdwan.	312	28th July 1870 ..	Forwards a carefully prepared statement in Form No. 1, showing the prevalence of cattle disease in the district, p. 191.
	A. C. Wright, Esq., Magistrate of Burdwan.	D. O. 1261	25th October 1870 8th December 1870...	Reports that no disease prevails. Reports disease in Gungajee-ghatee Thannah in Bancoorah District.
	C. F. Montresor, Esq., Commissioner of Burdwan.	13	3rd February 1864	Selections, Bengal Government, p. 13. States that cattle disease existed during the Sonthal insurrection and in 1864.
Beerbhoom.	R. P. Jenkins, Esq., Officiating Commissioner of Burdwan.	141 C	1st November 1866	Selections, Bengal Government, p. 126. Reports that cattle disease has been prevailing for the last two years.
	D. J. McNeile, Esq., Magistrate of Beerbhoom.	123 P	18th January 1870	States that busunto and khoorah prevail in the south-eastern part of the district, p. 192.

HISTORICAL SKETCH.

HISTORICAL SKETCH.

Prior to the year 1864 cattle disease did not excite any attention in this Division, and no records of outbreaks exist, with the exception of a report on *matah* or *gootee* forwarded in 1836 to the Medical Board at Calcutta by Dr. T. Wise, Civil Assistant Surgeon of Hooghly. This report was elicited by circulars issued by the Medical Board in 1834 and 1836, the first desiring information as to the existence of natural vaccinia in India, and the second regarding the "small-pox" among cattle, to which, in the interval, the attention of the Board had been directed. These circulars, which are of considerable historical interest, are printed in the appendix, and the replies to them from other stations will be alluded to in the proper place. These have been transcribed, by the permission of the Inspector General of Hospitals, from the valuable records of the Bengal Medical Department.

The Districts of Hooghly and Burdwan were visited by the Commission in April 1870, and the oral testimony obtained was to the effect that the disease called *gootee* or *bussunto* (rinderpest) has prevailed from time immemorial, and breaks out in particular places at frequent intervals. This is, no doubt, true of all the districts, and it is doubtful that in any year the whole of any district is free from this disease or from *khoorah* (foot and mouth disease). The Commissioner of Burdwan, C. F. Montresor, Esq., writing in February 1864, states that "all the districts of this Division have suffered more or less from this disease." In Beerbhoom it was prevalent during the Sonthal insurrection (1855), and existed in some places at the time the letter was written. In Bancoorah it had been virulent four years previously; in Burdwan had been known for 20 or 30 years; in Midnapore was reported to be a very common disease; in Howrah broke out every three or four years, and in a subsequent letter, dated 1st November 1866, the Commissioner (R. P. Jenkins, Esq.) on the authority of Baboo Joykissen Mookerjee, an influential zemindar, states that *gootee* is very well known in the district, and appears every year at the commencement of the hot weather. One reporter, Mr. Sawers, avers that the natives of Culna assert that the disease was introduced from the North-West by the bullocks of cartmen, 25 or 30 years ago, and was then (December 1863) a resident and established epidemic of the district. The inquiries of the Commission would go to show that this belief is unfounded, and that no date can be assigned to the importation of murrain into Burdwan; and this is probably true of every other district in India, though there is a universal tendency in the people of one district to ascribe the origin of cattle disease to some other. Statements that the disease originally came from the north, south, east, and west are exceedingly common.

Written records of particular outbreaks are as follows, oral testimony being disregarded as vague:—

Cattle disease is said to have been very virulent in Bancoorah, but the particular localities affected are not mentioned.

1860.

Disease is said to have prevailed in the Sub-

1862.

division of Culna virulently in 1862 and in a milder

1863.

form in 1863. Mr. Stalkartt gives instances of its

prevalence at Howrah and in the neighbourhood of Calcutta in both these years.

All the districts of the Division are said to have suffered more or less

1864.

in 1864; but in Beerbhoom disease prevailed in the

1865.

Pergunnahs Nuggur, Shacoolleepore, and Mouressur.

1866.

Gootee is said to have prevailed in this district

during the years 1865-66, and the mortality of the disease is put down at 4,500.

HISTORICAL SKETCH.

The particular localities visited are not mentioned. Disease also prevailed in the Sub-division of Gurbettah, Midnapore District, in the latter year. In 1867. a report dated 6th January 1870, the Magistrate of Bancoorah states that the disease has existed in 1868. a mild form during the last three years.

Towards the end of 1869, however, this district appears to have been visited severely, and the outbreak which commenced then continued to prevail widely during the first seven months of 1870. A detailed statement was called for from each Thannah in the district, which showed that only three of twelve police stations gave a clean bill of health. In the remaining nine, a considerable mortality had occurred up to the month of July 1870, giving a total of 11,045 deaths for the district. The principal cause of this mortality was *bussunto* (rinderpest), but *khoorah* (foot and mouth disease) and others prevailed simultaneously.

Similarly, in the District of Burdwan a very general outbreak of murrain made its appearance in November and December 1869, prevailing over the Sub-divisions of Burdwan, Bood-Bood, and Cutwa. This seems to have become intensified, and spread during the first six months of the year; and though in July the disease had greatly abated, and in most of the villages where it had prevailed altogether subsided, it continued to prevail here and there in different places, and as the rains cleared off came to be heard of more frequently.

In Hooghly also rinderpest prevailed very extensively. Reports were received at intervals from January to September, showing that the disease prevailed in several villages of the following police stations, viz., Goghaut, Bashbarea, Biddyabatty, Hurripal, Khanakool, Chundeetollah, and Jehanabad.

In Midnapore a severe outbreak of disease occurred in June and July in the Sub-division of Tumlook, but the remaining portions of the district seem to have remained unaffected. From Beerbhoom a report was received in January, stating that *bussunto* and *khoorah* prevailed in the south-eastern parts of the district, but nowhere else.

Towards the close of the year reports of murrain from the Burdwan District became more frequent. The disease prevailed to a small extent, and in a scattered way, in the Bood-Bood Sub-division, more severely in the Gangooria and Munglecote stations, south and north of Burdwan; and latterly an hospital for treatment was opened in the town of Culna, east of Burdwan, where numerous cases were obtained from the town and neighbouring villages. The Tumlook outbreak was reported on the 26th of October to have disappeared. In Hooghly, reports were received in November of the prevalence of disease at Cheenamore, but the cases were scattered and few.

Bancoorah and Beerbhoom appear to have continued free of plague throughout the rest of the year, no reports having been received subsequent to those above referred to.

Extracts from the Records of the Bengal Medical Department.

Circular from—J. HUTCHINSON, Esq., Secretary, Medical Board, to the Superintending Surgeons of Divisions,—dated 24th December 1834.

I am directed by the Medical Board to transmit to you, for the information of medical staff serving within your division, the annexed extracts from a despatch from Government in the General Department, dated the 1st instant, and from the Hon'ble the Court of Directors, dated the 4th of June last.

No. 14 Circular, to the Superintending Surgeons of Divisions.

2. The Board desire me at the same time to append copies of their circular letter No. 123 of the 3rd June 1832, to the address of Superintendents of Vaccination, and of their letter to the address of the Superintendent of Vaccination at Patna, under date the 7th of September of that year.

3. With reference to these documents, the Board have now to request that you will call on all medical officers within your circle, but more especially on those in charge of vaccine depôts, to make the fullest inquiry into the existence of variolous disease among the cattle in this country, requesting them at the same time, if they have reason to believe that it does exist, to describe the appearances and habits of the disease at the greatest length.

4. Should there be any depôt for breeding cattle within your circle, you will in like manner call on the Superintendent and the Veterinary Surgeon in charge to furnish you with every information on the subject which it may be in their power to give.

5. The Board is likewise desirous that the Superintendents and the Veterinary Surgeons attached to the several Stud Establishments for the breeding of horses should be applied to, to report if "grease" be a common disease among the horses in this country; but more especially in regard to that affection which in some measure resembles it, and which is called by Farriers "scratchy heel;" whether they have reason to believe that either the one or the other has any affinity to variola, or if inoculation with the virus of either is entitled to be considered a prophylactic against the occurrence of small-pox.

6. The Board appreciate highly the advantage that would accrue from the discovery of an indigenous source of vaccine virus, and have hazarded the above suggestions with a view to awaken or to invite generally such research on the subject as they are sure medical officers are not only able, but will be found willing to institute.

7. The Board are of opinion that, so far as Superintending Surgeons of Divisions and Superintendents of Vaccination are concerned, the information herein required may with propriety be embodied in their replies to the Board's Circular No. 872, of date the 4th of March of the present year.

Circular from—J. HUTCHINSON, Esq., Secretary, Medical Board, to the Superintending Surgeons of Divisions, dated 16th February 1836.

I am directed by the Medical Board to request that you will recall the attention of the medical officers and other public functionaries concerned, within the ——— Circle of Superintendence, to the subject of the Board's Circular letter No. 863, dated the 24th of December 1834, a copy of which communication is hereunto annexed for facility of reference.

It seems to be no longer doubtful that a disease called by the Natives *matak* or *gootee* does prevail among the cattle in this country, but it is characterised by symptoms of such severity, and is otherwise so unlike the vaccine disease described by Jenner and others as prevailing in some of the counties of England, that the Board have very great doubts of its identity.

Other circumstances have led the Board to doubt whether a variolous disease as well as a vaccine disease may not prevail among the cattle of this country, and accordingly any information on this point, in addition to that adverted to in the Board's circular above specified, would be highly appreciated.

The present subject is one in which the Board take a lively interest, and they look to medical officers accordingly with confidence for their zealous co-operation in conducting the inquiry.

From—S. LUDLOW, Esq., Superintending Surgeon, to Secretary, Medical Board,—No. 271, dated 29th March 1836.

I do myself the honor of forwarding, for the perusal of the Medical Board, a letter from Dr. Wise, of Hooghly, on the subject of the *matak* or *gootee* eruption which prevails amongst the cattle in this country.

CIRCULARS OF MEDICAL BOARD.

I presume that Dr. Wise's report will be considered a valuable one by the Board, as he is an experienced and observant vaccinator, and, I may venture to add, his conclusions seem to be advanced with much judgment and caution. He has gone a great way in establishing the fact that cows are subject to the most fatal effects of variolous epidemic as well as man, and that variola and vaccinia are modifications of the same disease, or perhaps by accident or transmission they may be, all three, modifications one of another. The evidence of variola being equally fatal in this country to the cow as to the human species, that is, in its epidemic or concentrated form, sets at naught the opinion of many writers in Europe on the same subject, who consider the constitution of the cow as possessing an innate power of resisting the specific effects of inoculation with small-pox matter, in so far as it has only produced a temporary spot of inflammation.

We find then in India, where variola is generally malignant, when in an epidemic form, that its subtle contagion is not alone hostile to man, and that it is not always so changed by the special constitution of the cow as to become a protective means against small-pox in the human species.

In Europe, the lower animals have seldom, of late years, been exposed to infection by variolous exhalations, but in this country it is not so, and therefore inoculation from the cow in seasons of epidemics must be dangerous and not recommendable at unfavorable times of the year.

I am in daily expectation of receiving answers from Mr. Brown at Sylhet and Messrs. Lamb and McPherson at Dacca and Moorsheadabad, as I communicated the Medical Board's instructions to those gentlemen as well as many others at the latter end of last month. These reports will be forwarded as soon as received, as I wish to collect them all together, so as to make one report on the whole.

DISTRICT OF HOOGHLY.

Hooghly. *From—T. WISE, Esq., Civil Assistant Surgeon, Hooghly, to the Superintending Surgeon, Barrackpore,—dated 29th March 1836.*

In reply to your favor of the 25th February, I have the honor to offer the following remarks on the nature and properties of the variolous and vaccine disease as they appear among the cattle in this district.

2. The variolous disease presents the following peculiarities :—

1st.—It appears at regular periods, but most commonly in the months of March and April, when the Natives inoculate their children and the small-pox prevails.

2nd.—The cow is first noticed to become languid and lose its appetite; the skin feels hot, and a discharge of saliva falls from the mouth and nostrils, often of a red colour. The fever and affection of the mucous membranes increase for some days; an eruption appears, first in the form of small pimples on the head, and then over the body, followed by diarrhoea and emaciation. The swelling of the mouth and nose increases and extends down the throat, and the eruption terminates in extensive sores, so that the cow can no longer swallow, and in this manner dies.

3rd.—The disease spreads by infection, and is propagated through the air and by fomites.

4th.—In some cases 50 and often 70 per cent. and upwards of the cattle attacked die in these fatal epizootics.

5th.—At the bottom of each pock there is a slough of the cutis, and a pit or depression is usually left in the part.

6th.—It only occurs once in the same individual.

3. In this disease of cattle we have the same epidemic nature as in small-pox, the same precursory symptoms and pustular eruption of the skin and mucous membranes, the same infectious nature and contagious properties of the morbid secretion, the same severe inflammation of the mucous membrane of the mouth from the contact of atmospherical air charged with virus, and afterwards the effects of its extension along the intestines, the same pits in the skin in cases of recovery, and the same fatal nature of the disease.

4. As to whether or not this disease of the cow be the same as that from which Jenner obtained his lymph is a point of great difficulty, and requires a proportionate degree of caution in drawing conclusions. Before deciding on this important question, it is necessary to recollect that epidemics differ in violence and fatality in different periods of their course, and in considering therefore the identity of particular diseases, these peculiarities should not be forgotten; certainly, regenerated lymph from the cow affected with the above disease, as successfully practised by Dr. MacPherson, is a convincing proof of both being varieties of the same disease. A boy was sent up to this station from Calcutta vaccinated with this regenerated lymph, which passed through many individuals, presenting the characteristic appear-

ances of vaccination without any unusual symptoms beyond that of, in some cases, a severer accession of fever than usual. In one case the sore did not heal up for a month after vaccination, and the operation required to be repeated to secure the infant from the natural small-pox.

5. From my individual experience, I am led to believe that the variola and vaccinia in this country are modifications of the same disease produced from unknown causes, in the same manner as inoculation by variolous matter produces in some cases varicella, and cases of this disease appear in certain individuals in variolous epidemics.

The milder disease, in this view of the subject, is produced by its passing through the human system, and still more so when obtained in favourable opportunities from the cow.

*Summary of Reports concerning the prevalence of Bussunto received from the Hooghly
Magistracy.*

Pergunnah or Sub-division.	Thannah.	Village.	Date of outbreak.	Date of return.	No. of cattle in locality.	No. attacked.	No. died.	No. recovered.	Remarks as to symptoms, treatment, &c.
Sub-division Jehanabad.	Goghaut ...	Foolooe ...	.....	21st Feby. 1870	500	23	17	6	The disease is stated to be infectious and to spread from village to village.
	Bashbarea ...	Akua, Dalimba.	25th Feby. ...	9th March ...	520	144	33	111	The symptoms assigned are those usually put down for <i>bussanto</i> .
	Goghaut ...	Pandoogram...	3rd March ...	19th " ...	...	28	26	2	The duration of the disease is stated to be 3 or 4 days.
	" ...	Dengul ...	.....	28th " ...	150	82	70	12	Native medicines are said to have been employed, but with little success.
Pergunnah Balea.	Chundeetollah	Bhadooah ...	2nd May 1870 ..	9th Sept. 1870	90	52	44	8	Preventive measures were taken, but their nature and result are not stated. The ratio per cent. of stock attacked was 21, and died 1.4.
" ...	" ...	Mollar Chuck	11th July ...	" ...	60	2	2	...	The ratio per cent. of attacked which died was 66.1, and recovered 33.9.
" ...	" ...	Jullamadooah	" ...	" ...	100	35	28	7	This statement has been prepared more to show the distribution of the disease than for a statistical purpose.
" ...	" ...	Suntesbatty...	" ...	" ...	50	27	24	3	The figures representing stock are more or less conjectural, and the death-rate seems too high, but not very improbably so.
" ...	" ...	Kanyedanga...	" ...	" ...	200	108	96	12	
" ...	" ...	Bhogobutty-pore.	" ...	" ...	200	104	94	10	
" ...	" ...	Singore ...	" ...	" ...	150	5	3	2	
" ...	" ...	Allipore ...	" ...	" ...	125	3	3	...	
" ...	" ...	Nowabkhow...	" ...	" ...	500	8	6	2	
" ...	" ...	Bagatee ...	" ...	" ...	50	11	9	2	
" ...	" ...	Hurreepore ...	" ...	" ...	200	34	22	12	
" ...	" ...	Radhabullub-pore.	" ...	" ...	100	14	12	2	
" ...	" ...	Ichuposur ...	" ...	" ...	200	16	12	4	
" ...	" ...	Nyshola ...	" ...	" ...	100	8	7	1	
" ...	" ...	Bajasholu ...	" ...	" ...	90	8	8	2	
" ...	" ...	Munitpore ...	8th Aug. 1870	" ...	60	8	7	1	
" ...	" ...	Doodcoora ...	" ...	" ...	50	17	9	8	
" ...	" ...	Mamoodpore	" ...	" ...	50	16	8	8	
Sub-division Jehanabad.	Khanakool ...	Nohin Chuck	30th June, 1st July, and 20th Aug. 1870.	19th Sept. 1870	1,200	305	162	143	
		Shoobul Chuck							
		Kakoe							
		Uttermansree							
		Etarae and Patarool.							
				TOTAL ...	4,745	1,058	700	358	
						28	26	2	
					1,030	674	356		

HOOGHLY.

Village Akna, visited 9th April 1870.

Case.

Bullock; 8 years old; 11 days ill; has running from eyes, nose, and mouth; coat staring; off feed for 11 days; has great thirst; purging watery and slimy stools, mixed with blood. Blood comes out of nostrils now and then; has an eruption inside the thighs; there are excoriations of gums, now in process of healing; the animal is evidently recovering, and will recover, provided it gets wholesome food. The owner, Bungshee Ghose, says that he has lost 14 head of cattle during the last 4 months. Disease commenced in Magh (January) last; had 20 head of cattle; six are living now; the whole of the herd had the disease. Has been in the habit of giving rice-water, grass, and straw chopped up; gives tepid water. Cowshed inspected and found to be neat and clean. It is made of mud walls and thatched with rice straw.

Treatment.
Cowsheds.

Evidence of MODHOO SOODEN CHATTERJEE.

Statistics.

Source of disease.

Carters.

Contagiousness.

Milkmen exchange
cattle.

Effect on agriculture.

Hiring bullocks.

Cattle sold to
beparees.
Destination
Pasture land.
Land less productive.
Tanks and ponds
drying up.
Treatment.

Segregation.

Hides.

Price of cattle.

Interest paid to
mahajuns.

Cultivation.

I am an inhabitant of Dalimba, 58 years old, and was born at Dalimba. I am izardar of the village. There are about 250 families who owned nearly 450 head of cattle, 300 being cows and the rest bullocks. At the present moment there are only 150 head of cattle, the remainder died of *bussunto* during the months of November, December, January, February, and March last. The disease though on the decrease still exists, and 5 or 6 are still ill. Twenty-five years ago there was disease in this village, and even then 25 or 30 head died. Before that time the disease *gootee* was not known. When *bussunto* appeared 25 years ago people considered it to be new disease. The disease appeared in the village of Dalimba first in the house of Mohesh Khara. I cannot tell how the disease originated. I am aware that in November last the carters brought some new bullocks from Pagree, Bagay, and Goorpore. The two former villages are 5 miles off Dalimba, where *gootee* raged in 1276 Bengalee (last year) in the months of June and July. It may be that cattle from Pagree and Bagay brought the disease to Dalimba. The disease is notoriously contagious. I am well aware that people of my village did buy cattle from villages affected formerly, and many had the idea that the disease was brought in by these newly bought bullocks. The carters live in the neighbourhood of Mohesh Khara's house. I also think that the carters go to the affected village with their carts and bullocks and bring with them the disease to their village. The carters lost their cattle in Falgoun (February) last. The milkmen are also in the habit of exchanging their cows with the cows of other villages, and it is a well known fact that their cows graze near highways and the railways, where the carters of different places pass and repass, and it is possible that the former got the disease from these cart bullocks. I am of opinion that, in consequence of this disease, lands will be fallow this year, and I think it will be difficult to find men to take the tenures on *bhaug jumma hat*, yet it is customary here to hire bullocks and ploughs for tilling lands; the rate of hire has increased four times. More people hire bullocks and ploughs now-a-days than before. In the village of Dalimba the number of cattle has increased ten times. The people are in the habit of selling cattle to the *beparees*. Both Hindoos and Mahomedans sell in this way. They are taken to Hooghly and Chinsurah for slaughtering purposes. The pasture land has become less than before. This is owing to the increase of cultivation. The lands yield very much less crops than before. This is owing to the rains being less than they were. It is not owing to the absence of inundation. The tanks and ponds of the village are drying up every day, and consequently the means of irrigation are becoming scarce. There are no wells in our village. When *gootee* breaks out the house is fumigated with *dhoona*, and the men try to drench with *conjee* and soft food and *kulai* water. There is no segregation owing to want of accommodation. People do segregate if there is a place for the purpose. I think people would gladly take their cattle to the hospital if one is established at a convenient distance. I think separation should be made when *gootee* breaks out. The moochees take the hides of cattle that die of the disease and sell to the *pikars* of Trebanie and other places; there is no *bhagaria jumma* in my village. The cow that fetched Rs. 88 10 years ago is now to be had for Rs. 25. This increase in the price prevents the ryots from buying cattle so easily as they used to do before. Ryots, when necessary, borrow money from the *mahajun* at a monthly interest of 2 pice to the rupee, sometimes even 4 pice. There are a greater number of cultivators now than before. The agriculturists are better off now than before in my village; the cattle are become fewer in number in consequence of the butchers purchasing a large number. The price of milk and ghee has risen, consequently the value of cows has increased. Another cause is, that the price of produce has increased. Paddy is the chief produce; *amun* being more abundantly cultivated than *aoos*.

HOOGHLY.

Village Baloregunge, visited 11th April 1870, 5-30 p. m.

A bullock, 14 years old, sick 5 days; symptoms,—viscid discharge from the nose, and bad discharge from the mouth and eyes; coat staring; off feed; had some *conjee* to-day; excoriation of gums and aphthous deposit; tongue very much furred; buccal membrane congested; very weak; medicine,—astringent drench, *conjee* and green grass.

The owner, Gorai Mundle, says that he had 17 head of cattle, lost 6 of *gootee*, 11 are left; 4 had not the disease. The disease commenced in his house 12 or 14 days ago. The disease appeared first in the house of one Soojooddy; the disease then gradually spread. (Gorai Mundle's house is close by; his cattle thus got the illness, which came to his house from Soojooddy's.) Two weeks ago the disease appeared in this village. About 40 head of cattle have died. There is no one who keeps an account of the casualties. The village watchman keeps an account of the deaths of men. Twenty-five years ago there was disease in this village. Never heard before then of disease breaking out; they had the disease *gootee* or *bussunto* before the last outbreak, but not in a very severe form. There has been no *gootee* in the interval that passed between the last outbreak and the recent murrain. The mortality is even greater now than in the outbreak that occurred 25 years ago. The village Akna was attacked first in November last, and the cattle of this place got the disease from the cattle of Akna. The cattle of both these villages graze in one and the same field. The owner states that whenever *bussunto* breaks out he gets cow doctors to give medicine, and they do give medicines, but what medicines are given he does not know. Another man who was present said that *gootee* had no medicine. Twenty-five years ago the disease broke out in a similar form and in a similar way as it did on this occasion. It came from a neighbouring village which was affected, and the villagers believe that the disease is contracted by contagion from other cattle; but on being questioned as to its breaking out spontaneously, they state their belief that it may break out of itself in any village. The villagers do not separate their healthy cattle from the sick, simply because they have no place to do so, and when disease breaks out in the village, their friends and relatives do not allow them to take their cattle there for fear of their catching the disease. They will be glad to send their sick cattle to any proper place, if such a place is made for them. The trial of segregation has not been made for them; therefore the villagers are not sure of the good results, but they think that separation of sick from the healthy will lead to good results. They think that the infection can be carried by the air. They do not know what amount of distance by separation would prevent the cattle contracting the disease by infection.

The moochee who is present says that the hides he gets are given to Keenoo Mussulman of Manand. Keenoo takes the hides to Calcutta; does not take any advance from Keenoo. Sells hides from 12 to 14 annas a piece; does not cure the hides. Gets one rupee for the best hide; charges 14 annas for *dagi* hides. Sells 12 hides monthly now, but before the disease sold only 2 or 3 skins.

Statement of the villagers, continued.

Five or six head of bullocks are annually carried away by the *Pikars* living on the other side of the river; these men buy for agricultural purposes. Do not frequent any markets for cattle. Strike private bargains sometimes in their own village and sometimes in the neighbouring villages. There is a *kutchra* road passing by our village, but the *Pikars* do not drive their cattle over that road. They, however, drive herds of cattle over the main road that goes to Calcutta. The *Pikars* bring the cattle from the Burdwan side. There were more cattle in the village formerly than now. The villagers buy and sell at the Mugrah market occasionally, but generally they go to their own village markets. They do not go to any other market. The Mugrah shop-keepers come to this village haut for selling. There is a daily bazar at Mugrah; no haut. All their dealings are carried on at Mugrah Bazar, their own village market, and in the neighbouring villages. There are no buffaloes here. Have not seen any *gootee* amongst sheep and goats. There are more bullocks than cows. This is a Mussulman village. Cows constitute about quarter of the whole stock, and the rest are bullocks. Rice is the main crop. All the lands will not be cultivated for want of a sufficient number of cattle. Do not know of any instance of the land ever lying fallow for want of cattle. Know that cattle get *puschima*. Cattle purge; throats swell; there is hoven, which disappears on the cattle purging. There is no particular cure for *puschima*; it is very rare and kills one or two animals only; the affected cattle die in one or two days. *Puschima* is not infectious. Know that cattle get *aishoo*. It is infectious. It is not fatal. They get the disease almost every year. In last Kartick (October) *aishoo* attacked a good many cattle in this village.

Symptoms of gootee.—Off feed; pass mucus and blood; thirst; running from eyes, nose, and mouth; sore mouth; the breath is very offensive; in some cases there are eruptions on the body. Have seen eruptions on teats and udder; these are reddish. The affected cattle die in 5 or 7 days, after which time they show signs of recovery. Give green grass, tepid water, and oil-cake, but generally cattle refuse food; give boiled rice also; 5 or 6 in a hundred survive in *gootee* cases; 50 or 60 head of cattle had the attack, and only 3 or 4 survived. In December

HOOGHLY.
Source of disease. (Pous) last, the disease *gootee* was bad in village Cashshora, and the people of Baloregunge used to go there, but not their cattle. Akna, which is 6 miles distant from Cashshora, got the disease soon after. There are 5 or 6 villages between this village and Cashshora, but the people here cannot say whether there has been any disease in any of these villages. The people are very much afraid of this disease. The Akna carts come to this village, and those of this village go to Akna. Brahmini bulls are scarce now, inasmuch as the Calcutta people take them away. The Hindoos have their bulls, for which no fee is charged. They castrate the bulls between the age of one or two years. The testicles are removed.

Baloregunge, 12th April 1870.

Case. *Case No. 1.*—Young cow; fifth day eats little; trembling; discharge from eyes; mouth hot; tongue a little furred; vagina congested.

Case. *No. 2.*—White bullock, full grown; seven days ill; discharge from eyes, nose, and mouth; aphthous spots on lower gum; has purged for 3 or 4 days, but the purging is stopped now; respiration laboured; off feed; breath offensive; stools soft; no skin eruption.

Case. *No. 3.*—Old bullock; 5 days ill; feeding; tongue a little furred, and buccal membrane a little congested; bowels slightly relaxed.

Case. *No. 4.*—Bullock, full grown; mouth very healthy; 3 days ill; feeding a little; purged from the first; clay coloured motions.

Cow-houses. *Cow-houses.*—Soft clay walls slightly raised; not well ventilated; 3 small windows and one door; clean and neat; clay floor. Owner of Nos. 2, 3, and 4 has 5 bullocks and 2 cows. No death; no other affected.

Nos. 2 and 3 had carbolic acid, two drachms each.

No. 4 had two ounces of hyposulphite of soda.

Case. *No. 5.*—Large bullock; 3 days ill; buccal membrane all right; no offensive breath; patches of congestion on gums, which are tumid; slight excoriations; discharges from eyes; oedema of eyelids; no eruption, nor diarrhoea; eats a little; to have, two ounces hyposulphite of soda.

Case. *No. 6.*—Bullock, full grown; 6 days ill; discharge from eyes, nose, and mouth; coat staring; lying down; nose extended; excoriation and aphthous deposit on gum; buccal membrane very much congested; aphthous deposit round orifices of sublingual ducts; tongue furred; breath offensive; borders of lips very much congested; aphtha and excoriation of buccal membrane; purging liquid; contains mucus; no eruption.

To have,—astringent mixture, opium, catechu, and chalk with spirit ammon. aromatic.

Case. *No. 7.*—Bullock, 6 days ill; aphthous patches and excoriations on gum; lying down; no purging; discharge from eyes; muzzle very dry; does not feed; chin resting on ground; nose extended. To have,—hyposulphite of soda, two ounces.

Case. *No. 8.*—Light-coloured bullock; 2 days ill; dung in good order; muzzle dry; off feed; gums and buccal membrane looking well; gums a little congested; one or two clots of blood came away with the dung.

Akna. Visited the village of Akna; found that all the cattle affected were recovering and no new cases occurring.

The villages of Sonatikri and Melchi are suffering. In Sonatikri disease exists in the houses of Gobindo Saont, Madhub Mondle, Kero Mondle, &c.

Akna, 13th April 1870, 7-30 A. M.

Deaths from puschima and gootee. JOGESSUR KOLOO, of Dalimba, 53 years old, says:—I am an oilman and have lived at Dalimba ever since my birth. I had 10 head of bullocks and 1 cow, but I lost 5 of *puschima* in the months of Assar (July), Srabun (August), Assin (September), and Bhadore (August), and 4 of *gootee* in Magh (January). I lost the 4 within 18 days. The disease *gootee* appeared in my house in the middle of January last. The disease first appeared in our village in the house of one Mohesh Khara. I gave no medicine whatever in *gootee* cases, but I gave black pepper and the root of *apan* tree in *puschima* cases, but without benefit. The affected cattle died in 4 or 5 days of *gootee* and *puschima*. I have not, or had not, any sheep, goats, or buffaloes. The *gootee* cases appeared one after the other, and not all at once. I have 8 beegahs of land. Two old bullocks got the *bussunto*, but they survived. I had one plough and a pair of bullocks, but none now; the cattle are dead.

Origin of disease.

Treatment.

Duration.
Sheep, goats, &c.

I will hire plough cattle and till this year. The two old cattle work a little on the *ghanee* (oil-machine). The *puschima* came on in different months. My cattle were stall fed, and never were allowed to graze. At the time I lost cattle from *puschima*, there were no other deaths from that disease in any other house in my neighbourhood. The symptoms in *puschima* cases are,—off feed, dull and heavy look, running from eyes, mouth, and nose, purging watery stool. There is swelling of the belly. My animals died in 4 or 5 days. Gave boiled rice to the sick, but the affected animals would not eat. Before the attack they would eat straw and *khullee* (oil-cake) and would drink water. I estimate my loss at 200 Rupees. The cattle that died of *gootee* a few days ago had *aishoo* (foot and mouth disease) 2 years ago. I have never seen a cow affected with *aishoo* twice. I do not get so much oil as I used to do before the outbreak.

KOYLASH CHUNDER GHOSE, *goalla*.—I live at Akna, Nundeeppoor. I sell milk and hold lands (two beegahs). I had 7 cattle, *viz.*, 2 cows and 5 bullocks. I have lost all of them of *gootee*. I lost them in Falgoon (February). I lost them within one month. The disease attacked one after another. I have not been able to buy any fresh cattle. I do not sell milk now. I shall try to till my lands by hiring ploughs; I may get them at Akna, Melchee, or Balore. I have lost 125 Rupees or thereabout in cattle. I have not been able to procure money; hence my inability to purchase other cattle hitherto.

BUNGSHEE GHOSE, *goalla*, 65 years old.—I am an inhabitant of Akna, Nundeeppore. I am a *goallah* by profession, and sell milk and *dáhee* (curd). I till 36 beegahs of land. I had 20 head of cattle, *i. e.*, 4 bullocks, and the rest cows, out of which I lost 14, leaving 2 bullocks and 4 cows; all these died of *bussunto* in Falgoon (February) and Cheyt (March). They died within a month. One bullock is still ill and looks as if it is dying. Every one of my cattle had *gootee*. Five have recovered and one, as already said, is still sick. I have four sheep, they had no disease; no goats. I have never seen sheep attacked with *gootee*. I used to give green grass, *choosee* and *khullee* (oil-cake), but the sick animals would not eat anything. I have lost Rs. 220 by the death of my cattle. Those which give milk are kept at home, as also the bullocks, but those of the cows that are dry, are let out to graze in the fields. Fifteen years ago there was an outbreak of *gootee*, but that was milder than the present outbreak. Once before in my life I saw the *gootee*. The symptoms were the same. I have all along lived in this village. I was born here. I will not be able to till my lands this year. I have lost the means of ploughing. I have no means of buying cattle. I have no *paddy* in store. The little that I had has been made over to my creditor (*mahajun*). I find it difficult to get two meals a day. I work daily for my bread. I labour as a cooly. The *mahajun* will not lend money now, inasmuch as I have lost my property consisting of cattle, and my business (selling milk, &c.) has seriously suffered.

BANESSUR KHARA, *goalla*, of Dalimba, 47 years old.—I was born in this village, and have ever since lived here. I do not sell milk, but am an agriculturist, holding 10 beegahs of land. The disease *bussunto* appeared in my brother Mohesh's house in the month of Aughan (November) last; my brother has gone to a distant place. The disease was first seen in my brother's house in a cow three years old reared in the house. My brother lost 12 head of cattle, being two bullocks and ten cows. My brother still has 18 left. They had the disease, but have survived. Out of the 18 living three are bullocks and the rest cows. The last case occurred in Magh (middle of January). The animals took ill one after the other. My brother's cattle used to go out grazing. I have got another brother named Shushtee who has lost 10 cows of *gootee*, and he has got still six cows and two bullocks. The latter have been recently purchased. The surviving animals had the attack, but they have recovered. My nephew Woodhur Khara (also absent) lost 11 cattle of *gootee*. He has still 10 which had the attack, but have survived. His stock consisted of one bullock and the rest cows; the bullock is dead. The cattle of my brother Mohesh used to go out grazing near the railway station of Mugrah in the field called Bonerdangah, and amongst the herd was the particular animal at first affected. The Grand Trunk Road passes near the field of pasture. Our cattle and those belonging to the village of Punsoor used to graze there. The reason is that we knew the owners of the field very well; hence my brother's cattle grazed there. No other cattle would graze there. Our family owned about 200 head of cattle, and all of these went to Bonerdangah. There has been no disease at Punsoor, but the moment the Punsoor people heard of the outbreak of *gootee* in Mohesh Khara's house, then they ceased taking their cattle to that field near the railway station. I do not know whether there was any disease in the houses standing near the station or road. Punsoor is close to Dalimba, but it is half a mile distant from the latter village. The cattle of Goberdhun Ghose, Sreedhur Ghose, Madhub Ghose, and Koylash used to graze with ours in the particular field. I gave no medicine, but I give straw (cut) and *khullee* (oil-cake), which the cattle refused. No green grass could be had at the time. The lands were dry this year, as there were no rains. We could get no *doob* grass then. Out of 200 head of cattle we lost about 125; every one of the 200 was attacked with *gootee*.

HOOGHLY.

Symptoms of *puschima*.

Treatment.

Loss.

Foot and mouth disease.

Loss of cattle.

Value of cattle lost.

Loss of cattle.

Sheep.

Value of cattle lost.

Previous outbreaks.

Not able to till land.

Reduced to daily labour.

Origin of disease.

Cattle belonging to the Khara family and Punsoor village grazed together.

Punsoor cattle not attacked.

Treatment.

Statistics.

Evidence of a money-lender. GOPAL KRISTO BANERJEE, of Akna, 44 years old—I was born in this village and have lived in it all my life. I am an agriculturist, a cloth merchant, and have *mahajunee* (banking, lending) dealings. I lend money to the ryots. I have let out Rs. 1,500, which yield an interest of 2 pice in the rupee monthly. In some cases I charge interest at 1 pice and 1½ pice to the rupee. I hold 15 beegahs *jummai* land, whereupon I grow late rice. I trade in cloth to the extent of Rs. 3,000. I have no cattle. My debtors till the land for me. The disease is still existing. The people have not commenced buying cattle for fear of their catching the disease. I fear I shall have to lend money to the people who have lost cattle for the purpose of buying new stock. The fall of rain will start the cultivation of lands, and will very likely help the disappearance of the disease; 11 or 12 years ago I saw similar disease in this village, but that was milder than the present outbreak. Besides, all the cattle were not affected, and only one-fourth of the number attacked died. I never in my life saw any other outbreak. After the last outbreak there was not much occasion for the ryots to borrow money for buying cattle. The present murrain has brought great misery on the people who have not had good crops since 1272 B. S. (1865). There are several people who have been so much reduced of late, owing to the loss of cattle, that I do not think I shall be able to trust their repaying me, and will therefore not be able to lend them money. Such people will have to labour day by day, and obtain a livelihood. I fear that I shall suffer loss to a certain extent, inasmuch as poor people who have lost cattle will not have the means of repaying me. I have never known a case of cattle poisoning.

Witness's cattle escaped infection. UMBICA CHURN GHOSE, 57 years old, a resident of Akna.—I am an agriculturist holding 26 beegahs of paddy land, and owning one plough and three bullocks and one cow and a calf. My cattle were never affected with *gootee*. The milkmen who live at a distance of 10 to 15 beegahs (3 beegahs equal to an acre) had the disease *gootee* in their houses. I consider the disease to be infectious. I cannot give exact dates, but from the time the disease raged violently, I did not allow my cattle to go out or any outsider to enter my cow-house. I also kept the cattle-shed and cattle very clean. To these precautions I attribute the exemption of my cattle. Baboo Doorga Prossaud Ghose, Rai Bahadur, Baboo Nobin Chunder Singh, Baboo Becharam Bose, Baboo Dourga Churn Nough, Baboo Tariny Churn Bannerjee, Baboo Brindabun Mookerjee, Baboo Gooroo Doss Bannerjee, Baboo Mutty Laul Nough, Baboo Nobin Kisto Paulit, Chuna Bagdy and a few other Bagdies, and one Koloo (oilman) had no disease amongst their cattle. They are not in the habit of letting out their cattle for grazing. They also adopted sanitary precautions. Some of them fumigated their cattle-sheds. The stuff called *dhoona* (resin) was burnt and the deity Shitolah was worshipped within the cattle-sheds. A few slaughtered kids before the deity, but not generally. I have heard that fowls had *gootee*. In case of future outbreaks I would recommend segregation, but I must state that the ryots have no place for effecting segregation. They have not got proper places for separation. As for the medicine, the Doctors know about that. I would also recommend cleanliness. It would be better if the dead bodies were buried; but there will be a difficulty in effecting this, inasmuch as the Hindoos will not like to bury the dead cattle, and the poor men may not have proper places for burial. At present when cattle die their bodies are thrown away. I have never known a cattle poisoning case in this part of the country. There is no regular *bhagariah jumma* here, but the moochies who take the skins give a few pairs of shoes to the zemindars or zemindary amlahs. The *pikars* buy hides from the village moochies. Five or six per cent. of cattle die from ordinary causes yearly. Butchers buy cattle from our village occasionally. [The deponent is a highly respectable person in the village.]

Evidence of GOBORDHUN GHOSE, age 45 years, of Punsoor, 13th April 1870, 6 P. M.

No disease at Punsoor village. I am an agriculturist and a milkman. I hold 15 beegahs of land and own four cows and two bullocks, as also one plough. My cattle had no disease. In fact here was no disease in our village this year, nor for some years past. Fifteen years ago there was *gootee* in my village. **Previous outbreak.** Our village cattle generally graze in the field called Bonerdangah near the railway station and very near the Grand Trunk Road. The cattle owned by the Kharas of Dalimba used to graze there. The cattle of the latter took ill, I think, in Magh last (January), and from the time we came to know of this circumstance, we refrained from taking our cattle to that field, and commenced taking them to the east side of the railway. Before the appearance of the disease among the cattle of the Kharas, our cattle used to graze in the field to the west side of the railway station. I cannot say how the cattle of the Kharas took ill and how our cattle escaped. We have taken care not to allow our cattle to mix with the cattle of the Kharas; over and above 150 head of cattle belonging to the Kharas used to graze there. The cattle of eight families of our village, numbering 125, grazed in the same place. The disease 15 years ago in our village was as virulent as it has been this year at Dalimba. I consider the disease *gootee* to have travelled from Burdwan and other districts lying to the west, and that it has been brought to our part of the country by sheep and buffaloes

bought from the western districts. I have heard that the disease has frequently been appearing in the western districts. The symptoms of *gootee*, as seen now, were the same as in cases which occurred 15 years ago. The murrain 15 years ago at first appeared in our village. I consider the disease to be infectious; hence the separation of our cattle; 15 years ago our cattle and the Kharas' cattle used to graze on the Bonerdangah. When there the disease attacked our cattle; the Kharas would not bring their cattle there, and they escaped that time. When the sickness appeared 15 years ago, there was a good deal of talk in the village, and our fathers had the disease among their cattle in their days, but I had not seen any disease before that. One attack of *gootee* gives immunity to the cattle against a second. Last year there was *gootee* on the east side of the river Koontee, namely, in Joypoor, Bagaty, Sultanpoor, and Demra, and the disease was very severe. Punsoor, Dalimba, Akna, Balore, &c., are on the west side of the Koontee. Five years ago there was disease at Mamoodpoor, to the west side of the river, and about two miles distant from our village. I am aware of no other villages where the disease appeared after the attack in our village 15 years ago.

NUFFER GHOSE, 50 years old, of Punsoor, agriculturist.—He says the disease that is raging at Akna is called *bussunto*. I saw the disease in our village 15 or 16 years ago. Before that time I did not see any such disease. I did not know whether there was any disease in my father's days. I am not sure, but I have heard that a first attack of *gootee* gives immunity to the cattle against a second.

SREE NAUTH GHOSE, 35 years old, agriculturist and milkman.—I know that *bussunto* is prevailing at Akna. In our village there was *gootee* 10 or 15 years ago. I never saw another attack.

Village Milchee, 14th April 1870.

1. Bullock, 12 years old; ill 12 days; off feed; purging, dark, clay-coloured; not passing any blood; appears to be recovering. Case.

2. Bullock belonging to the same man, ill one month, 25 years old; had a severe attack of *bussunto* and is very much debilitated. Inside thighs and all about mouth have a scalded appearance; eyes more or less closed, with viscid discharge; has had maggots and sores; stall covered with ashes; turpentine has been applied over the sore; animal ruminating, feeding since yesterday; dung clay-coloured, relaxed. This man lost one cow and two bullocks of *gootee* within the last 20 days. Disease first appeared in the house of Goyaram in Falgoon last (February); five cattle in the village died; disease still prevails; nine recovered; there are about 200 head of cattle in the village. (A dead crow is tied to the tail of the animal No. 2 for preventing it being annoyed by live crows.) Forty years ago there was *gootee* in the village, and the attack was milder than the present attack. The people do not know whether the disease ever appeared in the village before the last outbreak; one attack gives immunity from another (eyes of No. 2 bullock affected; has also eruptions on the body). The disease travelled from Baloregunge. It crossed the river and came here. The cattle of Baloregunge came here since the outbreak, and the cattle of this hamlet had been there. Particulars of outbreak. Disease 40 years ago. Source of present disease.

Village Joypoor, 14th April 1870.

Half a mile off railway station; had disease last year in Assar (June); no disease this year. About 35 head of cattle died there. The cattle graze on the west side of the Khall. The village stands on the east side of this stream. Ten or twelve years ago there was another outbreak of *gootee*. Khall (the Koontee.) Disease 10 or 12 years ago.

Bagaty village.—No disease now. This village adjoins Joypoor. There was disease in Assar (June) last, and two head of cattle died. The people do not recollect of any other outbreak. There are but a few cattle in this village. Disease in 1869.

Sultanpoor village.—No disease at present. In Magh (January) before last, *gootee* or *bussunto* appeared in this village. It came from the village of Alikhoja; Hoosnopoore. The disease continued to rage for three months and then disappeared. There were 200 head of cattle in this village then, of which nearly 80 died. A man 50 years old says that he never saw any such disease in this village before. Disease in 1869.

Boycanthpoor village.—About 300 head of cattle. At present there is no disease of any kind, and there has been no *bussunto* in this village. The cattle here and those of Sultanpoor have been grazing in the same field, yet there has been no disease here. There has, however, been *aishoo* in 1274 and 1275 (1867-68); no deaths; 3 or 4 calves only died. No *puschima*. Foot and mouth disease in 1867-68.

Kochatie village.—About 40 head of cattle. There is no disease. *Gootee* appeared twelve or thirteen years ago, and several cattle died. Since then there has been no disease. There Disease 12 years ago.

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HOOGHLY.

was disease at Demra, and the cattle of the village and those of Demra would graze in the same field. At the time, however, Demra was affected, the cattle were not allowed to mix. No *puschima*. Last year there were three or four cases of *aishoo*; no casualties.

Disease in 1869.

Demra village.—About 200 head of cattle; *gootee* appeared in Jyet (May) last. The disease continued in Assar (June). About 100 head of cattle died. Demra is separated from Kotchaltie by a field. The people of both villages hold land in the same field, one-sixteenth portion of culturable land remained fallow for want of bullocks. No disease now.

Disease in 1868.

Nothangram village, west side of the Khall (Koontee).—No disease now; about 50 head of cattle. Lost 7 to 10 head of cattle from *gootee* about 2 years ago after the rains. The disease came from the village of Punsoor. The Punsoor cattle graze on the other side of the railway, ours on this side. Joypoor and Bagaty were affected at the same time that the disease prevailed here.

Puschima in 1869.

Bashdebpoor village.—There are nearly 100 head of cattle. No *gootee* for the last 10 years. Last year in Pous (December) 10 or 15 head died of *puschima*.

PERMANUND GHOSE, 55 years old, of *Bashdebpoor*, 15th April 1870, 7-30 A. M.

Disease in 1869.

There are now 100 head of cattle in this village. There is no disease (*bussunto*) now, and the oldest man does not recollect the occurrence of the disease at any time. In Pous and Magh (December and January) there was cholera among cattle in this place, and about twenty to twenty-two head of cattle died. The symptoms are,—purging watery stools, discharge from mouth, body cold. Not very thick saliva was discharged from the mouth. The attacked cattle died on the first or second day. There are cow doctors in the neighbouring villages who treated the disease and gave some medicines (not known). They termed the sickness *alawoota* (cholera); not a single animal survived. The longest that lived was two days only. The carcasses were thrown into the *Bhagar*. The moochees did not take the skin, and the jackals and dogs ate them up. There are no moochees here. *Puschima* appears now and then, and an animal attacked with *puschima* may recover. Cholera among cattle is frequent in this village. In October (Kartick) last only two head of cattle were attacked with cholera. It comes on every third or fourth year. The disease is not infectious, as it does not spread about amongst the entire flock.

[N. B.—The people of this village appeared to be far from intelligent.]

Village Bagdangah, near Chandernugger, 31st March 1870, 10-45 A. M.

Case.

BHOGOBAN GHOSE's cow; had six calves; 14 days ill of *gootee* or *bussunto*; has in all seven cows and five calves; at first attack had profuse discharges from eyes, nose, and mouth; great difficulty of breathing for five or six days; bloody discharge from nose; more discharge from eyes than in any former case; numbers of small eruptions on sides of neck, dewlap, shoulders and arms, especially on neck; eruptions on udder, which is covered with crusts. On inside the left thigh close to the udder, a large confluent patch; vagina more or less destroyed by maggots; the crusts are easily detached, and the confluent patch is partially healed; very weak; great difficulty in walking a distance of 12 yards; staggers. [Mirza Mahomed Ali Jan, a newly joined member of the Commission, says that the disease at Hameerpore is exactly like this]. Eyes partially closed and considerable effusion under eyelids; discharge from mouth viscid and bloody. Round each pimple the skin is raised and the hair is erect; on scraping off the hair a congested surface is disclosed; the inside of thighs has a scalded appearance; head and nose poked out, and neck kept straight for facility of breathing; purging stopped two days; purged watery stools, no blood.

Case.

2. Bull calf of above; age 8 months; 3 days ill; condition poor; little discharge from nose and eyes; purging; conjunctiva congested; inside of hind shanks a little excoriated from discharge; prepuce congested. Disease here since Falgoun (February); 4 died; 2 sick cattle kept apart—20 yards—from the healthy cattle.

Case.

3. Bull; age 3 years; ill 6 days; eats little; muzzle dry; discharge from eyes; conjunctiva much congested; feverish, great thirst; no eruption; coat staring; no purging.

Case.

4. Cow; had 2 calves; 6 years old; condition poor; nine days ill; present symptoms,—discharge from eyes, nose, and mouth; muzzle dry; on gums, inside and outside, excoriations and aphtha; tongue much furred; conjunctiva much congested; oedema of the lids; vagina slightly congested; purging clay-coloured; off feed; no thirst; no eruption; no roughness. Saw another cow, recovered 8 days, passing thin clay-coloured stools.

RAMGOVINDO SEN, of Nowpara, 45 years old, born here, has 8 head of cattle, viz., 2 bullocks and 6 cows. Has 100 of beegahs land; requires 4 or 5 ploughs and 10 head of cattle. Has one plough; hires ploughs in the cultivating season; cannot afford to keep

Hiring ploughs.

4 or 5 ploughs. It is cheaper to keep cattle, but has no money to buy them. Had 8 head of bullocks before the cyclone of 1864. Some of the bullocks died of old age, and some from disease (*benga*); others hire ploughs and cattle for ploughing; those who cannot afford to hire ploughs, get from those agriculturists who can spare. Each plough and 2 bullocks, per day, cost 4 annas; the bullocks work from morning to noon. This year in Magh and Falgoun (January and February) the cattle were attacked with *bussunto*; the disease has now disappeared; some 20 head of cattle died; 5 or thereabout recovered. Considers the disease to be dreadful. Had not seen the like disease in his village in his life. Had heard of this disease breaking out elsewhere.

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BHOLANATH GHOSE, *goalla*, of Bagdangah, says that he keeps 8 head of cattle. Had no disease amongst his cattle. Had disease (*bussunto*) in his village. It commenced this month, Chyet (March). About 12 already attacked, and 4 died; never in his life had he seen like disease in his village [witness 40 years old]; the disease is new to the village. Symptoms,—twists about; excoriation within the teeth; off feed; purges watery stools; in some cases there is blood mixed; running from the eyes, nose, and mouth; eruptions on the skin, as seen by the Commission. A cow that gets the disease once does not get it again: on the 3rd day purging sets in; the cow dies in 7 or 8 days; recovers after an illness of 10 or 12 days; on the 4th day generally eruptions on the skin are seen: in some cases only eruptions appear. He was born in the village. Never heard of the appearance of the disease in his village. Never heard of the breaking out of the disease in the neighbouring villages. An old inhabitant of Belkooli states that the disease appears in some village or other every year; the mortality depends upon the type of the disease. If the type is very severe, then 15 out of 20 die; if mild, there is hardly any casualty. *Puschima* is more fatal than *bussunto*. There has been *puschima* in his village. It is a different disease. *Bussunto* is not so fatal as *puschima*. *Puschima* appears rarely, and when it appears it attacks one in a herd. Symptoms,—respiration forced; shivering; the tongue swells; hoven; running from eyes, nose, and mouth; dies in 2 or 3 days. *Puschima* is not infectious; *gootee* is. There is *khoerah*; it appears about every 10 years. It is not fatal; the cleft of the hoofs is sore. It is not infectious. Cattle giving milk are never allowed to graze; feeds with straw and oil-cake. Other cattle go out to graze and return home in the evening. There is pasture land quite sufficient for the grazing of cattle. Dead bodies are thrown into the *Bhagar*; there are moochees who take skins; does not know whether there is any *bhagaria jumma*. Moochees give shoes to zemindaree gbmastas' agents; moochees make shoes and sometimes sell them. Never sell cattle. *Pikars* do not come to this village. Cattle are not sold in the hat. They are purchased from the villages close by; the cattle of Bagdangah do not mix with the cattle of other villages; no Mussulmans in the village; the sick cattle are separated, but not kept far apart, as there is no room; knows that separation prevents the disease from attacking other cattle. If there was space he would separate healthy cattle from sick; the sick one to be kept apart, and the healthy kept away; the number of cattle does not increase owing to deaths amongst calves and old cattle. There are 100 head of cattle, 14 annas ($\frac{3}{4}$ ths) cows and 2 annas portion ($\frac{1}{4}$ th) bullocks; 20 cows give about 8 calves yearly; 4 die out of 20 cows per annum; cattle die of snakebite and of *puschima*.

Bussunto.Symptoms of *bussunto*.

History.

Puschima. Symptoms.*Khoerah*.

Infectiousness.

Milk cattle.

Feeding.

Pasture land.

Disposal of dead.

Pikars.

Separation.

Stock does not increase.

Answers to the questions in Form 4 of the Indian Cattle Plague Commission,
by BABOO JOY KISSEN MOOKERJEE, Zemindar of Hooghly.

2. The answers to questions 1 and 2 will be found in the return hereto annexed.

Locality and number of cattle.

3. Excepting the English and up-country bulls and cows, which altogether do not exceed 100 in number, in the possession of the Rajah of Burdwan, Mr. Stalkartt of Goosery, and perhaps one or two other gentlemen, all the cattle in the Hooghly and Burdwan Districts are of the country breed. The price of cattle in the Burdwan District is a little higher than that which prevails in the Hooghly District. The following table shows the prices at present prevailing and those which obtained ten years ago:—

Breed.

Price of cattle.

DISTRICTS.	PRICE OF 1 COW		PRICE OF 1 BULL.		PRICE OF 1 OX.	
	10 years ago.	At present.	10 years ago.	At present.	10 years ago.	At present.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Hooghly ...	12	20 to 25	8	15	10 to 12	25
Burdwan ...	17 to 18	25 to 30	10 to 11	25	12	25 to 30

HOOGHLY.

See.

4. Oxen and bulls are employed in agriculture and as beasts of draught and burden; the cows are never so employed. The people entertain a superstitious regard for the cows and treat them with great care and gentleness. The oxen and bulls are also treated very gently by husbandmen and cartmen.

The whole of the dairy produce (milk) is consumed daily by the owner and the members of his family. Poor men sell the excess milk to their rich neighbours or convert it into *ghee* for disposal in the market. The milkmen after supplying the demands for milk, convert the residue into milk-curd, or butter or *ghee*.

Housing.

5. The cattle are housed as well as the means of the owner permit. The sheds are generally kept very neat and clean, and to protect the cattle from being bitten by insects, the atmosphere of the sheds is filled with smoke every evening either by burning resin or dried cowdung. A cattle-shed usually consists of a low thatched hut, the floor of which is sometimes tiled, but generally consists of a slightly inclined mud plane, down which the dung and urine fall into a narrow drain along the edge of the plane.

Feeding and watering.

6. The oxen, bulls, and cows are fed twice every day on straw cut into short shreds and steeped in a mixture of mustard cakes and water. They are also allowed a sufficient quantity of grass in places where there are no pasturage lands. The grasses generally available for pasturage are the *Doob* (*Cynodon Dactylon*) and the *Mooto* (*Cyperus Communis*). The water which the cattle drink is procured from the nearest pond or *khâl*, whether that water be good or bad.

Herding.

7. In thickly peopled towns and villages, situated in the midst of other villages, the cattle are never herded. In agricultural villages the cattle are herded in the morning, and driven for pasture in the charge of little boys almost throughout the year, excepting only on very moist days.

8. At present the cattle are never driven to other districts for pasture. Formerly large numbers of cattle used to be driven from the Midnapore District and the southern portion of the Hooghly district.

Condition.

9. The general condition of cattle in the Hooghly, Burdwan, and 24-Pergunnahs Districts is not such as might be desired. The cattle in these districts are evidently degenerating. This is principally owing to the want of pasturage lands, except in portions of the Burdwan District to the want of intermixture with other breeds, and perhaps also to the general unhealthiness of climate, which has within the last 10 or 12 years desolated so many villages. It is much to be regretted that the people in these districts cannot be induced to set apart a few beegahs of land for pasturage in each village or field. The small patches of land which for some reason or other unavoidably lie fallow are used for pasturage, but they yield very poor nutriment to the cattle. As to improving the breed by special bulls purchased or imported for the purpose, the people would never dream of such a thing.

Supply of stock.

10. The stock is kept up by breeding, but no special bulls are kept or imported. I think the number of cattle is decreasing in these districts, and the rise of price within these 10 years is owing to this decrease.

Markets.

11. There is no regular cattle mart in the Hooghly and Burdwan Districts. Cattle breeders periodically drive their cattle from village to village, and dispose of as many of them as they can. The people of these districts not unfrequently purchase cattle in villages and markets in the Midnapore and Bancoorah Districts, but their usual practice is to buy cattle from cattle breeders and such of their neighbours as have any to spare.

Exports.

12. Formerly cattle were not exported from the Hooghly and Burdwan Districts to other places, but owing to the increased demand for beef in Calcutta, the agents of the Calcutta butchers occasionally purchase cattle to the number of 100 or 200, and take them down to Calcutta.

Hide trade.

13. There are several persons who trade in hides in these districts. They purchase the hides from *moochees* in neighbouring villages and export them to Calcutta. The native butchers (*chamars*) use the hides for making shoes, oil-flasks, strings, toys, &c. The local trade, however, is not extensive, and the nefarious practice of killing cattle by poison for the sake of their hides is almost unknown in these districts.

Mortality.

14. The ordinary death-rate among cattle does not exceed 4 to 6 per cent. in a year, but in times of plague the mortality is 40 to 60 per cent. in 2 or 3 months.

History.

15. It is curious that the cattle plague has been of frequent occurrence in the Hooghly and Burdwan Districts since the date of the prevalence of epidemic fever in these districts. Previously there was a cattle plague in one village or two in 9 or 10 years, but during the last 10 or 11 years there has always been a plague in one part of the district or the other.

Nature of murrains.

16. There is no premonitory symptom by which the outbreak of a plague can be anticipated. A husbandman sees one morning one of his plough cattle indisposed, finds it averse to take its usual food, and perhaps concludes that it is a sudden fit of indigestion; but

he finds on the next or on the 3rd morning that small eruptions are visible on its body, and that perhaps one or two more of his bullocks and cows evince the same want of appetite. The disease spreads in all directions as if in radii from a common centre, and in 10 or 15 days there is a regular cattle plague in the village. Sometimes two or more cattle are simultaneously affected in the village, and spread the infection with a corresponding rapidity.

17. The plague generally occurs in Falgoun and Chyet (March and April), i. e., in the Season. beginning of summer. The only form in which the plague occurs in these districts is the *gootee* or *bussunto*, the particulars of which will be given below.

18. The plague occurs in no other form in these districts. The *gootee* plague rages in a village generally from four to six weeks.

19. The answer to this question will be found in the annexed return showing the Statistics. statistics of deaths in five villages.

20. There is no other breed excepting the country breed in these districts. With Liability to attack. regard to age, sex, and condition, it will be seen from the annexed return that cows and calves are the most affected by the plague.

21. The symptoms of the affection are as follows :—The first symptom which strikes the Symptoms. observer is dulness and stupidity of the animal. There is no shivering. The animal becomes averse to food, but not to drink. It does not ruminate. There is no perceptible alteration in the temperature of the skin, but there is salivation and the stomach becomes inflated. The eruptions become visible on the 2nd or on the 3rd day. There is no swelling of the tongue and throat, but the tongue becomes comparatively stiff, and it loses its usual motory power. There is difficulty of breathing, but no cough. The bowels become lax and the excreta are liquid, as well as mixed with blood and pus. This is looked upon as a sure sign of approaching death, which usually takes place on the 5th or 6th day after the attack. Affected cows are never milked, but it is said that if milked the quantity of milk is found to be considerably less than the quantity usually secreted. The animal keeps a standing posture for a day or two and then lies down, and in many cases does not rise any more.

22. The dead bodies have never been scientifically examined, and therefore the condi- Post-mortem appear- tion of the different parts after death is not known to the people. The butchers (*chamars*) ances. however, who open the bodies for taking the hides, say that they do not find any differences in the interior of the body; but as they are ignorant men, a slight inflammation or discoloration of some organ might escape their notice.

23. The *gootee* plague certainly appears to be contagious. It appears so not only from Infectiousness. the fact of the cattle in the same shed with an affected animal being the first attacked, but also from the manner in which the plague spreads.

24. In most cases the disease is allowed to take its own turn and no medicine is Treatment. administered, but in some villages in the Hooghly District the affected cattle are made to take a decoction of black gram (*Phaseolus Melanospermus*), *cala* (*Cardanthera Triflora*), beetle leaves, lovage (*Ligusticum Ajonan*), leaves of the ramoon tree (*Trophis Aspera*) and *biddhuruck*. In some villages in the Burdwan District hot water is dashed into the mouth of the affected cattle. These medicines, however, do little good. The rate of mortality in most villages is unaffected by human interference, and sometimes only one or two in a 100 escape from death by the effect of these medicines.

25. The cattle-sheds, as I have said before, are daily cleaned, but no extraordinary care is Sanitary measures. taken when the cattle are affected. In the Hooghly District they are not removed to other places, nor do the husbandmen ever think of giving the cattle drinking water from a tank not used before. In some villages in the Burdwan District the affected cattle are kept separate. No disinfecting agencies are employed, if we may except the smoking operation alluded to above. The carcasses are not buried or burnt, but thrown away on a piece of ground called *Bhagar*, specially reserved for the purpose, where they are gradually devoured by dogs, jackals, and vultures.

26. The horns and hoofs of dead cattle are not deemed to be worth taking even by the Horns, hoofs, &c. butchers, and are allowed gradually to decay in the *Bhagar*, but the hides of cattle (dead of the plague or otherwise) are taken by the butchers after the carcasses have been thrown away.

27. Goats, sheep, and other animals are not in any way affected by the plague. Other animals.

28. Nor does it in any way affect man. Man.

29. The plague is not prevailing in any part of these districts at present, but, as I have Present disease. said above, this is not the season for the outbreak.

HOOGHLY.

Weather.

Improve breed.

Question of pasture
land.

Cattle hospitals.

30. The effects of the weather or of heavy falls of rain on the plague have not been carefully observed, but it is believed that they do not exercise any influence whatever.

31. The best thing that could be done to improve the breed of cattle would be to import into the district up-country and foreign bulls and cows. I have several times tried to introduce this element on my estates, but owing either to the climate or some other cause which I could not make out, the bulls and cows gradually became sickly and died. The question of pasturage land is no less important. But it is difficult to suggest anything practical on this head. The ryots, finding that rice, vegetables, and other crops yielded a large profit, gradually brought the grazing lands into cultivation, while the minute division and sub-division of holdings incident to the Hindoo and Mahomedan laws of inheritance have reduced the holdings of the ryots into dimensions which seriously affect the existence of grazing lands. The Zemindars and other proprietors, on the other hand, find it much more profitable to let out the lands for cultivation at Rs. 2-8 or Rs. 3 rent, instead of allowing the lands to continue *ghas-cur* at a rent of 8 annas a beegah. A spot should also be set apart in each field, at a sufficient distance from human habitation, for the burial of carcasses. I would also propose that model cattle hospitals should be established in each district, not only for the treatment of diseased cattle, but also for the training of at least a few natives in each village as Veterinary Surgeons. No compulsion should, however, be used for the treatment of cattle, or for the separation of diseased cattle from the healthy, or for the burial of carcasses, &c. A few useful hints published in the form of a pamphlet for the treatment of cattle might also be advantageously circulated in villages through the Zemindars and Police Inspectors.

BURDWAN DIVISION—HOOGHLY.

HOOGHLY.

JOY KISSEN NOOKERJEE.

VILLAGES.	NUMBER OF CATTLE BEFORE THE PLAGUE.						NUMBER WHICH DIED OF THE PLAGUE.							
	YEAR.	Plough Cattle.	Draught Cattle.	Cows.	Steers.	Heifers.	TOTAL.	Plough Cattle.	Draught Cattle.	Cows.	Steers.	Heifers.	TOTAL.	
{ Madhubpore, in Thannah Chunderkona, Hooghly, 1½ mile in length, 1 mile in breadth, surrounded on all sides by cultivated fields. }	1274 (1867) ...	250	...	60	25	30	365	45	...	25	13	17	100	
	1275 (1868) ...	250	...	42	14	15	321	53	...	23	10	12	103	
	1276 (1869) ...	250	...	18	8	7	283	72	...	9	5	3	89	
	1277 (1870) ...	250	...	15	11	13	289	...	...	...	...	...	...	
{ Tatarpore, in Thannah Chunderkona, Hooghly, one square mile. There is a khal to the north, and fields on other sides. }	1274 (1867) ...	120	...	30	15	16	181	16	...	5	4	3	28	
	1275 (1868) ...	120	...	25	13	14	172	25	...	10	9	10	54	
	1276 (1869) ...	120	...	22	11	16	169	60	...	17	10	12	99	
	1277 (1870) ...	120	...	9	3	5	137	...	...	...	...	...	...	
{ Russickpore, in Thannah Montessor, Burdwan. About one square mile. One Kuree khal to the north, and fields on all other sides. }	1277 (1870) ...	351	244	358	120	165	1,238	76	109	73	40	60	359	
	1276 (1869) ...	200	40	26	10	16	292	100	40	6	2	6	154	
{ Koomdhara, in Thannah Serampore, Hooghly, less than a square mile, surrounded by cultivated fields on all sides. }														
TOTAL ...		2,031	284	605	230	297	3,447	447	149	173	93	123	985	
								22	52	28	40	41	28	
								Deaths per cent. of stock ...						

DISTRICT OF BURDWAN.

Statement showing the localities visited by Bussunto in the Burdwan District during the year 1870, and the number of deaths reported in each village.

Sub-division.	Thannah.	Village.	Date of outbreak.	Date of last return.	No. of deaths reported.	REMARKS.
SUDDER	Gangooria	Moheshdalla	23rd April 1869	15th July 1870	...	This table shows the distribution of the disease in the district, and approximately the number of deaths which took place. The statements of stock and number attacked are, evidently, so unreliable that they have been omitted, the figures given in different returns being irreconcilable. The disease is shown as reported up to the 31st of December, but it was then going on in several parts of the district. The symptoms described are those usually assigned to <i>bussunto</i> , and are given with greater accuracy in the evidence recorded by the Commission.
		Shaldaha	"	"	"	
		Dalpoor	"	"	"	
		Bamunpara	3rd June 1869	"	"	
		Roohakantpoor	"	"	"	
		Shamespoor	"	"	"	
		Kamupara	26th February 1870	"	13	
		Dadpoor	4th March 1870	"	4	
		Minapoor	16th "	"	6	
		Dhuredee	4th April 1870	"	4	
		Bugowan	15th "	"	5	
		Dhalai	"	"	35	
		Potumdha	23rd "	"	21	
		Gobindpoor	4th October 1870	15th October 1870	7	
		Bijra	"	"	16	
		Amudpoor	8th August 1870	"	93	
		Gangooria	28th September 1870	"	6	
		Kooshagram	13th October 1870	30th "	5	
		Sookoor	"	"	3	
		Bursoot	"	15th November 1870	4	
		Huro	8th November 1870	30th "	5	
						Total deaths in Gangooria Thannah, 272.
	Sahebgunge	Rampore	10th March	15th July 1870	8	Total deaths in Sahebgunge Thannah, 48.
		Munderdih	"	"	8	
		Chandra	"	"	10	
		Lashigram	5th August 1870	15th August 1870	10	
		Bhatacool	"	"	12	
	Burdwan	Mundulpooker	2nd July 1870	"	13	Total deaths in Burdwan Thannah, 58.
		Kahgram	7th "	"	9	
		Buharpore	14th "	"	8	
		Behela	"	"	4	
		Shomepoor	16th December 1870	31st December 1870	24	
	Munglecote	Neegum	8th July 1869	15th July 1870	29	Total deaths in Burdwan Sub-division, 378.
		Munglecote	1st January 1870	"	79	
		Rogram	3rd February 1870	"	46	
		Shimulia	4th August 1870	15th October 1870	62	
		Magram	21st January 1870	"	286	
		Seemolie	2nd March 1870	15th July 1870	29	Total deaths in Munglecote Thannah, 502.
CUTWA	Keogram	Sherandy	13th January 1870	15th July 1870	12	Total deaths in Keogram Thannah, 272.
		Gungatikmy	14th "	"	6	
		Kakmhatty	"	"	4	
		Malgram	12th December 1869	"	175	
		Aukhor	19th January 1870	"	14	
		Kuchatay	"	"	5	
		Begonia	19th April 1870	"	7	
		Barinda	29th March 1870	"	9	
		Nogorunga	28th June 1870	"	6	
		Tildanga	9th September 1870	15th October 1870	5	
	Cutwa	Ghoranash	11th February 1870	15th July 1870	15	Total deaths in Cutwa Thannah, 153.
		Dewan Serai	26th "	2nd March 1870	23	
		Arjundihi	2nd March 1870	"	11	
		Boshombha	7th "	15th July 1870	25	
		Goshombha or	"	"	"	
		Goalpara	22nd "	"	45	
		Koshee	25th "	"	31	
		Gafoolia	18th July 1870	31st "	8	
						Total deaths in Cutwa Sub-division, 832.
	Culna	Foringachy	25th June 1870	15th "	6	Total deaths in Culna Thannah, 87.
		Badagachy	3rd July 1870	"	5	
		Barodowary	14th November 1870	31st December 1870	71	
		Srinanpore	2nd December 1870	"	5	
		Kumalpoor	25th March 1870	15th July 1870	1	
CULNA	Bhatooria	Edratpore	27th "	"	12	
		Chundypore	22nd April 1870	"	4	
		Jalordanga	15th July 1870	31st "	28	
		Goalpara	5th October 1870	15th November 1870	19	

DISTRICT OF BURDWAN.

Statement showing the localities visited by Bussunto in the Burdwan District during the year 1870, and the number of deaths reported in each village,—continued.

Sub-division.	Thannah.	Village.	Date of outbreak.	Date of last return.	No. of deaths reported.	REMARKS.
CULNA,— contd.	Mentesur	Bahoodanga	7th October 1870	15th November 1870	7	Total deaths in Bhatooria Thannah, 55.
		Coxially	13th "	30th "	6	
		Hat Shioontia	3rd December 1870	31st December 1870	8	
		Dhenooa	2nd October 1870	15th November 1870	57	
		Kowra	"	"	19	
	Bood-Bood	Shajadpore	3rd "	"	64	Total deaths in Mentesur Thannah, 149.
		Gomooree	"	15th July 1870	200	
		Omoor	"	"	50	
		Satnundy	"	"	500	
		Leparah	22nd Feby. 1870	"	20	
BOOD-BOOD	Bood-Bood	Joykistopore	"	"	200	Total deaths in Bood-Bood Thannah, 1,151.
		Fumanagur	"	"	20	
		Khatooreah	"	"	55	
		Kole-Kole	19th April 1870	"	5	
		Uchagram	19th January 1870	"	7	
		Kakoree	19th April 1870	"	7	
		Depara	"	"	4	
		Gulshee	19th July 1870	"	7	
		Jijut	19th "	31st July 1870	1	
		Challagram	1st "	"	8	
	Shamabad	Jrakana	20th "	"	4	Total deaths in Shamabad Thannah, 14.
		Sausanga	19th January 1870	"	10	
		Rungpore	21st August 1870	11th Sept. 1870	3	
		Reipore	10th "	"	1	
		Gogram	9th "	"	1	
		Kosha	6th "	"	4	
		Koterokee	14th October 1870	30th October 1870	2	
		Kashpore	14th Sept. "	30th Sept. "	1	
		Bahar Khomin	5th October "	30th Nov. "	12	
		Joykisto Bati	6th "	"	26	
AUSGRAM	Shamabad	Kosha	30th Nov. "	15th December 1870	3	Total deaths in Bood-Bood Sub-division, 1,207.
		Jesoudah	"	"	"	
		Lagram	18th April "	15th July "	14	
		Coormulo	18th July 1870	"	10	
		Bishutpore	1st Sept. "	11th October 1870	7	
	Ausgram	Surr	19th "	"	2	Total deaths in Ausgram Thannah, 42.
		Dhonkorah	30th October "	30th Nov. "	9	
		Warishpore	15th Nov. "	15th Dec. "	12	
		Wuldihi	5th Dec. "	"	2	
						Total deaths in Bood-Bood Sub-division, 1,207.

The total deaths in the District of Burdwan during the year amounted to 2,829.

Village Taleet, District Burdwan, visited 16th April 1870, at 8 P. M.

BURDWAN.

Bullock, 6 or 7 years old; ill 9 days; feeds but little; recovering; has purged severely. Case. No blood passed, but thick mucus; œdema round eyes; in very weak condition, but evidently getting better.

Evidence of RAM CHURUN MISREE.

Has lost 3 head of cattle; had 7; has 4 now; all are ill. The 3 that died showed the Evidence of Ram same symptoms as the one above mentioned now shows. Churun Misree.

In 1249 B. S., or nearly 30 years ago, his cattle suffered from *gootee*; calls the disease History. *bussunto*; lost 2 cattle,—all he had in 1249.

Three of the others are suffering from the same disease and showing the same symptoms. There are about 700 head of cattle in the village, out of which number nearly 25 have died of *gootee*. The disease has just commenced, having made its appearance in the house of one Taracotal about 20 or 25 days ago. Taracotal has lost 5 or 6 head of cattle, and has only two left; they are still suffering. The disease made its appearance from Satrumdee and Shaora Jamar, 2 mi. sudistant from Taleet in the north-west direction. The murrain has been raging in those villages since Falgoon (February) last. Before

BURDWAN. Sheep and goats. Course of disease.	the two latter villages had been attacked, Joykistopore had the disease. At Shaora sheep and goats suffered and died of <i>gootee</i> . Nearly all the cattle at Joykistopore have died. The cattle of the affected villages and those of this village (Taleet) have been grazing together in the same fields; hence the origin and spread of the <i>gootee</i> . From this place the disease has travelled to Amar, a mile distant from this hamlet towards the east. The animals of Amar and those of Taleet also graze together. The general opinion is, that there has been no disease since 1249 B. S. But one man (Sreemontho) says that 5 or 7 years ago he lost 2 head of cattle of <i>bussunto</i> . He adds that one Manick Ghose also lost his cattle of the same disease. This subsequent attack was not a general one, and the neighbouring villages were not then affected. There was a cyclone and flood in 1249 (1843), and a large number of <i>beparees</i> from Raina, who had several head of cattle with them and who were stopping in the village at the time, lost their animals from starvation and the inclemency of the weather, and the carcasses were thrown into the fields. The stench was something fearful, and that caused the disease. The storm came on in Jeyt (May). It rained for 7 days continuously. The people do not know in what country the disease originated, but they know that it comes from a north-westerly direction. There are no cattle markets near this village. The nearest haut is 40 miles distant from Taleet. On very rare occasions the <i>beparees</i> bring cattle for sale. <i>Beparees</i> do not, as a rule, come and take away cattle from this village, but they do so on rare occasions. About ten head of cattle are taken away annually. When the people want to purchase or sell cattle for agricultural purposes, they do so by private bargains. The carcasses are thrown into the <i>bhagar</i> . The moochees take the skin. They hold the <i>bhagar</i> <i>jummah</i> . The moochees make shoes, and sell hides to the <i>pikars</i> , who take them to Calcutta. The cultivation will suffer in consequence of this disease. Those people who have suffered by loss of cattle will let the land in <i>bhaug</i> , and even with that arrangement some land will remain fallow. In 1249 B. S. (1843) the murrain occurred in Aughun (November), when the lands had already been prepared, and they made arrangements for letting lands next year. These arrangements were easily made, inasmuch as in that attack the neighbouring villages did not suffer. The people are not aware of any case in which an agriculturist, being reduced to poverty from the loss of cattle, has had recourse to manual labour. This is an infectious disease; there are no places and no means for segregation. The people are of opinion that segregation may save cattle, but they have no places where they can take cattle to. Had they any such place, they would have carried their cattle hither, and thus separated the sick from healthy. Never knew of an instance of segregation. The disease is just commencing, and there are still several houses where it has not gone. No medical treatment of this disease has been tried. They give the sick cattle rice gruel and soft green grass. In 1249 (1843) nearly every head of cattle died.
Cause of disease.	
Another outbreak.	
Course of the outbreak of 1249 (1843).	
Origin of disease.	
Supply of cattle.	
Sales.	
Disposal of carcasses.	
Hides.	
Effect on cultivation in 1249 (1843).	
Infectiousness.	
Segregation.	
Treatment.	
Losses.	

About 100 or 150 cattle have been taken ill, and are still ill, 25 having already died.

<i>Puschima</i> . Symptoms.	<i>Puschima</i> appears but rarely in this village. It is called in Taleet <i>puschima nara</i> . The affected cattle shiver and froth from the mouth; the coat stares, and they are off feed. Those that die, die within two or three days. The stomach swells out. When the cattle recover they commence purging, and purging is brought on by the action of medicine. The people give <i>chunam</i> , <i>kuldee</i> , and cobweb to their cattle. It is not infectious; attacks one or two cattle; has no particular season.
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Foot and mouth disease.	<i>Aishoo</i> is not fatal. Last year there was <i>aishoo</i> in this village. Only calves died. Ram Chand's cattle had <i>aishoo</i> last year, and they have got <i>bussunto</i> this year.
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History. Rinderpest about 1800.	An old man of 86 years says that he saw <i>gootee</i> when he was 20 or 25 years old in Taleet.
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Case.	A bullock, 8 years old; 8 days ill; has commenced eating boiled rice for the last 2 days. There was running from eyes, nose, and mouth. There was purging also; mucus, but no blood; purged for 3 or 4 days; still purging. (The owner had 6 head of cattle, of which 3 got the disease. One has recovered, 2 are still ill). Gums congested around teeth; opacity of cornea; no eruption.
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Case.	Bullock, 7 years old; 4 days ill; off feed; no thirst; gums congested. Discharge from eyes, nose, and mouth; purging; has got congee.
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Case. Losses.	Bull calf, 15 months old. Discharge from nose and a little from mouth; congestion of gums; dry muzzle; ill since yesterday. Has not been purging. Ten or 15 cattle died in this locality. The owner of this calf had 9 head of cattle. Has 4 ill now, and 1 bullock died 4 or 5 days ago. Three of those ailing are bullocks, and the other is a cow.
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Katgora, visited 17th April 1870, 8 A. M.

Visit to Katgora. Case.	A bullock, 4 years old; 9 days ill; off feed; no thirst; purging mucus and blood; profuse viscid discharge from mouth, nose, and eyes; a little oedema around eyes and on cheeks below eyes; excoriations on gums, and aphtha on lower and upper lips. The
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animal is lying down; great exhaustion; panting; occasionally has the peculiar click in respiration; eruptions on neck, cheeks, shoulders especially; but generally over all other parts of the body. The eruption consists of minute pimples, which cause the hair over them to be raised, and these raised dots or pencils of hair are to be seen in all parts of the body; there is great congestion, with slight prolapsus of rectum; blood and mucus dribbling away.

A cow, 6 years old; ill 4 days; thirst; bowels relaxed; slight discharge from eyes and nose; congestion of gums around teeth; mouth hot; vagina slightly congested; the calf of the above cow also ill; has diarrhoea; vagina slightly congested. (These 3 animals belong to the same man).

A cow calf, 1½ years old, 6 days ill; eats but little; profuse discharge from eyes, mouth, and nose; vagina much congested, with aphthous deposit; aphthous vesicle in mouth; purging, but not violently; difficulty in breathing; weak.

Evidence of villagers.

SHEIK NUJFOODDY, NEHALOODDY, SHEIK ALEEMOODDEEN, of Katgora, Canchunnugger, and MUNOOR HOSSAIN, of the same place, give the following information:—A month ago the disease known by the name of *bussunto* made its appearance in the house of one Nuffer Sheik, who lost 3 head of cattle of that disease. The house of one Shookroo was then attacked, and he too lost one. Shookroo's house adjoins that of Nuffer. The disease then came to the house of Shooka Sheik, who lost 1 cow. Shooka's homestead is next door to Shookroo's. Moeka's house was then attacked, and he has this morning lost 1 bullock. He has besides 3 sick cattle. There is at present disease in the houses of other villagers. The deponents do not know whether there has been any disease in any of the neighbouring hamlets, but they have heard that the village of Goitunpoor, across the Damooda river, 2 miles off to the west, had the disease. They believe the disease to be contagious. The disease is a common one, appearing, as it does, now and then, and carrying off several head of cattle. They have been seeing the disease from their boyhood, but it is not always in the village. It comes at an interval of 5 to 10 years, and has been as destructive as it is now. If 20 get ill of *gootee*, only 5 may survive, the disease being fatal. One attack gives immunity from a second attack: 3 years ago there was a milder type of *gootee*, and then only 2 head of cattle died in the village. There are only 200 head of cattle in this village. They buy cattle from the neighbouring hauts. There is a cattle market at Cotulpoor, 20 miles distant from Katgora. The villagers do not sell cattle in that market, nor to the *pikars*. Old cattle die in course of nature. They slaughter the barren cows, and sometimes sell them. Poor people may sell old bullocks, but this is not the rule. No sheep in this village. There are goats. Never saw any goats have *gootee*, or dogs. No Pigs. The moochees take the skins of carcasses. They sell skins to the *pikars* and make shoes. The bullock that cost Rs. 10 ten years ago will cost now Rs. 15. Never use cows, nor barren cows for ploughing. There are bulls in the neighbourhood which serve cows. The villagers generally here are not agriculturists. They drive carts and pack bullocks. They go to Cawnpoor, Furrackabad, Chanka, Soondrie, Jhaldah, Ranchee, &c., &c. Knows of instances in which cattle with carts had *gootee* on the way, and died. Their own cattle died while thus travelling. They were purchased from villages en route. The disease was bad in Chanka, in Gya, 4 years ago, where and when they lost cart cattle. *Gootee* appears in winter and summer; at no particular seasons.

Visit to Palapooker, 18th April 1870, 6-30 A. M.

Palapooker village is inhabited by milkmen. On arrival at this place, the Commission saw 3 carts being laden with panes of glass. The carters said that they had come from Sasseram, in the district of Arrah (Shahabad), with oil, and that they are going back there. They also said that they have been going and coming for the last 4 years. When the carters left Sasseram, 6 weeks ago, there was no *gootee* at that place.

Evidence of SREENIBAS GOPE.

There are about 50 families of milkmen in this village owning 200 head of cattle, including bullocks; half are cows and half bullocks. They are also agriculturists. There is no other disease amongst cattle at present except *aishoo*. The last casualty in the village was in Magh last (January); another died in Falgoon last (February) of *puschima*. Annually the village loses 20 to 25 head of cattle, including calves, from ordinary causes. They never go to any cattle fairs or markets, but they always buy from villages. A cow

BURDWAN. Price.	is purchased from 8 to 20 Rupees, a bullock from 5 to 30 or 40 Rupees. The cow that sells for Rs. 20 now would cost 10 years ago 12 to 13 Rupees. The bullock that cost now 40 Rupees would sell in days goneby for 20 to 25 Rupees. [The deponent is 55 years old].
Increase.	Has been a <i>goallah</i> all his life. Ten or 11 years ago this village had <i>gootee</i> . The symptoms in <i>gootee</i> are,—dulness; ears drooping; off feed; purging blood and mucus; excoriations in the mouth; running from eyes, mouth, and nose. The animals die in 5 to 7 days. The coat is staring, and in some cases eruptions are seen. There are eruptions on the chest, thighs, udder, sometimes on the eye, and nearly on all parts of the body.
Rinderpest in 1860.	
Symptoms.	
Eruption.	
<i>Puschima</i> symptoms.	The symptoms of <i>puschima</i> are running from nose and mouth; no hoven; off feed; in some cases purging. The animal dies on the first day. The animal does not pass any blood. Shakes the head, and the tongue gets cold. The mouth turns black. <i>Gootee</i> appears in Falgoon (February) generally, but it may come on at any other time. It does not come on annually, but when it appears it kills nearly every animal in the house. Five or 7 years before the last outbreak there was <i>gootee</i> in this village. The deponent does not recollect when the village had another attack before the last but one outbreak; but he knows that the disease has come on from time to time at certain intervals. In the last outbreak the disease broke out in this village at first. From here it travelled to the neighbouring hamlet of Chandshor. Deponent does not recollect whether before the last outbreak any new cattle had been purchased and brought into the village. The disease travelled in the air. The disease <i>bussunto</i> is considered to be infectious, and the deponent states that the air brought sickness to one cow in the village. That infected animal imported disease to the neighbouring cattle. <i>Aishoo</i> is not fatal, but calves die of the disease. This village lost about 8 head of calves; they died in Falgoon and Cheyt last (February, March); no grown up animals died; the symptoms of <i>aishoo</i> are,—sore mouth and sores in the cleft of hoofs; the animal cannot eat, and maggots appear in the sore; the animal infected suffers as long as even a month; the people look upon <i>aishoo</i> as infectious; yet an animal that may survive from an attack of <i>aishoo</i> may get it again; one attack of <i>gootee</i> gives immunity to a second attack; does not think that <i>puschima</i> is infectious; <i>puschima</i> is invariably fatal. No medicines are given in <i>bussunto</i> cases, but the owner soaks <i>choora</i> (parched rice) and drenches it; they do not separate sick from healthy for want of a suitable place. The people think that they would save their cattle by separating, and they would separate if they got a suitable place. Five or 10 per cent. survive in <i>gootee</i> cases.
Season of rinderpest.	
History.	
Rinderpest in 1855.	
Infectiousness.	
Foot and mouth disease.	
Symptoms.	
Second attack.	
Treatment.	
Segregation.	

Visit to Gungpore village. *Gungpore village, visited 18th April 1870, 7-30 A. M., on the east side of the Grand Trunk Road and 4 miles distant from Burdwan.*

Rinderpest in 1870. Met MADHUB CHUNDER GHOSE a Bengalee teacher (*guru*), who said that the disease *gootee* has appeared in the villages of Khood-koorie, Sackhari, and Jhooghy on the south side of the Damooda; the disease has been raging since Falgoon (February) last. The disease is now on the decrease, but there are a few cases of *gootee* yet.

Evidence of Tariney Churn Chuckerbutty. TARINEY CHURN CHUCKERBUTTY, 56 years old; *barée* (family residence) at Gungpore, and has all his life lived here; has seen *bussunto* among cattle in this village 3 or 4 times in his life. There have been frequent outbreaks of *puschima* and *aishoo*. Some 8 years ago *bussunto* made its appearance here; about 20 or 30 head of cattle died then; there are 200 head of cattle, or even less, in this place. Never saw cultivation interfered with in consequence of loss of cattle; has seen people letting their land in *bhag jumma* and hiring cattle, owing to casualties caused by *gootee*. Has seen agriculturists reduced to poverty, and take to manual labour and incur heavy debts, owing to loss among cattle. Neither the location of the village nor the caste or employment of the inhabitants has anything to do with the disease; as an instance, the deponent mentions his own village, which, he says, stands on the side of the Grand Trunk Road, where the *pikars* and *pikaree* cattle come often; yet the village has not been affected. There has been disease at Eley, a village adjoining this hamlet, and 7 head of cattle died in the month of Cheyt (March) last. Out of 8 head of cattle attacked, only one survived. What cholera is to human beings, *gootee* is to cattle.

Convalescent case. Saw a cow convalescent from *gootee* belonging to one Hurry Narain Mistree; had been affected in Cheyt (March) last. Had had hot skin, running from eyes, nose, and mouth; looked stupid; ears drooped; purged very offensive matter mixed with blood and mucus; off feed; great thirst; a few spots appeared on the body. In one or two places scabs had formed, and the animal is now in a very bad condition; is inclined to pick; two or three spots were observed, about the size of a 4-anna bit, without hair, and having in the centre a depressed cicatrix-like spot. The owner has no other cattle, and during the illness of the cow she was kept tied up in the house and not allowed to mingle with other cattle. Before the disease the

owner used to tie the animal by the road side, where there was *doob* grass, and did not allow her to graze about at will. At the time the cow took ill there was *bussunto* in the adjoining village of Eley. His house is not near *any other* house; waters the cattle in the pond close by.

The villagers consider the disease to be infectious, as also *aishoo*. The cattle of the village graze in the fields, not on the road side. They are stall fed, and supplied with grass, straw, and *khullee*. The cattle are taken out to plough the fields in the morning at the cultivating season and let go at noon. There has been no small-pox in the village this year, nor any epidemic fever or cholera.

Village Bam, on the east side of the Grand Trunk Road.

Contains about 225 head of cattle; no disease among them at present.

Four or 5 years ago there was *gootee* in this village in the months of Falgoon (February) and Cheyt (March); about 15 head of cattle died. There is no *aishoo* or *puschima* at present here. Epidemic fever has prevailed for the last 3 years; men are still suffering, nearly 100 men having died. The people of this village have heard that *gootee* is raging much at Indosh on the south side of the Damooda near the Bancoorah road, 7 or 8 *kos* (14 from 16 miles) distant to Burdwan. There is a Moonsiff there.

Mirzapore, visited 20th April 1870.

Three miles north of Burdwan, half a mile from Cutwa road; contains about 1,000 head of cattle; 300 houses, Hindoos; one family of Mussulmans; agricultural village; crop cultivated *amun dan*; no *bussunto* now; had it 5 or 7 years before (1272 B. S.) in Assar (June and July) and Shrabun (August); lost some 150 to 200 head; 3 or 4 years before they had another attack. They have it every 4 or 5 years; there are a few deaths yearly from *puschima*, *khoorah*, and other diseases; but when *bussunto* occurs, it affects a great number of cattle. Dead cattle are thrown on the fields, and the hides are removed by chamars, who in ordinary years do not sell them elsewhere, but in years of great loss of cattle hides are sent to Burdwan and elsewhere. No cattle are sold to *pikars* from this village. Cattle are sold by private bargain when wanted. There is no cattle market close. There is a *haut* at Kishnagar (64 miles) and at Paschandi (36 miles).

Cattle are grazed on the fields on both sides of the village, and go towards the road. They have had foot and mouth disease lately, but no deaths and no cases at present.

Kamnara, visited 20th April 1870.

Saw a cow, apparently convalescent from *gootee*, was attacked with *gootee* a month ago had foot and mouth disease 10 days ago; very poor condition; very lame near forefoot, maggots; slight discharge from nose. On ribs, shoulders, and quarters most of the hair has come off, leaving bald black patches on the ribs. There is an old scab close to the sacrum, nothing on the udder; the ears are also bare, and cicatrix-like spots are seen on the back and on each side of the spine.

This animal went with 200 or 250 other cows to Jhapurdah, close to Howrah, 60 miles off, 2 or 3 days' journey, for grazing. This is a common practice. The people are *goallas* and the pasture of their village is very bad, and they sell milk and graze their cattle at Jhapurdah. They went in Falgoon (February), and their cattle were attacked with disease, and 30 to 40 died among them, two belonging to the owner of the sick cow. This cow went with the rest and became affected, and was brought back; they generally bring the cattle back in June, but they brought them back sooner this year on account of disease. None died on the road back. Two or 3 sick were brought back. Since they came back no other case has occurred in the village. They returned 20 or 30 days ago. This is a *goalla* and agricultural village—all Hindoos, no Mussulmans. They had *bussunto* 5 or 10 years ago. Do not know how many cattle were lost then. Saw another convalescent cow in a neighbouring shed not quite so ill as this animal. No precautions have been taken to prevent the spread of disease throughout the village. Disease is bad in Bhogiria and Palitpore. No other villages about here adopt the custom of sending their cattle to a distance. *Pikars* don't come here to buy.

Evidence of ISSUR CHUNDER GANGOOLY, Bood-Bood Sub-division, 19th April 1870.

ISSUR CHUNDER GANGOOLY, of Colecole, Sub-division Bood-Bood, 6 miles to the north and east of Bood-Bood, 40 years old, says:—I am an agriculturist and owned 22 head of cattle before the outbreak, of which 4 were bullocks, 4 bulls, and the rest cows. On the 24th Falgoon (March), the disease known in this part of the country as *bussunto* appeared in my

Bood-Bood.	house and killed 16 head of cattle, viz., 4 bulls, 2 bullocks, 10 cows; another was
Loss.	attacked, but it got all right; the others had the disease 3 years ago, when it made
Second attack.	its appearance. The symptoms of the disease are:—at first shivering for 3 days; the skin
Symptoms.	is hot, while the ears and horns are cold; from the 4th day there is running from eyes, nose,
	and mouth; off feed and drink; the tongue swells; the animal then groans and commences
	purging blood and mucus; it dies on the 5th or 6th day; the breath and the faecal matter
Loss in money.	are very offensive; I saw no eruptions on my cattle. I have lost Rs. 200 in 16 head of cattle.
Treatment.	I got a book from my neighbour, and as directed therein gave internally infusion
	of chiretta, <i>kharee neemuck</i> , and <i>asafetida</i> ; I also made the infected animal inhale
	sulphur smoke each time for 10 minutes; I saved one bullock by using these medicines.
Effect on cultivation.	There were nearly 500 or 600 head of cattle in my village, perhaps more; somewhere about
Price.	150 have fallen victims to <i>gootee</i> . I have seen eruptions on the bodies of cattle infected;
	I observed that hair had fallen off and scabs formed. This loss will interfere with my
Rinderpest in 1867.	cultivation, for I shall be obliged with others to let a portion of my land in <i>bhag jumma</i> ; I
Manure.	hold 36 beegabs of land. It has become difficult to get cattle in the neighbouring places, and
Feeding.	their value has much increased, for the bullock worth 10 rupees ten years ago, costs now Rs. 20
Rinderpest in 1862.	and Rs. 25. We never sell cattle to the <i>Pikars</i> . Ours is a Hindoo village, but there are
	Mussulmans in it; the last attack 3 years ago was mild; there is still disease in our village.
Infectiousness.	We use the cowdung for fuel and for manure; the cattle of our village graze in the
Origin of disease.	neighbouring fields and are housed and stall-fed during night; we give rice straw, <i>kholee</i> ,
Sheep and goats.	<i>bhoosee</i> , and grass, also <i>conjee</i> or rice-water. About 8 years ago there was another
	outbreak of <i>gootee</i> , which was as destructive in its effects as the recent outbreak; <i>bussunto</i>
Segregation.	appears in our village now and then. I and my fellow-villagers consider <i>gootee</i> to be an
Treatment.	infectious disease; our cattle used to graze in the fields along with the animals of
Spread of disease.	villages Poorsa and Paraz; in Falgoon last (February) the cattle of our village took
<i>Puschima</i> .	the disease from them; there are no buffaloes in our village, but we have sheep and goats;
Symptoms.	I did not, however, see any disease amongst them, but I have heard that sheep and goats have
Season.	died of this disease. Separation of sick from healthy is beneficial, but at present we have
Foot and mouth	no means of effecting this. I used to give the sick animals rice gruel and soft grass, but
disease.	they could not eat anything. I cannot name any particular village that had the disease
Second attack.	after our village had been attacked; but nearly all the surrounding villages got the sickness.
	<i>Puschima</i> appeared in our village 4 or 5 years ago; the cattle attacked, however, were few,
	and it is not contagious; the symptoms are purging, swelling of the throat, and death on
	the first day; there is no running from eyes, mouth, and nose; no sores in the mouth.
	<i>Bussunto</i> appears in Pous, Magh, Falgoon, and Cheyt (December, January, February, and
	March); there are no particular seasons for <i>puschima</i> . <i>Aishoo</i> appears in the rainy
	season and in Kartick (October) and Magh (January); the mouth and hoof become sore; it is not
	fatal; we have <i>aishoo</i> in our village now and then. One attack of <i>gootee</i> gives immunity
	from a second attack, as is found in my own case. I have not seen any animal recover from
	an attack of <i>puschima</i> , but I have seen one animal get two or three attacks one after the
	other; this year our village has been healthy as far as human beings are concerned.

Village Bheershennee, visited 20th April 1870, 6-30 A. M.

Visit to Bheershennee	The village of Bheershennee is distant two miles to the east of Bood-Bood. 1. A bull
village.	calf two years old; ill four days; off feed and drink; profuse sticky discharge from nose and
Case.	frothing from the mouth; no running from the eyes; excoriations on gums; tongue very much
	furred; purging clay-coloured watery stools, which were very offensive; the animal is shivering
	and the respiration is forced; coat staring; no eruptions to be seen, and breath very offensive; the
Stock.	owner is giving nothing for food and no medicine; this is the first attack in the owner's house.
Case.	The owner has 10 head of cattle, of which 3 are cows, 4 bullocks, and the rest bulls; the
	sick animal is kept in a separate room from the other animals. In another house saw
	a sick cow calf 8 months old; 8 days ill; picks a little; discharge from nose; coat staring;
	purging blood and mucus; sores around the rectum and vagina; no eruptions on the skin;
	no thirst; the owner gives the animal <i>conjee</i> ; the mouth looked all right; the owner has
Case.	8 cattle, of which 6 are bullocks and 2 cows; no casualties; the calf is the only one that has
	been attacked; calf is allowed to go to her mother, which is all right.
	In another neighbouring house saw an old cow lying down with sticky discharge from
	eyes and nose, and running from mouth; ears drooping; coat staring; purging watery stools,
	which were very offensive; ill 5 days; off feed; has not been able to get up since yesterday; has
Stock.	forced respiration; no eruptions on the skin; does not ruminate; the owner is giving no medicine
	and no food. The owner had 10 head of cattle, of which 3 are cows, 2 bulls, and the rest
	bullocks; the disease at first appeared in the owner's house in Falgoon (February) last, and
	killed 1 cow and 1 bullock; the third that was attacked was a cow, which has recovered; the
	4th is the animal now sick; others have not yet got the disease.

Evidence of Villagers.

NUFFER CHUNDER GHOSE, BONMALLY GHOSE, GOOROO DASS GHOSE, KASHEE NAUTH	Evidence of the vil-
CHUCKERBUTTY, of Bheershennee, say,—that this is a Hindoo village inhabited by about 150 families	lagers.
who own nearly 400 or 500 head of cattle; there are no sheep and buffaloes in this village, but	Village stock.
there are goats. The bullocks form the greater portion; cows number 100 and calves the same, the	
rest are plough bullocks. The disease that has been raging in this place since Pous (December)	
last is called <i>bussunto</i> . The first case of <i>gootee</i> was in the house of one Nudder Chand Ghose,	Origin of disease.
whose cattle used to graze in the fields along with the cattle of Khamargow and Noorkoona, where	Progress.
the disease was then raging violently; Nudder Chand lost 5 cattle one after another. The	
disease then went to the house of Shushy Coloo, 25 yards distant from Nudder Chand's place,	
and killed 1 cow belonging to him; it then indiscriminately attacked several houses in the village:	Loss.
the disease was most virulent in the latter end of Falgoon (February) and Cheyt (March). It	Symptoms of rinder-
is now on the decrease: the village has lost upwards of 100 head of cattle. The symptoms of the	pest.
disease are,—that the animal looks stupid, gets fever, is off feed, purges, has sore mouth, running	Effect on cultivation.
from eyes, nose, and mouth, and dies in 3 or 4, even 5 days; eruptions on the skin have not	
been seen; but in one case an animal which recovered was losing its hair in several places.	Rinderpest in 1864.
No land, however, will be fallow on account of this misfortune, but it will be let in <i>bhag</i>	Cattle poisoning.
<i>jumma</i> . Six or seven years ago <i>bussunto</i> appeared in this village, but then it was suspected that	Different type.
the <i>moochees</i> were poisoning all the cattle; the symptoms seen now were also seen then, and	Markets.—Sales.
some <i>moochees</i> were seized in the act and sentenced by the Magistrate. We now think that	Cattle traders.
the last outbreak was in reality one of <i>gootee</i> ; about 50 head of cattle died in the last outbreak;	
the type, however, was not so severe as at present. The value of cattle has increased 50 per cent.;	
there are no cattle markets here. The people go about from village to village and make	Markets.
private bargains: sometimes the <i>Pikars</i> bring cattle from the north side of the Illoor river	Herds driven along
in the District of Beerbhoom and sell them to the people; they come at this season (Falgoon	Grand Trunk Road.
or Cheyt) (February and March) once annually, bringing a herd of 20 or 22 head of cattle.	<i>Puschima</i> .
They do not purchase any cattle. If any one in the village wishes to sell cattle on account of	Symptoms.
poverty the villagers buy them up. There are cattle markets at Krishtonugger in the Beerbhoom	Infectiousness.
District, at Pachondeher (Thannah Kutoogram, Sub-division Cutwa), and Bowalia in Beer-	Foot and mouth
bhoom. The butchers are often seen to pass by the Grand Trunk Road with herds of cattle	disease.
bought in Beerbhoom, where there is a large number of cattle. Four years ago <i>puschima nara</i>	Rinderpest in Janu-
appeared in this village in the house of Gooroodass Ghose and killed 10 head of cattle. The	ary 1870.
disease appeared in Jeyt (June). The disease did not go to any other house; the symp-	Second attack.
ptoms of <i>puschima</i> are,—swelling of stomach and throat, and purging blood; sore tongue;	Hides.
death in 2 or 3 days. <i>Gootee</i> is infectious, but <i>puschima</i> is not so. <i>Aishoo</i> is not fatal, and	Meat of diseased
it is called <i>packai</i> . The attacked animal gets sore mouth and sore feet; calves die of this	cattle.
disease; it has appeared in the village from time to time. <i>Aishoo</i> appears in Magh and	
Falgoon (January and February). <i>Aishoo</i> is contagious. There was a mild outbreak of <i>gootee</i>	
last year in Magh (January) and it killed 20 head of cattle; the animals that got it last year	
and survived have escaped this year, although the disease has been in the house. An animal	
gets <i>puschima</i> twice and thrice, also <i>aishoo</i> . Have seen sheep and goats die of <i>gootee</i> this	
year; there are no <i>moochees</i> in this village, but the <i>moochee</i> of Bood-Bood, by name Khetoo,	
takes the skins; there is no <i>bhagarja jumma</i> . Khetoo sells skins to the <i>mahajuns</i> , who	
take them to Burdwan and Calcutta; the average price of a skin is Re. 1 and 1-4 a piece. Even	
the <i>moochees</i> take the meat of diseased cattle and sell it to the <i>Baoories</i> , who eat it. Beerbhoom	
is a great trading district.	

8-30 A. M.—Dukinkhara, nearly two miles south of Bood-Bood.

Saw a sick cow, ill 8 days, 10 years old; the animal is standing up, but looks miserable and	Visit to Dukinkhara.
very weak; there is profuse discharge from eyes, nose, and mouth (the people have applied	Case.
turmeric to the nose and mouth); coat staring; feeds but little; will not eat by itself; purges	
blood and mucus, mixed with clay-coloured stuff; eruptions on shoulders and neck; the animal is	Treatment.
shivering; the owner said that when he made the animal inhale <i>dhoona</i> (resin) smoke, some mag-	Stock.
gots came out; gives rice gruel; is drenched; this is the first attack in the house; has 85	
cows, bullocks, and buffaloes; none else are attacked.	
Saw in another house a cow 4 years old; condition fair; 6 days ill; does not eat of	Case.
itself; is drenched with rice gruel; there is discharge from eyes and nose, and frothing from the	
mouth; eruptions on the skin under the hair; purging blood and mucus, very offensive; ex-	
coriations on the gums; tongue furred, and vagina highly congested—lined with viscid aphtha.	
Saw in the same house a cow in fair condition, 8 years old, profuse discharge from nose,	Case.
and running from eyes and mouth; coat staring; drenched with rice; hoven since last night;	
vagina congested, and contains slight, viscid, aphthous material; purged yesterday, but no	
purging since last night; no excoriations on the gum; a few eruptions are seen here and	
there; ill 6 days; turmeric applied to the nose; shivering.	
In the same house saw another cow calf, 2 years old, ill 6 days; picks; looks better;	Case.
slight discharge from eyes, nose, and mouth; purging blood and mucus; no eruptions on	

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BENGAL, BEHAR, AND ORISSA,

Bood-Bood.	the skin; buccal membrane very much congested, and one or two excoriations on gums; vagina congested; condition fair. One calf in this house has recovered. The owner has lost 2 head of cattle, viz., 1 cow and 1 bullock.
Evidence of the villagers.	TAFFIL AHAMMED and GOLAM SAFDAR say,—this is a Mahomedan village; all the people are agriculturists. There are 200 families in the village who own nearly 300 head of cattle and buffaloes; there are also sheep and goats in the village; <i>bussunto</i> appeared in this village 12 days ago; it appeared in the house of Harry Bagdy, who has lost 2 head of cattle; the sickness came from the village of Amour, which is distant 2 miles from this village, lying to the west side; the people of Amour, 14 days ago, had seized 7 head of cattle belonging to Gopaul Bagdy and Harry Bagdy, which had done damage to the Amour people's garden, and kept them there for 4 hours; these animals returned home and brought the disease; 2 of these cattle died; 8 head of cattle are ill now. 14 or 15 years ago there was <i>gootee</i> in this village; the oldest men do not recollect another outbreak of this disease; consider <i>gootee</i> as infectious; <i>puschima</i> appears in the village now and then; it is not infectious. It appears rarely and kills a few animals; <i>aishoo</i> also attacks the cattle of the village. The symptoms of <i>puschima</i> are,—purging, swelling of the throat, <i>hoveen</i> and death in 2 days; <i>aishoo</i> is not fatal; there are no <i>moochees</i> in this village, but <i>moochees</i> from Doodgapore skin the dead animals in the bazaar; no poisoning; buy cattle from the neighbouring villages. <i>Pikars</i> come here from Beerbhoom with cattle for sale; they are not allowed to purchase any. Buffaloes have not yet been attacked. During the last attack buffaloes had the disease, but they recovered; only 1 died; do not know whether sheep and goats get the illness. The price of cattle has doubled. Segregation should be practised during plague, but in this part of the country there are no means of separating; the cattle graze during day, and are stall-fed at night. Some cattle are stall-fed day and night.
Village stock.	
Rinderpest prevailing.	
Origin of outbreak from pounding of cattle at Amour.	
Rinderpest in 1856.	
No previous outbreak.	
<i>Puschima</i> .	
Symptoms.	
Foot and mouth disease.	
Hides.	
<i>Pikars</i> (drovers).	
Buffaloes subject to rinderpest.	
Price.	
Segregation.	
Feeding.	
Visit to Bood-Bood village.	9-30 A. M., visited the village of Bood-Bood.
Case.	Saw a cow 6 years old; sick 7 days of <i>gootee</i> ; the animal is lying down and appears to be very weak; the body has become cold; there is running from eyes, nose, and mouth; purging mucus mixed with blood, and very offensive; off feed; drinks; drenched with rice gruel, and given green grass; hair standing on end; ears drooping; offensive breath; no excoriation on the gums; respiration healthy. There has been no loss in this house; two had the disease, but they have recovered. The people said that disease has appeared since Magh (January) last, and in the following Falgoun (February) several animals died. Nearly 100 head of cattle out of 250 died; the disease is considered to be infectious. Amour gave the disease to this village; the cattle of both villages graze together. The disease appeared 10 years ago and a few years before that period; the disease was before then unknown to this village, but it has appeared since the construction of the Grand Trunk Road 42 years ago, the village being 1½ beegah distant from that road; the sickness is on the decrease; the people know <i>puschima</i> ; it appeared in this village last year, but the cases were few and the disease not so contagious; the symptoms are: swelling of the throat, purging, shivering, and death in 2 or 3 days. <i>Aishoo</i> attacks the village cattle now and then; there are a few buffaloes in this village; one buffalo died in Falgoun (February) last of <i>gootee</i> . Nearly 30 head of cattle have recovered; the value of cattle was nearly double; cattle are purchased in the neighbouring villages; the <i>Pikars</i> bring cattle from Beerbhoom and sell them; they do not buy cattle. <i>Pikars</i> frequently take herds of cattle to Calcutta by the Grand Trunk Road; they came from Beerbhoom.
Evidence of villagers.	
Rinderpest in January 1870.	
Loss.	
Infectiousness.	
Origin of disease.	
Rinderpest in 1860.	
Arsen since construction of Grand Trunk Road.	
<i>Puschima</i> .	
Symptoms.	
Foot and mouth disease.	
Buffaloes.	
Price of cattle.	
<i>Pikars</i> (drovers).	
Village stock.	
Losses.	
Rinderpest in February 1870.	
Symptoms.	
Spread of disease.	
Mortality.	
Treatment.	
Infectiousness.	
Segregation.	
Supply of cattle.	
Markets.	
<i>Pikars</i> (dealers).	
Rinderpest in January 1870 in Bhaghee.	
Origin of the disease.	

Evidence of villagers of Deegnuggur, 11-30 A. M.

DENO NAUTH MONDUL, NILKANTO MONDUL, NUND PAUL, NOBOCOOMAR GHOSE, JODOO PAUL, and SHIB NAUTH GHOSE, of Deegnuggur, 8 miles to the north-east side of Bood-Bood, say:—Our village is inhabited by nearly 1,000 families, consisting of Hindoos and Mahomedans; they owned before the cattle murrain 2,500 head of cattle or more, of which about 250 died of *gootee* in Falgoun and Cheyt (February and March); the disease is now on the decrease, but has not entirely disappeared; the disease first appeared in the month of Falgoun (February) in the house of one Deno Sing, who lost, one by one, 10 head of cattle. From Deno Sing's house the disease travelled to the house of Pitumber Roy, a neighbour, and scattered all over the village. The symptoms are,—shivering; looking dull and heavy; ears drooping; water running down from ears, mouth, and nose; coat staring; purging mucus and offensive watery matter; off feed; a little thirst. The animal dies on the 4th, 5th, or 6th day, and sometimes on the 7th or 10th day. Have known of cases ending fatally on the 2nd day; 25 per cent. of the attacked have recovered; gave no medicine, but drenched with rice gruel. Consider this disease to be infectious, and would separate the sick from healthy, if means were available for so doing. Get their supply of cattle from the Beerbhoom District and the neighbouring villages. Do not frequent any fairs or *hants* for cattle. *Pikars* come to the village occasionally and sell cattle, as also purchase a few. The village does not stand close to any high road. In Magh last *bussunto* appeared in the village of Bhaghee, 4 miles to the west of the place. The people at the time of the disease went to cut wood through

this village, and it was in this way that their cattle got the disease. The people hope to buy fresh cattle, and thereby cultivate their lands. Have sheep and goats in the village. They lost 5 sheep from the *gootee*. No goats have been attacked. Some 5 or 7 years ago there was *gootee* in the village, but it was of a milder type than the present one. Do not recollect of any other previous attack. *Puschima*, in which there is a swelling of throat and hoven, appears in the village occasionally, but it is not infectious, and kills 1 or 2 cattle here and there. The disease *aishoo* was very common in the village, but it has never proved to be fatal. The symptoms are first sore mouth, and then sore feet. The cattle of this village graze during the day in the fields, and are housed and stall-fed during the night; the ordinary food allowed to cattle is rice straw, grass, oil-cake, *choosee* and rice-dust. Carcasses of cattle are thrown into *bhagars* and the *moochees* skin them. Are not aware of any cases of cattle poisoning. During the recent outbreak the *moochees* themselves lost several head of cattle. The cattle that could be had for Rs. 10 ten years ago sell now for Rs. 14 or 15. The number of cattle is being reduced owing to the destruction of cattle during plagues and by butchers. There are no Brahmince bulls in the village, but people keep bulls for serving cows. The Mahomedans castrate cattle at the age of 2½ years. There are pigs in the village, but the deponents do not know whether they get *gootee* or not. The cause assigned for the increase in price of cattle is the fact that they have become more scarce than before.

During the day the cattle are watered in the tanks. Paddy is the main crop in the village.

Village Racona, 3 miles east of Bood-Bood, bordering on the Grand Trunk Road, visited 21st April 1870, 7-50 A. M.

A bull 8 or 9 years old; ill six days; condition poor; discharge from nose and mouth; excoriations on upper and lower gum, under lip, buccal papillæ, and aphthous deposits; off feed; thirst; offensive breath; dung hard and mucous; viscid discharge from urethra; no eruptions; pulse weak, 60; hair standing on end; animal weak.

In another house a bull, age 8 or 9; six days ill; excoriations all over the gums; mouth very cold; tongue very much furred; discharge from the eyes, nose, and mouth; condition rather good; difficulty in breathing; nasal membrane tumid, excoriated, and covered with very viscid discharge; eruptions on dewlap and other parts of the body; purging.

In another house a cow, 5 or 6 days ill; 6 teeth; condition rather poor; fever; mucous membrane of mouth generally, and especially at base of papillæ and vagina much congested; no eruption on the body; feeds little; no purging; pulse 72; coat staring.

Another bullock belonging to the same man; 6 teeth; condition good; ill three days; feeding; eruptions all over the body; discharge from eyes, nose, and mouth; gums congested; hair coming off; buccal membrane congested; no purging; bowels rather constipated; faeces mixed with slime; pulse 68, small.

A bullock belonging to another man; 4 teeth; ten or twelve days ill; offensive breath; picking; urine thick, highly colored; discharge from nose and mouth, but not from eyes; coat staring; buccal membrane congested; tongue very much furred; viscid discharge from urethra; still purging; faeces covered with mucus; rectum congested; one or two slight eruptions.

Evidence of villagers.

NOBIN CHUNDER ODHICARY, RAM LALL SHIE, DHONE KRISTO MONDOL, TARINEY ODDICARY, and HARADHONE ODHICARY, of Racona, say,—that this village holds 150 families owning nearly 300 head of cattle, of which a ten annas portion consists of bullocks and the remaining 6 annas cows; there are only a few goats, but no sheep and buffaloes. Out of the number given the people have lost about 175 head of cattle from *bussunto*, which broke out in the months of Mang, Falgoun, and Cheyt (January, February, and March). The disease is on the decline, but there are a few cases; the disease first made its appearance in the house of the deponent Tariny Odhicary, who lost seven head of cattle. It then attacked the house of one Brojo Corpor, a neighbour, who lost three head of cattle. It then spread over the village indiscriminately. Four head of cattle of Tariney's recovered. The symptoms of sickness are—off feed, fever, forced respiration, running from eyes, nose, and mouth; in some cases eruptions on the body, purging blood and mucus; hair standing on end, and death in three to ten days. This village got the disease from the village Konderpoor, on the north side, distant half a mile. The cattle of both these villages grazed in the same pasture. Peary Shome, a fellow-villager, actually saw a *moochee* sprinkling (*yoghasee*) faecal matter taken from the bowels of dead cattle on the grass in the path through which the village cattle pass out.

In Magh (January) before last a *moochee* was seized in the act of cattle poisoning, and sentenced by the Sub-divisional Officer; the name of the *moochee* is not known. Carcasses are thrown into the *bhagar*, where the *moochees* skin them. Buuka, Holidhur, and

Boon-Boon.
Sheep and goats.
Sheep died of *gootee*.
Rinderpest in 1865.
No previous attack.
Puschima.
Foot and mouth disease.
Symptoms.
Feeding.
Disposal of carcasses.
Cattle poisoning.
Price of cattle.
Reduction of number of cattle.
Bulls.
Castration.
Pigs.
Cause of increase of price.
Watering.

Visit to village Racona.

Case.

Case.

Case.

Case.

Case.

Evidence of villagers.
Village stock.

Loss from rinderpest.
Rinderpest in January—March 1870.
Origin of disease.
Progress.

Origin of rinderpest.

Infected matter sprinkled by a *moochee* on the pasture.

Cattle poisoning.

Disposal of carcasses.

Bood-Bood.
Hides.
Effect on cultivation.

Interest charged by
mahajuns.
Infectiousness.
Segregation.
Rinderpest in 1860.

No previous attack.

Supply of cattle.
Pikars (cattle deal-
ers).
Price of cattle in-
creased.
Cause assigned.
Supply of slaughter
cattle.

Manure.

Puschima.

Symptoms.

Foot and mouth
disease.

Symptoms.

Contagious.

Second attack of foot
and mouth.

Second attack of
rinderpest.

Cattle poisoning.
Convictions for cattle
poisoning.

Goats liable to rinder-
pest.

Symptoms of poison-
ing.

Spread of rinderpest.

Want of pasture land.

Breeding tract.

Rinderpest in Gor.

Village stock.

Loss from rinderpest.

Which still prevails.

Origin of disease.

Individual losses.

Treatment.

Manuring.

Effect on cultivation.

Interest on borrowed
money.

Gopal, *moochees* of Jharooba, take the skins; they carry the skins on carts to Calcutta, or sell them here to *Pikars*. They consider that the loss of cattle will interfere with the cultivation this year, and it is feared that a two-anna portion of cultivable area will remain fallow; many will hire ploughs and some will let in *bhag jumma*; a few will borrow money of *mahajuns* and buy cattle. The interest generally charged is 1 pice and 1½ pice and occasionally 2 pice to the rupee monthly. Cannot say how Kandeepore got the disease. Consider *gootee* to be very infectious. We know that separation of sick from healthy cattle may check the murrain, but have at present no means of separating. Ten or 12 years ago there was *gootee* in the village, but that was of a milder type than this. Since then there was no *gootee*. Do not recollect of any previous outbreak. Get our cattle from Beerbhoom and Cutwa and from neighbouring villages. People go there for cattle, and sometimes *Pikars* bring cattle for sale; this is the season for the appearance of the *Pikars*; they do not purchase or take away any cattle from the village. The value of cattle has trebled from what was ten years ago. The cause of this is that the number is being daily reduced by death and knives. They frequently see large herds of cattle being taken to Calcutta by the butchers. The butchers get the majority of their supply from Laulunge, Sub-division Raneeunge, Pergunnah Shergur, District Burdwan, and from Kristonugger in Beerbhoom. They also take cattle away from the villages about here. Cowdung is used for fuel and for manure; this is a Hindoo village containing Brahmins, Woogra Khettries, Telees, Bagdees, and Barbers; all castes are agriculturists. There is now and then *puschima nara* in this village; the deaths from this disease amount to one or two. *Puschima* appears in Maug and Pous (January and December), but may appear at other seasons; it is not contagious; the symptoms are, throat swollen, sometimes feet swollen; off feed; purging, and death in 2 or 3 days; 5 or 7 years ago there was *puschima* here. *Aishoo* appears in the village oftener, but no casualties occur; the mouth and feet of the cattle get sore, and then they recover. It is contagious; it is called *Bodal Khor*. *Puschima* cases are always fatal, and *aishoo* may attack one and the same animals twice and thrice. *Gootee* does not attack a bullock a second time. Have heard that *moochees* occasionally poison cattle, but never saw it. Do not know what poison is given. Have heard that some white stuff is wrapped up in plantain leaves and given to the cattle. Nobin moochee, of Poorgi, and Ramdhone moochee, of Shimnoree, were found guilty of poisoning cattle and convicted. The people consider the present disease to be *bussunto*, and not poisoning. No pigs in this village. Have seen 2 goats die of *bussunto*.

The symptoms of poisoning are,—purging blood, swelling of throat, and salivation from mouth. The poisoned cattle die within a few hours, and sometimes in 2 or 3 days. *Simool khar* (arsenic) is given. It is a white stuff. The disease has spread over the entire village, whether by the roadside or in the interior. No cattle of this village are sent to any distant place for pasture. There are no milkmen here. During the rains the cattle cannot graze in the field. The people have increased their cultivation, and the pasture lands have consequently diminished. Sold cattle in the year of famine. The breeding district is Beerbhoom, across the Moore river.

Evidence of NOBYE BHUTTACHARJEE.

NOBYE BHUTTACHARJEE, of Gor, 55 years old.—The village of Gor is 3 miles distant, north-east of Bood-Bood. There are about 7 or 800 houses in my village. I cannot tell the exact or even approximate number of the cattle, and I cannot say how many head of cattle died in the village. I own one cow, and that has been taken ill three days. The cow has got *bussunto*.

Evidence of villagers of Pootna.

JODU NATH ROY and SHAM CHURN ROY, of Pootna, 6 miles south of Bood-Bood.—Ours is a Hindoo village containing Brahmins, Kaists, Ogrokhetttries, Goalah, and Bagdee; there are no Mussulmans in our village. Our village is purely agricultural. We have 100 families owning somewhere about 400 cattle, of which 50 are cows and the rest bullocks. Half the number has died of *gootee*, which broke out in our village in Cheyt (March). The disease is still very bad; it first broke out in the house of one Ram Kristo Goalah. I do not know how the disease came there, but I am aware of the fact that the cattle of our village graze in the common pasture along with many others belonging to neighbours, and that at the time there was disease in the village Shore, half a mile distant from our place. The particular animal that was first attacked was turned out to graze with the rest; this man has lost the whole of his cattle, 8 in number. One of the deponents has 3 bullocks, of which 2 have recovered and 1 is still ill. The other deponent has 1 bullock, which is free from disease. Rice gruel and rice-dust mixed with water are given to the sick cattle. I did not allow it to drink water. The quantity I gave is 2½ seers to each animal. We have not yet commenced to plough; we are just manuring the fields. All the land will be tilled somehow or other. Those who have lost cattle will have to borrow money from *mahajuns* at the interest of 2 per cent. per mensem, buy fresh cattle, and till the land.

In the year 1269 there was an outbreak, killed about 400 cattle, seven years ago, and I myself lost 9 during that outbreak. On that occasion no land remained untilled. I had to borrow money to buy fresh cattle, and repaid the money in three years; but then I had to part with some of my landed property. I consider the disease to be contagious, but I have known instances of 1 animal being attacked amongst 7 or 10 which escaped; but we have no place where to remove the cattle, but if the place be provided we shall be very glad to do so. He has heard from his father that there had been occasionally one or two cases of poisoning, but the symptoms of poisoning are quite different from those of *gootee*, and I am able to distinguish the poisoning cases from the *gootee* cases.

Evidence of LALLBEHARY ROY, of Satmudy.

LALLBEHARY ROY, of Satmudy, 18 miles north-east of Bood-Bood, lying within this sub-division.—Our village is inhabited by Hindoos, composed of Agvoores, Benyas, Brahmins, and Bagdees, as also Kaists and Bostaubs. There are no Mussulmans. The village people are mostly agriculturists and laborers. No carts in the village; our village is inhabited by about 1,000 families, and had 2,000 cattle before the disease broke out, of which nearly 1,700 have died. The disease commenced in Falgoun last (March), and declined 8 or 10 days ago. I have 2 or 3 cases now in the village. Our village got the disease from a village called Shomra, nearly a mile distant; our cattle and cattle of Shomra village have been grazing in the same fields. Some houses only have escaped. The reason is, that they have not sent their cattle to graze, but have kept them tied in their houses, only taking them out once or twice a day to a neighbouring tank for water. Some of the other cattle of the village are also watered there. The people have commenced purchasing fresh cattle from Pulitpore and other villages, and they hope to cultivate their land with this fresh cattle. Have not in my life ever seen another attack of *bussunto*. I have lost 9 head of cattle, and of the 4 remaining 3 had the attack, but recovered. They are paying from Rs. 12 to 16 for a bullock that cost before the murrain Rs. 10 only. All the people in the village are very much distressed on account of the loss of their cattle. Deponent came to Bood-Bood to register a bond in favor of his *mahajun* for capital borrowed for the purchase of cattle. He appeared greatly affected on the subject of the disease. The village has small-pox among men since March last, 1 having died; 4 are still ill.

Evidence of villagers of Amoor.

ENYETOLLA and DERASTOLLA, of Amoor, 2 miles west of Bood-Bood, inhabited by Hindoos and Mussulmans, principally by the latter.—We are principally agriculturists, but employ our cattle in carrying oats and *kunker*; the former from Raneeunge to Burdwan, and the latter from different other places. Our village is inhabited by 500 families. We have got about 600 or 700 head of cattle, of which 40 or 50 have died. The disease commenced in the month of January last. The disease at first broke out in the village of Myenpoor, 1 mile north of our village. It then came to the village of Shimore, half a mile north of our village, and from that village it came to our village by the cattle mixing with each other. I am aware of a house which entirely escaped, but can't say why. There will be no difficulty in cultivating the land. We never sell cattle; we buy cattle from neighbouring villages.

Evidence of BANYRAM, of Nusropore, dated 21st April 1870.

BANYRAM ROY, of Nusropore, 12 miles south of Bood-Bood. The disease appeared in this month; can't say how the disease came, though cattle graze with the cattle of Danorya village, and consider the disease to have come from there. Have not the means of separating the sick from the healthy, though we do separate in the same sheds. My village is 5 miles distant from the Grand Trunk Road.

Evidence of VELAYET HOSSEIN, of Khena, dated 21st April 1871.

VELAYET HOSSEIN, of Khena, 10 miles east of Bood-Bood, on the Grand Trunk Road, inhabited by Hindoos and Mahomedans, particularly the latter.—The people are generally agriculturists; some are buyers and cartmen who carry their crop to Burdwan. Upwards of 40 cattle have died. We have 1,500 head of cattle. The disease is still raging, and the cattle are daily dying in twos and threes. The sick are not separated from the healthy; take no measures to stop the disease. I understand that separation is good, but we generally do not separate. The disease came from the village of Joykristopoor. The cattle of both the villages graze together; 1,200 head of cattle have died in Joykristopoor. Cultivation has not yet been fairly commenced from want of cattle. The people are afraid of this disease. In Ashar (June) last there was *gootee* in the village, but only 88 cattle were lost. It stopped at the commencement of the rains. Eight or 9 years ago they had the disease. The village stands near the junction station. There are no milkmen in the village.

Bood-Bood.

Rinderpest in 1863.

Contagiousness.

Segregation.

Cattle poisoning.

Symptoms different.

Hindoo and agricul-
tural village.

Loss from rinderpest.

Rinderpest in March
1870.

Origin of disease.

Escape of some
houses.

Reason.

Effect on cultivation.
History.

Increase of price.

Fresh purchases ne-
cessary.

Variola prevailing in
Satmudy.

Agriculturists and
carriers.

Village stock.

Loss.

Origin of rinderpest.

Progress.

Effect on cultivation.

Origin of rinderpest.

Segregation.

Agricultural village.

Cartmen.

Village stock.

Rinderpest prevail-
ing.

Segregation.

Origin of disease.

Loss from rinderpest.

Rinderpest in June
1869.

In 1862.

BOOD-BOOD.

Evidence of BAMA CHURN DUTTA, of Anurpore.

Village stock.
Loss from rinderpest.
Origin of disease.
Hides.

BAMA CHURN DUTTA, of Anurpore, 5 miles to the south of Bood-Bood.—The village is inhabited by 50 families; they have about 150 head of cattle; 40 have died. The disease is still prevalent, but on the decline. Commenced 15 days ago. The disease first broke out at Neemdang and thence came to my village; Neemdang almost adjoins my village. There are 2 moochees in my village who make shoes and obtain their supply of skins from the villages of Bhegar and Bankora. They also take hides to sell to Calcutta.

Evidence of JADUBEENDOO MOZOOMDAR, of Dooarmeree.

Village stock.
Loss from rinderpest.
Origin of disease.
Segregation.
History.
Effects on cultivation.

JADUBEENDOO MOZOOMDAR, 30 years old, and a Mooktear of the Bood-Bood Deputy Magistrate's Court, says,—that I live in the village of Dooarmeree, 4 miles to the south of Bood-Bood. Ours is a Hindoo village containing 30 families, who own 400 head of cattle. We have Kaists, Brahmins, and Sutgopes, but no Goalahs. Of this number we lost 40 in the village. The disease is still raging, and about 12 are still ill. The disease appeared at the latter end of Cheyt (April). I have lost 1 cow; 4 are still ill, and 5 have recovered. I cannot tell how the disease originated in the village, but I think that it came by our cattle mixing with the animals of the infected hamlets in the fields. The cattle of Noapoor, Omorpoor, Gowa, and those of our village graze together. Noapoor had the disease first. Noapoor adjoins our village, and it is 4 miles from the Grand Trunk Road. Whoever has 2 cattle-sheds separates the sick from healthy, but not those who have not 2 rooms. *Bussunto* appeared in the village thrice during the deponent's lifetime. Eight or 9 years ago there was *gootee*, but in that outbreak only 2 or 4 died. There was another outbreak some 15 or 16 years ago. Then, too, the deaths were comparatively few. Does not fear that the cultivation will be interfered with owing to the loss of cattle, but if the disease kills many more animals, cultivation may suffer to a certain extent.

Evidence of KHETOO MOOCHEE.

Hides.
Number of hides.

KHETOO MOOCHEE, 60 years old, an inhabitant of Bood-Bood.—I was born in this village and have lived here. I am an agriculturist, holding 5 beegahs of land, and I skin all the carcasses of cattle in the village of Bood-Bood. Lately I have been skinning the dead cattle at Bhegshini. I make shoes and *petaraks*, but I never sell hides to *Pikars*. I have to give shoes gratis to the village mondols, gomastahs, and chowkedar often. Since Pous (December) last I have been getting 20 hides monthly from Bood-Bood; I have 20 hides in store at home. I also prepare leather for yoking the cattle to the ploughs. There being a great demand for shoes and *petaraks*, I have not been able to sell any hides to the *Pikars*. I use salt, lime, and *amrah* fruits in curing the hides.

Visit to Oolooberiah Fair, 6th March 1870.

Rinderpest in Calcutta.

Foot and mouth disease at Oolooberiah, &c.
Oolooberiah.

Market.

Stock whence brought.

To whom sold.

Cattle inspected.

In crossing the river Hooghly the ferryman informed the Commission that the Oolooberiah haut is not so thickly attended at present as it used to be, because the people of Calcutta will not buy cattle, as there is *gootee* (rinderpest) at Halseebagan, Kistobagan, Manicktolla, Simla, and Badoorbagan. He also informed that there was disease in the house of Bheem Maul of Kistobagan, Bonomally Dey, nephew of this man; also that there was *aishoo* (foot and mouth disease) at Oolooberiah, also at Rajeebpoor, Poojoollee, Acheepoor, Myapoor and Choramadur.

Oolooberiah is a village and police station of the district of Howrah, situated on the right bank of the Hooghly river, about 20 miles from Calcutta. Through it runs the high road to Midnapoor, Balasore, Cuttack, &c., and the entrance of the Balasore canal adjoins the village. A cattle, goat, and poultry market takes place here every Saturday, commencing at 7 and lasting all day. Cattle are brought here from the west and south, viz., the districts of Midnapoor, Maunbhoom, Balasore, and Cuttack, and sold chiefly to the Calcutta goalahs and butchers. Small purchases of plough bullocks are also made by the ryots of the surrounding districts.

On arriving at Oolooberiah the Commission called at the Police Office, and requested the Head Constable to render all the assistance in his power, which he willingly did.

The Commission then proceeded to the fair, and made a general inspection of all the cattle exposed for sale. There were about 400 head of cattle; about 70 per cent. were cows, both milch and barren, and 30 per cent. were bullocks. The cattle were generally of an excellent class, and in very fair condition. No animal could be called fat; many were very lean, and some extremely emaciated, but the barren cows brought for the Calcutta meat market were the best conditioned.

Cases of foot and mouth disease.

A careful inspection of each animal was made with the view of ascertaining whether any one was or had been the subject of disease. Only two diseased animals were found. These were cases of foot and mouth disease, both belonging to the same man, who had bought them about a fortnight ago at Bhudruck, in the district of Balasore (distant 90

miles from Oolooberiah), and exposed them for sale on this and the previous market day. In one case, said to be a fortnight ill, the hoof only was affected, a purulent discharge issuing from the cleft of both forefeet, and on the dorsum of the tongue a small patch—an old blister mark—was observed.

The other case, alleged 8 days ill, had no affection of the hoof, but the tongue was very sore, and on handling it, one or two circular patches of cuticle came off, leaving a red raw surface. On the gum there was an excoriation, which on being cleaned was found to be slightly ulcerated; this was on the right side of the frenum, size 1 inch by $\frac{1}{2}$ inch, and the rest of the gum was quite healthy-looking. Mr. Hallen considered that from the appearance of this patch, it might be supposed to be more than simple foot and mouth disease, and even symptomatic of *gootee*, but on careful inquiry and close inspection no symptom of purging could be traced. The animal was in great pain, respiration accelerated, and there was a profuse discharge of viscid saliva from the mouth. The buccal membrane at the angles of the mouth was also much excoriated; there was also profuse sticky discharge from the nostrils.*

A small bullock was seen with a single hoof on both forefeet. The natives stated that they had seen similar cases.

Evidence of AKBAR MULLAH.

Akbar Mullah, Sirdar of the market, states:—I have been izaradar of the market for the last 14 years. The market takes place on every Saturday from morning to evening; it is a cattle, goat, sheep, and poultry market. Generally some 500 head of cattle, 40 to 50 goats, and 40 or 50 sheep change hands every market. These animals are brought from Orissa, Jehanabad, and Tumlook and the neighbouring places. The greater number of cattle comes from Midnapoor and Orissa, and Mundlegat Pergunnah. The sheep, goats, and poultry come from the neighbourhood. Of the cattle, bullocks constitute the greater portion; about 10 annas are male and 6 annas female; the male animals are 62 per cent., and 38 per cent. are brought for ploughing, for carts, oilmen, pack, &c., partly for slaughtering. The cows go to the butcher (barren cows) and dairies (milch cows); about half are bought for each purpose. These cattle go to Calcutta, principally to Diamond Harbour, to Howrah, to the new Sunderbund clearances, and other places. The price of cattle at present is as follows:—

Milch cows are sold for from Rs. 10 to Rs. 25, or Rs. 40—even Rs. 80, according to milk; barren cows, Rs. 3, Rs. 8, Rs. 10, Rs. 15; bullocks for Rs. 20 to Rs. 30, or Rs. 35. Formerly the price of cattle was much less; a cow that would 10 years ago cost Rs. ten now costs Rs. 15. All classes of cattle have similarly risen in price. During the Orissa famine the cattle were very cheap: the people parted with their cattle for money on very easy terms. The reason of the rise in price is, that cultivation has increased and the prices of necessities have increased, especially of grains. The price of sheep and goats has likewise increased. Cattle coming to the market are grazed during the day and tied up in stalls and fed during the night. The villagers adopt the same system.

They get oil-cake, rice straw, and green grass; sometimes green grass is specially given to milch cows. The feeding of cattle costs more now than formerly; the pasture land is getting less in consequence of the cultivation increasing. No indigo cultivation has taken place for the last 40 years. The cattle are employed from March or April to August or September continuously; after that they have rest, except for winter crops, which are comparatively limited. Late paddy (*amun*) is the chief crop cultivated. The yield of the land is not so great as formerly, for want of inundation and irrigation, and therefore more land has had to be appropriated. The cows are mainly served by Brahmini bulls, some of which are let to wander about loose and others kept tied up by Hindoos—Brahmins; bulls are taken away sometimes to Calcutta. The cultivators keep more bullocks than cows; the goalahs more cows than bullocks. Not more than 2 or 3 in 20 cows are lost in ordinary years. At present foot and mouth disease is the only disease prevailing here. I have only seen *gootee* once in my lifetime in my village (in Bamtalla, close to Oolooberiah). Diseased cattle are very seldom brought to the market. I get 1½ pice for each cow brought to market when sold. Never saw a case of *gootee* exposed for sale in the market. I have seen foot and mouth disease frequently. I saw *gootee* last in my village about 20 years ago, and since then it has not prevailed in the fair; nine head of cattle belonging to me were attacked; 1 died and 8 recovered.

Last year I did not notice that Diamond Harbour people bought more cattle than usually. Have seen *puschima*, which is a rare disease, and only attacks one or a few cattle. *Aishoo* goes over the whole flock, as does *bussunto*. Hides are removed by moochees; there

* Cases of this sort have been noticed in England during the recent outbreak of foot and mouth disease.

OOLOOBERIAH.

Rinderpest.

Evidence of Akbar Mullah.
Number of stock exposed for sale.
Whence brought.

Destination.

Present price.

Ten years ago.

Reason of advance.

Treatment of cattle.

Food.

Pasture.

Uses of cattle.

Soil and crops.

Bulls.

Ordinary mortality.

History.

Puschima.

Hides.

OOLOOBRIAR.

is no *bhagaria jumma* here; there are about 4 deaths of cattle every month in my village, in which there are some 450 head; the hides are made into shoes or sent to the *karkhana* (agency houses) in Calcutta.

Cattle where purchased.

TEN PIKARS (CATTLE DEALERS) examined.—They go to Orissa, Mundleghaut, Midnapoor, and Tumlook; they purchase cattle from ryots; they bring sometimes 8, 10 or 16 head, and always sell here, and here only; they have sometimes to refuse to purchase sick cattle, but they have not heard of the existence of *gootee* this year. They never purchase sick cattle knowingly; they have never known of sick cattle being brought for sale by any inhabitants. The inhabitants of Tumlook, Mankoor, Mundleghaut, and Midnapoor breed cattle for the purpose of sale; all these men assert that they have never seen a case of *bussunto*, but have heard of its prevailing in Calcutta. They have frequently seen *puschima*. In this disease the stomach and throat swell, discharges occur from the eyes, nose, and mouth, and diarrhoea appears in some cases; cattle die in one or three days. This disease only attacks a few cattle at a time, and is not infectious.*

From J. R. HALLETT, Esq., Joint Magistrate, in charge Midnapore,—(No. 214, dated 28th July 1870.)

In accordance with the instructions contained in the Government Order No. 2777 of the 11th of December last, I have the honor to report for your information that small-pox is causing great loss amongst cattle in several places within the jurisdiction of the Police Station of Nundeeagram in the Sub-division of Tumlook.

2. The accompanying tabular statement contains as much information as could be obtained on the several points mentioned in the Government letter above quoted; the disease appears to be on the increase, and unless some steps are taken to prevent it, it will undoubtedly cause great harm.

[REMARKS.—The tabular statement appended to this letter shows that the disease (small-pox) prevailed in one village of Pergunnah Jullamotta and 14 villages of Pergunnah Berhampore. It broke out in June, and of 694 animals attacked, 347, or 50 per cent., had died, 210, or 30·2 per cent., recovered, and 137 were still ill. The disease was considered to be infectious, and supposed to originate from a deficient rainfall, and consequent heat of the weather. The symptoms assigned to it are those usually given: pustules are described on different parts of the body, and swelling of the throat put down as one symptom. The average duration is said to be five days, and "no preventive or remedial measures are known to the owners of cattle."]†

From J. P. GRANT, Esq., Magistrate of Bancoorah,—No. 18, dated 6th January, 1870.

In reply to your call, dated the 6th ultimo, received through the Commissioner of Burdwan, I have the honor to inform you that the cattle disease has existed in a mild form in this district during the last 3 years, the period during which I have been connected with it.

Until lately it has not been prevalent to such a degree as to call for any particular remark, but within the last two months it has been severely felt at a village called Jamjooree, about 8 miles south-east of this station.

I have obtained a report on the subject from the medical officer who visited the place with the object of examining the matter. I send you a copy of the report;† it is not exactly in the form prescribed by you, but it is sufficiently interesting and instructive in its present form.

† No. 1, dated 2nd Jany. 1870.

The disease prevails in a much lesser degree in other portions of the district, especially in that portion bordering on Manbhoom, but, so far as I can learn, it has not, except at Jamjooree, been exceptionally fatal.

I have, however, ordered the Police to be particular in obtaining and reporting information on this head; and as often as I hear from them of circumstances to which your letter applies, I will inform you of them.

From V. RICHARDS, Esq., Civil Medical Officer of Bancoorah, to the Magistrate of Bancoorah,—No. 1, dated 2nd January 1870.

I have the honor to report that I visited the village of Jamjooree, where cattle disease was reported to be prevalent.

I find that during the past two months 200 cattle have perished from the disease in the above village alone.

The symptoms appear to be the following:—

Refusal of food; inflammation and ulceration of the tongue and mouth; sometimes crackling of the feet.

* These men appear not to have given truthful evidence.

BANCOORAH.

Running from the eyes and nose (coryza); either diarrhoea, or, as is most frequently the case, dysentery.

I found an eruption only on about 2 or 3 cattle out of 40 or 50 sick, and in all of these the pustules had taken on the process of ulceration and contained maggots.

Ulcers were mostly situated about the umbilicus; one of the eyes was frequently attacked, ending in its total disorganization.

There appears to be a practice amongst the Bowries, which should at once be forbidden, though I have not as yet noticed any serious result from it, that is, the use of deceased cattle as food. Whenever an animal dies, the skin is taken by a chamar and the carcass is handed over to the Bowries for food.

Cholera and fever have broken out at Bissenpore, where cattle disease is also prevalent. Such a practice is likely to be attended with serious results. I would therefore suggest that all animals dying from the disease should either undergo cremation or inhumation, or that, at any rate, the use of the carcasses as an article of food should be forbidden.

People in a village, to save their cattle when one of their stock is attacked, transfer the apparently healthy ones to some other village; the consequence is, the dissemination of the disease through the district, as these cattle, in which there is no appearance of disease, are often really undergoing the stage of incubation.

Could not something be done to prevent this?

All cattle should be prevented from leaving a village that is attacked by the disease. I am aware of the difficulty that would attend such a measure with the larger towns, such as Bissenpore, but I think a small village like Jamjooree might easily be subjected to such a regimen for a short time. Isolation alone can prevent the spread of the disease.

Abstract of Returns from Bancoorah received on 1st August 1870.

Thannah. Name and position.	Number of villages.	Name of disease.	Date of outbreak.	No. of cattle in villages.	No. attacked.	No. died.	No. re- covered.	No. still ill.
Oudah ...	33	Bussunto ...	End of Dec. 1869	1,500	669	306	125	238
Bishenpore ...	4	Do. and puschi- ma.	December 1869	3,500	3,000	2,500	500	
Gowrungdihi ...	2	Khoorah ...	Ditto ...	400	50	3	47	
Rugonauthpore ...	37	Pilloe, Bosonto Golakantaki, Pochamingla.	Ditto ...	14,491	9,047	7,096	1,951	
Chatna ...	...	.....	Nil					
Kaksa ...	8	Bussunto ...	April 1870 ...	1,871	623	561	62	
Nemapore ...	...	.....	Nil					
Bancoorah ...	...	.....	Nil					
Gungajulgati ..	4	Bussunto ...	December 1869...	1,014	135	50	85	
Raneegunge ...	28	Do., Pachao, Kur- riah Doongra, Pilloe.	January 1870 ...	7,868	550	438	112	
Kotulpore ...	3	Small-pox ...	December 1869...	508	68	39	29	
Sonamookie ...	8	Bussunto ...	Jan. and Feb. 1869	1,016	67	52	15	
TOTAL ...	117	.....	.....	32,168	14,209	11,045	2,926	238

[REMARKS.—The disease most common and fatal is *bussunto*. The symptoms assigned to it are those usually given, eruptions and swelling of the throat occurring in some cases.

The spread of the disease is attributed in one case to the cattle of pilgrims conveying the disease, in another to those of travelling merchants, and in the rest to climate. Segregation seems to be adopted spontaneously by the villagers in some cases, but it happens that they carry with them cattle ill in the first stage, which subsequently sicken and spread the disease. The treatment seems to consist mainly of the administration of *congee*, rice gruel. Taking the sum total of all the figures given, it seems that during the last month of 1869 and first six months of 1870, in a stock of 32,168, 14,209, or 44 per cent., were attacked, and 1,045, or 34·3 per cent., died. The deaths per cent. of attacked were 77. Taking *bussunto* alone, out of a stock of 5,909, 1,562, or 26 per cent., were attacked, and 1,008, or 17 per cent., died. The deaths per cent. of attacked were 64. The mortality of *khoorah* was very small; in the instance where that affection alone is assigned, only 6 per cent. of attacked and 7 of stock. It is difficult from the meagre description given to identify the other diseases mentioned.]

BEERBHOOM. From D. J. McNEILE, Esq., Magistrate of Beerbhoom, to the President of the Cattle Disease Commission,—No. 123 T, dated 18th January, 1870.

With reference to your letter No. 100 of the 16th ultimo, to the address of the Secretary to the Government of Bengal, I have the honor to report for your information that I have instituted enquiries throughout this district to ascertain the existence in any part of it of cattle disease.

2. The reports I have received show that in the south-eastern part of the district a few cases have occurred of two kinds of disease, one that which is so well known by the name of *bussunto*, and the other a foot disease called in this district *khoorah*. Neither of these, however, has assumed a form which can be called epizootic. They have appeared in one or two isolated places, and have not spread, and the mortality of such places has been very small.

3. Under these circumstances, I have issued orders that weekly reports shall be submitted from the part of the district to which I have referred, and, should any necessity arise, will communicate again with you on the subject. Four-fifths of the district are entirely clear of disease, and the part in which it has shown itself is the highest and driest tract in it.

CHOTA NAGPORE DIVISION,

COMPRISING THE DISTRICTS OF HAZAREEBAGH, LOHARDUGGA, MAUNBHOOM, AND SINGBHOOM.

Index of Records.

[N. B.—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch	...	...	Page 195.
Lohardugga.	Assistant Surgeon W. Dunbar, Dorunda.	13	20th March 1836...	Describes the <i>matah</i> prevalent in the district, p. 196.
	Col. E. T. Dalton, C. S. I., Commissioner, Chota Nagpore.	96	14th March 1867 ...	<i>Selections, Bengal Government, p. 139. Forwards a report from the Deputy Commissioner in extenso.</i>
	H. L. Oliphant, Esq., Deputy Commissioner of Lohardugga.	669	19th October 1866...	<i>Selections, Bengal Government, p. 139. Describes bussunto, khoorah, &c., and states that they are very prevalent in the district.</i>
	R. L. Forbes, Esq., Assistant Commissioner, Palamow.	111	17th September 1866	<i>Selections, Bengal Government, p. 149. Describes sitlah, khoorah, &c., and states that they have been very prevalent in 1864 and 1865.</i>
	Col. E. T. Dalton, C. S. I., Commissioner of Chota Nagpore.	1960	7th July 1869 ...	Forwards a letter from the Extra Assistant Commissioner of Palamow, p. 196.
	R. L. Forbes, Esq., Extra Assistant Commissioner of Palamow.	104	14th June ,, ...	Reports extensive prevalence of <i>matah</i> among cattle, and great mortality, p. 197.
	Col. E. T. Dalton, C. S. I., Commissioner of Chota Nagpore.	2048	10th July ,, ...	Forwards letter from Extra Assistant Commissioner of Palamow, p. 197.
	R. L. Forbes, Esq., Extra Assistant Commissioner of Palamow.	164	8th ,, ,, ...	States that cattle disease prevails in Palamow throughout the year, p. 198.
	H. L. Oliphant, Esq., Deputy Commissioner, Lohardugga.	199	1st February 1870...	<i>Reports that no cattle disease prevails in the district.</i>
	Col. E. T. Dalton, C. S. I., Commissioner of Chota Nagpore.	453	17th March 1864 ...	<i>Selections, Bengal Government, p. 46. Reports that cattle disease is well-known in all the districts of his Division, and yearly sweeps off large numbers of cattle.</i>
Maunbhoom.	Lieut. R. Money, Deputy Commissioner of Maunbhoom.	172	11th February 1864	<i>Selections, Bengal Government, p. 46. Gives a statement of mortality in 1861, 1862, and 1863, and describes the disease bussunto.</i>
	Col. E. T. Dalton, C. S. I., Commissioner, Chota Nagpore.	96	14th January 1867	<i>Selections, Bengal Government, p. 139. Forwards detailed reports from all the districts of the Division.</i>
	Lieut. R. Money, Deputy Commissioner of Maunbhoom.	915	22nd December 1866	<i>Selections, Bengal Government, p. 144. Gives a short history of cattle disease in 1864, 1865, and 1866.</i>
	Lieut. C. H. Garbett, in charge of the Deputy Commissioner's Office.	39	8th January 1870	<i>Reports prevalence of khoorah in several places and of bussunto in the town of Purulia and at Ambicanuggur and Simlapal.</i>

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Maunbhoom,—contd.	A. L. Clay, Esq., Deputy Commissioner of Maunbhoom.	49	9th January 1870	Report that cattle disease, <i>bussunto</i> , is always flying about the district, but has prevailed in the station of Purulia since December 1869. The civil medical officer describes the disease, p. 198.
	Baboo Woodoy Chund Dutt, Civil Medical Officer.	2	4th " " "	
	A. L. Clay, Esq., Deputy Commissioner of Maunbhoom.	67 C	9th February " "	A further report upon the same outbreak of disease: the district generally said to be free of disease, p. 199.
	Baboo Woodoy Chund Dutt	27	16th " " "	
	Col. E. T. Dalton, C. S. I., Commissioner of Chota Nagpore.	521	7th March 1870	Reports that, with the exception of Maunbhoom, the Division is free from disease.
	A. L. Clay, Esq., Deputy Commissioner of Maunbhoom.	656	3rd April " "	tates that no epizootic exists in the district, and gives particulars of a slight outbreak of disease in one village.
	Ditto ditto	1204	16th June " "	States that no cattle disease exists in his district.
	Col. E. T. Dalton, C. S. I., Commissioner, Chota Nagpore.	96	14th January 1867	Selections, Bengal Government, p. 439. Submits a report from the Deputy Commissioner in extenso.
	Capt. H. M. Boddam, Deputy Commissioner.	631	4th October 1866	Selections, Bengal Government, p. 143. Describes the diseases <i>matah</i> and <i>khoorah</i> .
	Ditto Ditto	60	20th January 1870	Describe the widespread prevalence of cattle disease in the district towards the close of 1869 and at the beginning of 1870.
Hazareebagh.	Samuel Delpratt, Esq., Civil Surgeon.	26	14th " " "	The Civil Surgeon gives a careful description of the symptoms, p. 200. Page 203.
	Capt. C. T. Hitchens, District Superintendent of Police.	21	13th " " "	
	Lieut. Col. H. M. Boddam, Deputy Commissioner of Hazareebagh.	63	24th January 1870	Report to the Commissioner the prevalence of disease in the district, (the same described in the preceding record).
	V. T. Robertson, Esq., District Superintendent of Police, Hazareebagh.	28	18th " " "	
	Lieut. Col. Boddam, Deputy Commissioner.	100	3rd February 1870	A statement in Form No. 1 of cattle disease prevailing in Mouzahs Echak and Ooreyah.
	Ditto Ditto	525	15th June 1870	States that cattle disease has died out.
	Col. E. T. Dalton, C. S. I., Commissioner of Chota Nagpore.	453	17th March 1864	Selections, Bengal Government, p. 46. States that cattle disease is well-known in the district.
Singbhoom.	Dr. W. H. Hayes, Deputy Commissioner.	201	26th October 1866	Selections, Bengal Government, p. 145. Describes the disease <i>bussunto</i> . States that it is very prevalent in the district.
	E. T. Sillingston, Esq., Deputy Commissioner of Singbhoom.	467	22nd December 1869	Reports that no cattle disease prevails in his district.
	Dr. W. H. Hayes, Deputy Commissioner.	866	24th January 1870	Describes an unusual "epizootic" in Mouzah Dheerol, p. 203.
	W. Ritchie, Esq., District Superintendent of Police.	...	17th May " "	Describes a disease called <i>hotomo</i> , or swelling of the throat, in several villages, p. 203.
	Ditto Ditto	...	14th June " "	Reports prevalence of <i>Rog</i> in a village, p. 204.
	Ditto Ditto	...	25th " " "	Reports the prevalence of <i>hotomotana</i> in several villages, p. 204.
	Ditto Ditto	...	27th July " "	Reports prevalence of <i>Rog</i> in Assoora, p. 204.

HISTORICAL SKETCH.

A very interesting account of *matah* among cattle in this Division was elicited by the Medical Board in 1836, by the circular printed at page 161. The account of it, written by Assistant Surgeon W. Dunbar, and printed in this appendix, shows that then, as now, an equally destructive murrain, apparently of the same nature, every two or three years ravaged the cattle of these districts.

Recent inquiry regarding the prevalence of cattle diseases was first started in 1864, and the result was that the Commissioner, Colonel E. T. Dalton, found that the disease *bussunto* was well known in all the districts of the Division, and "that every year large numbers of cattle are swept off by it." The most definite statement, however, is that given by Lieutenant R. C. Money, Deputy Commissioner of Maunbhoom. He states that *bussunto* is said always to have been in the district, and the deaths from it always to have been many; but for the last two or three years it is said to have raged more severely than

formerly. In 1858, the Commissariat cattle in the station of Hazareebagh are said to have suffered from *matah*, and been treated without success with tartarized antimony.

In the year 1861, 22,661 cows and 7,701 buffaloes are reported by Lieutenant Money to have died of *bussunto* in Maunbhoom. The mortality in the same district in 1862 is returned as 26,032 cows and 6,293 buffaloes. The deaths in the year 1863 amounted to 18,098 cows and 54,459 buffaloes. In the year 1864 many cattle are said to have died in this

district; and in the Palamow Sub-division of the Lohardugga District, where the disease called *sillah* (rinderpest) is said always to prevail, "it increased to an alarming extent." Other diseases, *panja sota* (apparently a more virulent form of *sillah*) and *khoorah* (foot and mouth disease) co-existed. Disease prevailed in Maunbhoom, but to a less extent; but in Palamow the severe epizootic which had begun in 1864 "continued with very little abatement till the end of 1865." Maunbhoom was visited severely in 1866, and the mortality is put down at 22,000.

The disease seems to have spread over the greater portion of the district. *Matah* and *khoorah* are said to have been prevalent in the District of Hazareebagh during this year, but the particular localities visited are not specified; and in Singbhoom rinderpest is stated to have been very prevalent in the district. A graphic description of the disease is given by the Deputy Commissioner, Dr. W. H. Hayes.

No record exists of cattle disease in the Division in the years 1867 and 1868, but this, most probably, is owing rather to an absence of inquiry than to an absence of disease.

Towards the end of the year 1869 *bussunto* broke out in Purulia, and in the Pergunnahs Ambicanuggur and Simlapal in the Maunbhoom District, and very widely in the Hazareebagh District. Cases appear also to have been observed here and there in Singbhoom. A very severe outbreak of *matah* is reported to have existed in the Palamow Sub-division of the Lohardugga District. The disease commenced in February and lasted till June, and caused a mortality estimated at from 10 to 15,000 head of cattle. Another disease, not named, characterized by watery purging, vomiting, and death in a few hours, exactly resembling cholera, is also reported to have been prevalent. Small-pox prevailed among men simultaneously with *matah* among cattle. The officer reporting upon this outbreak states that cattle disease (*matah*) prevailed in the sub-division during each of the 5 years preceding 1869.

The Maunbhoom and Hazareebagh outbreaks continued to attract attention during the early months of the year 1870, but the disease did not spread widely. A few cases were from time to time brought to notice in the Singbhoom District, but the Commissioner, writing in September, reported that the Division was free of disease.

DISTRICT OF LOHARDUGGA.

Extract from the Records of the Bengal Medical Department.

LOHARDUGGA. From W. DUNBAR, Esq., Assistant Surgeon, Dorunda, to the Superintending Surgeon, Dinapore Division,—(No. 13, dated 20th March 1836).

I have the honor to acknowledge the receipt of your letter, dated March 1836, referring to the subject of variolous disease among cattle, and requesting me to forward to you any information I might have obtained upon the subject. Opportunities of observation may naturally be expected to occur at Dorunda, as a great part of the property of the inhabitants of this neighbourhood consists in the large herds of cattle which are daily sent out to graze in the immediate vicinity of the cantonment. I have the honor to lay before you the following few facts which seem to be pretty well ascertained and authenticated :—

A murrain called *matah* does exist among cattle. I.—We may affirm with certainty that a disease called by the people here *matah* does attack the cattle in this district. Its ravages are occasionally severe and extensive, whole herds being sometimes nearly extirpated in a very short space of time.

Occurs every two or three years. II.—From the inquiries I have made on the subject, I learn that sometimes two or even three years elapse without any appearance of the disease, or at least without its being found to exist either generally or in a malignant and aggravated form.

Symptoms. III.—The following are the symptoms and appearances of the disease as described to me and partly observed by myself in the case of gun bullocks of the Ramghur Battalion, several of which suffered from the effects of this destructive epidemic :—Animals seized with this disease are observed to show an aversion to food, the eye looks heavy and dull, and the bullock shows every sign of having been attacked with some serious malady; a small blister or vesicle is observed to form under the tongue, which soon becomes an ulcer; other small ulcers are soon developed over the tongue and in the throat; the abdomen in bad cases swells and becomes painful on pressure; the animal is seized with a purging, first of watery slime, which as the disease advances becomes foetid and assumes a dirty black appearance; death generally takes place on the 3rd or 4th day after the development of the disease. In those bullocks which recover from the disease, I am informed that the ulceration of the mouth and tongue is less general than in bad cases, and that it does not spread downwards; the abdomen is much less swollen and is not very tender on pressure; the purging is usually slight, and does not present a foul putrid appearance; towards the close of the disease in such cases, an eruption breaks out over the skin, of a reddish dusky colour, each spot or pustule being about the size of a split pea. The eruption, as the animal gets well, generally disappears. All the gun bullocks which were seized and recovered had this eruption. I had no opportunity myself of seeing this, as all the gun bullocks which were attacked with *matah* during my stay at Kera perished, and in none of them was anything like an external eruption noticed. My information on this subject is derived principally from the Gun Sergeant of this Battalion—an intelligent man, who narrowly watched the disease throughout its progress, and communicated the result of his observations to me on the return of the guns to Dorunda.

Mild cases. Eruption. *Matah* in Singbhoom. The disease *matah* has been very prevalent and very fatal this year in Singbhoom and some of the neighbouring districts. I am informed that about Jamar and Boondoo immense numbers of cattle have been swept off. Since I received your letter I have visited several of the villages adjoining the cantonment, where large herds of cattle are kept, and find that the disease has not spread to this part of Chota Nagpore this season. I shall not fail to communicate to you the result of any further observations I may be able to make on this very interesting subject.

From Colonel E. T. DALTON, C. S. I., Commissioner of the Chota Nagpore Division, to the Secretary to the Government of Bengal, in the Judicial Department,—(No. 1960, dated Chota Nagpore, the 7th July 1869).

I have the honor to submit copy of a report* by Mr. Forbes, Extra Assistant Commissioner in Palamow, on cattle disease in that Sub-division, and bringing to notice that whilst the *matah* raged among the cattle, a bad type of small-pox broke out among the people.

* No. 904, dated 14th June 1863. 2. This was not previously reported, and the statistics now submitted by Mr. Forbes are not apparently based on the results of any proper system of inquiry.

3. Besides the *matah*, another disease resembling cholera attacked the cattle fatally in every case.

4. The disease was new to Palamow, and the description given of it does not tally with any that I have seen or recollect having read of before.

5. Mr. Forbes has been directed to collect and submit more accurate statistics, and to explain why the bad outbreak of small-pox was not previously reported.

LOHARDUGGA.

From L. R. FORBES, Esq., Extra Assistant Commissioner, Palamow, to the Deputy Commissioner of Lohardugga,—(No. 104, dated Daltongunge, the 4th June 1869).

With reference to your memorandum No. 225, dated 29th April, forwarding Commissioner's letter No. 1149 of 26th idem, I have the honor to submit the following report on the cattle disease in the pergunnah.

2. I find that the disease commonly known as *matah* or small-pox has been prevalent to a certain extent throughout the year, and that this and the numerous other diseases which attack cattle in this district have created fearful ravages.

3. The *matah*, I find, began to assume an epidemic form in the early part of February, first showing itself as such in the Oontaree Tuppeh, from thence gradually spreading itself over the whole of the northern and eastern Tuppehs, gradually diminishing in force as it spreads southwards; the disease in fact seems, in the most extraordinary manner, to have confined itself entirely to those parts where distress prevailed, increasing in the violence of its attacks where distress was greatest, and decreasing in the same manner where distress was least felt.

4. The number of cattle that have been carried off may, I think, be estimated at from 10 to 15,000 head; and this I believe to be a moderate estimate, the people themselves fixing the number much higher, some at nearly 30,000.

5. As is usual, this disease among the cattle has been accompanied by a small-pox epidemic among the population of a very virulent type, and mortality has been very large.

6. I have not as yet succeeded in collecting very reliable information as to the extent of the mortality, but I trust to be in a position shortly to give as trustworthy statistics as it is possible to obtain. I believe, however, that I am not overstating it when I fix the number of deaths during the last twelve months at 2,000 souls.

7. I would here observe that small-pox is always present in Palamow throughout the year,—at least I have not known the pergunnah to be perfectly free during the five years I have had charge of the sub-division.

8. I now wish to describe another epidemic, for such I believe it may be called, which has made its appearance in the pergunnah among the cattle this year for the first time, and for which the natives have no name.

9. The symptoms are exactly those of cholera. The animal is suddenly attacked with a watery purging and vomiting,—not a foaming, it must be understood, but vomiting of actual food.

10. In half an hour, or one hour at most, after the attack, the animal lies down generally on the right side, apparently much distressed, and never rises again, death ensuing within two or four hours after the first attack.

11. When death is taking place the flanks seem to swell out, and as death comes on, the head is turned towards the flanks, the neck stiffening, so that the head after death remains in that position.

12. The most extraordinary feature in the disease is, that it broke out first in Tuppeh Oontaree, where distress was greatest, and appeared simultaneously with the cholera epidemic now prevalent.

13. It appears to have attacked but few villages, but to have carried off all cattle in whatever village it made its appearance.

14. From Oontaree it appears to have travelled south and eastwards, attacking villages here and there *en route*, in exactly the same way as the cholera has done.

15. Thakurai Juggernath Dial, of Chainpore, reports that the disease is now amongst his cattle to the south, creating great ravages. I would add that the disease is not confined to the bullocks and cows, but that numbers of buffaloes there also have been carried off.

[Qy. Was this "Cholera" cattle poisoning? C. P. C.]

Memo. from COLONEL E. T. DALTON, C. S. I., Commissioner of Chota Nagpore,—(No. 2048, dated the 16th July 1869).

Copy of the following submitted through the Secretary to the Government of Bengal, Judicial Department, in continuation of this Office No. 1960 of the 7th instant, for information of Government.

From L. R. FORBES, Esq., Extra Assistant Commissioner, Palamow, to the Deputy Commissioner of Lohardugga,—(No. 164, dated 8th July 1869).

With reference to your No. 728, dated 3rd instant, I have the honor to report that I did not report the existence of small-pox because it was not a sudden and unusual occurrence. Small-pox is present in Palamow throughout the year, with more or less fatal effects.

2. The number of deaths stated by me was not the result of any accurate information; I only stated the number approximately; besides, even supposing the number mentioned by me to have been correct, the mortality, only 1½ per cent., could not be considered anything very extraordinary, since it extends over the whole year.

3. Had the epidemic appeared suddenly, and the extent of mortality mentioned occurred within a short period, I should certainly have brought the matter to your notice.

DISTRICT OF MAUNBHOOM.

From A. L. CLAY, Esq., Officiating Deputy Commissioner of Maunbhoom, to the President, Cattle Disease Commission, Calcutta,—(No. 49, dated Purulia, 9th January 1870).

I have received instructions from the Commissioner of Chota Nagpore to supply you with information called for in your letter to the Secretary to the Government of Bengal, Judicial Department, No. 100, dated 6th ultimo.

2. I now write to inform you that an outbreak of cattle disease has recently been reported in Purulia, the sudder station of this district, and I have requested the Civil Medical Officer to give the matter his personal attention, in order to enable me to furnish you with the fullest and most accurate information possible. I enclose copy of his preliminary report just received, which touches upon most of the points mentioned in your letter above referred to. The final report promised by the Medical Officer on cessation of the epizootic will be submitted on receipt.

3. The cattle disease known in the vernacular as *bussunto* is always flying about the district among the villages in the interior, but as it is difficult to obtain trustworthy information from these remote localities, I have thought it better to confine my present inquiries more especially to Purulia.

From BABOO WODOY CHUND DUTT, Civil Medical Officer, to the Deputy Commissioner of Maunbhook,—(Dated Purulia, 4th January 1870).

I have the honor to acknowledge the receipt of your letter No. 2340, dated 29th ultimo, with enclosure, on the subject of cattle disease.

In reply, I beg to report that from my enquiries it appears to me that cattle disease has been prevalent in this station since the commencement of last month. The poorer classes of people are so indefinite in their ideas of dates, that I have not been able to ascertain the exact date of its origin or the first house in which the disease broke out.

With regard to the questions propounded by Mr. Hallen, V. S., I beg to furnish the following information regarding the present outbreak of cattle disease in Purulia.

1st.—The disease is at present confined to either side of the road leading from the bazaar to Buchabund.

2nd.—The disease is called *gobussunto* by the natives.

3rd.—The exact date of outbreak cannot now be ascertained. It has no doubt existed since the commencement of December last.

4th.—The number of cattle attacked up to 31st December is reported to be 91. Of these, 23 (25·2 per cent.) are said to have fallen victims to the disease, 55 to have recovered, and 13 to have been still ill on the above date.

5th.—The total number of cattle in the town of Purulia is said to be 2,498.

6th.—I believe the disease is infectious, and will yet affect a large number of cattle.
It is, I think, gradually extending in all directions.

7th.—I have no positive information as yet as to the mode in which the disease first originated.

8th.—The disease first shows itself by shivering, erection of the hairs of the skin, disposition to stand quietly at one place, and refusal of food. Heat of skin and watering from the eyes and mouth very soon follow. The hot stage or fever lasts for 3 or 4 days, when the skin cools down again, and diarrhoea or thin stools set in. In favourable cases the diarrhoea is mild. The stools are feculent, dark coloured, and thin. The looseness lasts for 3 or 4 days, when the faecal evacuations again become consistent, the animal takes its food, the discharge from the mouth and eyes ceases, and convalescence is established. In unfavourable cases the diarrhoea gets worse. The evacuations become quite watery with shreds of mucus floating in it, or they are stained with blood. They are passed frequently and with great force. The discharge from the mouth becomes thick, purulent, or sanious. Ulcers form in the tongue, gums, and lips. There is difficulty of swallowing and laboured breathing. The mouth, lips and throat swell. The animal is unable to get up and becomes exhausted; death follows in from 9 to 12 or more days. In one instance that I saw, abortion resulted in an animal labouring under the disease.

I have not noticed any eruptions on the skin or feet. In one calf only a small red crack was seen in a hoof, the nature of which remains to be ascertained. Some owner of diseased cattle informed me that during the febrile stage of the disease small hard bodies can be felt on the skin by the fingers. I could not, however, perceive them in the two animals I tried. Eruptions on the tongue, gums, and lips were noticed by me in many cases, and in one bad case ulcers and worms had formed in the mouth. I have as yet seen about a dozen cases only, and I reserve further details on this subject till the end of the epidemic, when I hope to furnish you with a full report on the subject.

From A. L. CLAY, Esq., Officiating Deputy Commissioner of Maunbhoom, to the President, Cattle Disease Commission, Calcutta,—(No. 67C, dated Boorda, 19th February 1870).

In continuation of my letter No. 49, dated 8th January 1870, I have the honor to submit herewith copy of the Civil Medical Officer's final report on the subject of the cattle disease lately prevalent at Purulia, with form of questions (No. 1) duly filled up.

2. The disease appears to have been confined to comparatively few cases, and scarcely to have deserved the name of an epizootic.

3. From inquiries I have made while out on tour in my district lately, I am inclined to think that the cattle disease is not generally prevalent at this season, though individual cases occur here and there.

From BABOO WOODOY CHUND DUTT, Civil Medical Officer, to the Offg. Deputy Commissioner, Maunbhoom.—(No. 27, dated 16th February 1870.)

In compliance with the request contained in your letter No. 2340, dated 29th December last, I have the honor to submit herewith my final report on the epidemic of cattle disease which prevailed here in December last.

I am happy to state that since my first report to you on the subject, dated 4th January, there has been very little disease amongst cattle in this town. The District Superintendent of Police reports that only one head of cattle was attacked and died during the month of January in the town of Purulia. On the 4th January I got ready a shed for the reception of diseased cattle. Up to the 9th seven animals were admitted for treatment. Of these, two died and five were discharged cured. The last animal was sent out on the 28th January last, when the hospital was broken up.

From the small experience I had of the epidemic since my last report, I have nothing to add regarding the symptoms of the disease to what I stated before on the subject.

With regard to treatment, I ordered two prescriptions to be used, one in the febrile stage, and the other in the stage of diarrhoea. These were as follows :—

Seven leaves of the *muddar* plant and 21 black peppers to be ground together and given at the commencement of the disease. This medicine is much used by some of the natives, and from my knowledge of its properties, I consider it a useful febrifuge and diaphoretic.

In the second stage of diarrhoea, the following prescriptions were used :—

Kuth or catechu	...	...	...	...	...	...	1	tola
Opium	...	...	...	...	...	...	1	"
Congee water	...	...	...	...	...	...	1	seer

This is useful in restraining the drain from the intestinal canal.

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The hospital was opened in a shed in front of the charitable dispensary, and every arrangement was made for the food and care of the sick animals. A servant was engaged at Rs. 5 per mensem to look after the cattle. Between this man's pay and bazaar medicines an expenditure of Rs. 5-15 has been incurred, for which amount a bill is herewith submitted for payment. The cost of feeding the animals has been recovered by me from their owners.

[The appended statement shows 101 cattle attacked, 27 deaths (26·7), and 94 recovered in a stock of 2,498.]

DISTRICT OF HAZAREEBAGH.

Hazareebagh.

From LIEUT.-COL. H. M. BODDAM, Deputy Commissioner, Hazareebagh, to the President, Cattle Disease Commission,—(No. 60, dated 20th January 1870).

With reference to your letter No. 100, dated 6th December 1869, to the Secretary,

No. 21, dated 13th January 1870,
from District Superintendent of Police.

No. 26, dated 14th January 1870,
from Civil Surgeon, Hazareebagh.

Government of Bengal, I have the honor, in accordance with the instructions of the Commissioner of Chota Nagpore, to forward for your information copies of letters as per margin.

With reference to the letter from the District Superintendent of Police, I may say, once for all, that the information given by the Police as regards numbers of cattle attacked and died is unreliable, but it shows the extent over which cattle disease prevails, as Jorie is on the west, and Kusmar is on the east of the district.

Cattle disease of a minor or less virulent type prevails throughout the district, and generally throughout the year; the inhabitants are, however, an ignorant, illiterate race, and generally call every disease either *matah*, small-pox, or cholera, and no attempt is made by the owners of the diseased cattle to cure them by the exhibition of medicines, nor even will they, unless compelled, attempt segregation.

A few of the *goallas* pretend to know how to treat some of the diseases, but their remedies are found to consist in the use of *ghee*, *huldee*, *karee nimuck*, and the cautery.

When the inhabitants of a village in which cattle disease prevails are questioned as to symptoms, all they can say is that the animal is violently purged and dies in a short time. Even those who admit that they have lost half their herd of cattle, cannot give any decided opinion regarding the symptoms of the disease, stating, when questioned as to whether there were eruptions on the body, sometimes yes, and sometimes no; could not say whether the eyes and mouth watered or not,—thought they did sometimes; body sometimes cold, sometimes hot; and so on with regard to any questions put to them.

From S. DELPRATT, Esq., Civil Surgeon, Hazareebagh, to the Deputy Commissioner, Hazareebagh,—(No. 26, dated 14th January 1870).

I have the honor to inform you that, in accordance with the instructions contained in your paragraph 1 of letter No. 3 of 3rd current, I visited on the 12th and 13th instant the town of Ichak and the village of Ooreyah, and instituted enquiries on the subject of the disease lately prevalent amongst cattle in this district. I collected my information as far as possible under the headings given in the letter No. 100 of 6th ultimo, from the President of the Cattle Disease Commission, which you were good enough to transmit to me, and I now give you the result for each place in separate forms, contrasting the two in a subsequent paragraph.

II. 1st.—District Hazareebagh, town of Ichak.

2nd.—Disease called by the natives here *haiza*.

3rd.—First observed in the first week of December last.

4th.—Number attacked said to be 300.

5th.—Deaths among the above 100—33 per cent.

6th.—Recoveries said to be 200—66 "

7th.—Two still ill; they are nearly recovered.

8th.—The town is said to contain 1,600 cows and buffaloes.

9th.—The native cowherds do not think the disease infectious.

10th.—No one knows in the least how the disease originated.

11th.—Primary symptoms.—The animal refuses all food and grass, but drinks eagerly, and generally shows signs of being "out of sorts;" no particular attention is paid to this, until, however, it is noticed that the animal shows the following signs of sickness:—drooping of the ears, watering of the mouth, eyes, and nose, which induces the owner to examine the mouth, when the tongue is found redder than usual. As the disease progresses, this congestive state increases, sores break out on

HAZAREEBAGH.

the tongue and fauces, and in the course of 24 hours purging sets in, which lasts for 2½ days, when, if not controlled, the animal dies. If the purging passes off, the animal experiences relief of the symptoms of the mouth, &c., and the appetite gradually returns, and the beast is able to eat soft food, such as boiled *oorudh* and soft grass, but his strength is always much reduced by the illness, from which he but slowly recovers. The appearance of the coat is said to be natural throughout. No eruption is to be seen on any part of the body or feet; eyes, nose, and mouth watering throughout the whole period of the severe symptoms. Body hot, mouth and tongue and breath very hot and watering; head also hot, nose and ears cold, breathing labored; no cough at any stage of the disease; no shivering fit nor swelling of the throat; urine excessive in quantity and high colored, but never bloody. The fecal evacuations are first the last food eaten, passed in an undigested state, then watery motions with streaks of blood. If this continues, the animal dies in about two days; if the motions become less in frequency and quantity, it is a good omen. Sometimes mucus is also passed with the evacuations.

12th.—Average duration of attack said to be 60 hours.

13th.—No remedy for this disease is known. Great faith, as usual, is placed in *poojahs* to the goddess *Kali*, with incantations by distinguished *Brahmins*. Treatment.

III. 1st.—Village Ooreyah, Pergunnah Champa, District Hazareebagh. Locality.

2nd.—Disease called here by the natives *beadh*. Name of disease.

3rd.—First appeared six weeks ago. Date of outbreak.

4th.—Ninety-one attacked. Statistics.

5th.—Sixty-one deaths (67 per cent.) The account had been kept by tying a knot in a piece of string for each death. This string was shown and counted in my presence.

6th.—Thirty cases recovered (33 per cent.)

7th.—One case still ill.

8th.—Five hundred head of cattle in the village.

9th.—The natives consider it infectious, but have not tried the effects of segregation.

10th.—Origin utterly unknown.

11th.—Primary symptoms are a general state of malaise and disinclination for food for three days, then watering of the mouth, eyes, and nose. On opening the mouth, sores are seen on the tongue, palate, and fauces, extending downwards into the throat; drooping of the ears; diarrhoea then sets in; the ordinary motion looser than usual, succeeded by watery bloody stools, which are ejected with great force, and come out, as the natives described it, as from an enema—*pichkari*, the liquid evacuations being deposited or dropped at some distance to the rear, or where the animal may be standing. There are also coagula of blood passed with the motion, and sometimes there is mucus mixed with the stool. The coat is described as being rough; no eruption noticed in a single case; eyes, mouth, &c., watering; body, ears, mouth, and surface of body all cold. In every case there is labored breathing, but only in some (and these are the cases which recover) is there cough, which is consequently considered a favorable symptom; shivering fits in some cases, but this is a dangerous symptom, as all those animals in which it has been experienced have without exception succumbed to the disease; no swelling in the throat; fecal evacuations are as above described; urine thick, resembling mustard oil, and scanty in quantity. Symptoms.

12th.—Average duration of the attack before death or dissolution, uncertain. In some cases it has been rapidly fatal, death occurring within twenty-four hours; one animal was said to have died in twelve hours; in other instances, the disease has taken one, two, three, five, six, and even as long as twelve days before terminating fatally.

13th.—No remedy is known, nor has any medicine been administered; sacrifices of goats to *Kali* and *poojahs* have been made, but without any favourable response having been vouchsafed by the goddess. Treatment.

HAZAREEBAGH.

Discrepancies.

Village register.

Ichak statistics unreliable.

Discrepancy in symptoms.

Comparison of symptoms.

Diseases identical.

Infectiousness.

Segregation.

Effect.

IV. In pursuing these investigations, I have called to my assistance the principal cowherds of each place, and the information given above, as regards symptoms, &c., has been derived from what they have witnessed amongst the infected cattle. It will be noticed how greatly the symptoms differ in the two places. The name even of the disease is different in the two localities. The rate of mortality, comparing the two places, is striking: at Ichak, one-third only of those attacked died and two-thirds recovered; at Ooreyah the tale told is exactly the reverse—two-thirds died, while only one-third recovered. I confess that I much distrust the returns given for Ichak, whilst I put more faith in the numbers as furnished at Ooreyah, where the information elicited was given in the most simple and primitive manner; for instance, the number of head of cattle in the village was shown me by the presentation of twenty-five small pieces of gravel, each of which, I was told, represented a score. Thirty particles of goat's dung placed carefully in the palm of my hand showed the recoveries, and the knotted string clearly proved that regular count had been made of the terrible mortality.

One man told me he had 19 animals attacked, all of which died. Another had fortunately lost only two out of six infected by the disease. At Ichak, on the contrary, the numbers were arrived at by the despatch of some twenty municipal police and peons through the town for the collection of information on this point. As they returned to me in the course of one hour and a half, having been supposed to have traversed and made inquiries at every house in a large city in the interim, I look with great suspicion on the statistics furnished by them, more especially as, during their absence, I questioned the man who seemed to be considered the chief among the *goallas* respecting attacks, recoveries, and deaths, and he informed me that of the seven wards into which the town is sub-divided, the one of which he had information more particularly, he reckoned to have had 150 cases, the great majority of which had ended fatally. This statement might possibly have been exaggerated, but I cannot help thinking that the report of the local police must have been underestimated, reference being had to the perfunctory manner in which the duty of collecting facts was performed.

V. Regarding the great difference in some of the symptoms at the two places, it must be remembered that the information on all these somewhat minute points was derived from unlearned and timid men, that it was very difficult to glean anything on some points, and if a leading question were put, the man at once jumped to the conclusion that the *huzoor* must require an answer in the affirmative, and replied accordingly, being backed up, as a matter of course, by the others standing-by; but allowing for this, it would appear, by comparing the statements of the two places, that in each the disease is ushered in by similar premonitory symptoms, such as a state of general malaise, disinclination for food, drooping of the ears, &c., all showing the animal to be not in ordinary health. This state is succeeded by characteristic symptoms, clearly indicating the onset of actual disease, and these symptoms are accurately and similarly described at both places, *viz.*, the watery discharge from eyes, nose, and mouth, the aphthous spots on the mucous membrane of the mouth and fauces. Both places are also in accord on the point of the non-appearance of eruption on any part of the body; and the generally rapid supervention of diarrhoea culminating in the bloody flux, in some cases mixed with mucus, is most faithfully recorded in both localities. All this leads me to the conclusion that the disease is identical in both places. The difference in the anal secretion is only in the matter of quantity (character alike in both), which in one is excessive, and the other scanty; the cough in one place, which is considered a good augury, and no mention of this symptom in the other, are points on which natives may differ without attaching, in their case, much importance to their diversity of opinion; but the question of the temperature of the body, and especially of the mouth, which latter both remark on as being the seat of specific inflammatory action, being a matter on which the two places are so diametrically opposed, is a subject of some surprise to me, and which I find it difficult to reconcile, even in the case of Native opinions. Regarding rigors, while this symptom is said never to have been remarked at Ichak, it is mentioned, as in some cases, and those the most fatal, to have been witnessed at Ooreyah, and in the only case I have seen at this latter village, the animal had a distinct fit of shivering in the earliest stage of the disease.

With reference to the question of "infection," the opinions differ at the two places. Baboo Kalidas Palit, at Ichak, the intelligent manager of the Ramghor Estate, informed me that when the disease first appeared among the estate cattle, he separated those that were sick (4) from those that were healthy, sending the latter away to a distance of three miles from the city, and that the disease did not show itself amongst the animals after their segregation. On the other hand, a native named Bakonrie, stated,—“I had seven cows kept in one house. One was attacked in the morning—violent purging with blood and mucus and died the same evening. None of my other cows suffered.” Another native, Santoki, affirmed,—“I had twelve cows confined in one house; four were attacked with this

disease. I gave no medicine, but I offered a kid to the goddess *Kali*. One of the animals, a calf of seven months old, died, the other three full grown animals recovered, and none of my other cattle were affected.”

HAZAREEBAGH.

VI. From my slight experience of diseases of the lower animals, I am rather diffident in pronouncing an opinion of my own on the subject, but being asked to do so, I would observe that, from the peculiar symptoms of the disorders, I am inclined to characterize it as an exanthematous eruption. I should in the preceding paragraph have remarked that the chief *goallas* I consulted at Ichak told me that though they meet with disease amongst the cattle annually, yet they had not seen this special type of disease for the last seven years, in which year a disease exactly similar in symptoms, attended with excessive mortality, prevailed in the town.

VII. With reference to your request for an expression of opinion from me as to the necessity of the Cattle Disease Commission visiting this district, I think it would be better, not knowing the engagements of the Commission in other zillahs, that the question of visiting these parts or otherwise should be left to their discretion after reading the local reports on the disease; at the same time bearing in mind that the facts I have above laid before you are gleaned from the information derived from only two places near Hazareebagh, and that the disease is supposed to prevail rather extensively in many other parts of this district.

From CAPTAIN C. T. HITCHENS, District Superintendent of Police, to the Deputy Commissioner of Hazareebagh,—(No. 21, dated 13th January 1870).

With reference to your office memorandum No. 1090, dated 29th ultimo, I have the honor to forward replies to as many of the questions contained in the Government Resolution forwarded therewith as can be ascertained from this office record.

Names of places.	Dates when the disease broke out.	No. died.	Nature of disease.
Jooree in Chuttra	12th November 1869	1	Small-pox.
Sindooar "	5th " "	2	Ditto.
Ooria (Hazareebagh)	4th December "	33	Bowel complaint.
Echak "	5th " "	4	Ditto.
Silwor "	8th " "	5	Ditto.
Sakheed (Chuttra)	17th " "	1	Ditto.
Mudkorpore (Kasmor)	22nd " "	9	Ditto.
Rolah Hazareebagh	23rd " "	2	Ditto.
Mutwooree	1st January 1870	2	Small-pox.
Ponda (Kasmar)	2nd " "	2	Ditto.
Gujjundee (Koderma)	" " "	4	Ditto.
Hazareebagh Town	" " "	1	Chupka.*
		66	

* A cattle disease of the following description,—inflammation and soreness of the throat, liquid stools, ulcers on the nose, body cold, color of urine white, breathing natural. The animal remains diseased for about a fortnight. The people apply butter as a medicine.

DISTRICT OF SINGBHOO.

From W. H. HAYES, Esq., Deputy Commissioner, Singbhoom, to the Commissioner of Chota Singbhoom. Nagpore,—(No. 866, dated 24th January 1870).

Being out on tour, I have met with a singular epizootic which has considerably alarmed the villagers. It is quite different from *bussunto*, but fortunately has not extended to more than 3 or 4 villages in this neighbourhood. I submit a report of it in the form issued by the Cattle Plague Commission.

[The statement annexed shows that the disease in question prevailed in Mouzah Dheerool, Pergunnah Ghatsillah. No vernacular name was ascertained, and it is thought to be glanders. It broke out in December, and in a stock of 300, 12 were attacked, 11 died, and one was ill. The disease is supposed to be infectious. The symptoms assigned are:—

Swelling of the tongue, with general edema, thorough prostration and suppression of discharges, with difficulty in breathing. The disease lasted 24 hours, and was treated, apparently unsuccessfully, with *dhatura* and wild horse-radish.]

COLEHAN REPORT No. 1.

SINGBHOO.

Singa Munda, Sindaree, CHORAIPEER—reports disease for upwards of two months past amongst the cattle of his village; the disease amongst them is termed *hotomo*; the throat and jowls or cheeks of the animal swell up; it ceases to eat or drink, and dies off in the course of two or three days, or in a shorter period; up to the present 46 head of cattle have died.

Copy sent to the Deputy Commissioner for his information.

CHYEBAASA,

The 17th May 1870.

W. RITCHIE,

Offg. District Supdt. of Police, Singbhoom.

COLEHAN REPORT No. 2.

Toaree, son of Turam Munda, Sakorsai, CHORAIPEER,—reports that for the last two months the cattle, goats, and sheep in his village have been dying of *rcg*; that up to the present some 22 head of cattle have died, and some 12 or 14 sheep and goats belonging to different people in the village; to-day one cow died. This man came to me last Sunday, and I told him to come on Monday, but he did not appear until to-day, when he had been sent for.

Copy sent to the Deputy Commissioner for his information.

CHYEBAASA,

The 14th June 1870.

W. RITCHIE,

Offg. District Supdt. of Police, Singbhoom.

COLEHAN REPORT No. 3.

Dabbro Mankie, Sakorsai, CHORAIPEER,—reports cattle disease still existing in the following of his villages, viz., Mohadee, Ramajair, and that one buffalo belonging to him is now suffering. In the first named village 7 head of cattle, including buffaloes, have died, and in the second village 3 bullocks; the disease is everywhere on the decrease now, and it is probable that it (the disease) may entirely disappear owing to the rains having set in. The disease was at its height in April and May before the wet weather commenced. The moment rain began to fall it commenced to decrease.

The cattle are not affected every year; the last time the disease prevailed was about three years ago. The present disease they (the Hoes) term *hotomotona*, or swelling of the glands of the throat; the moment this comes on, the ears of the beast affected droop and hang down. Nothing particular is perceptible about the eyes; water runs from the mouth. No change is visible as regards the body and coat of the animal, nor is this disease (*hotomotona*) attended by purging; and the animal, he says, when attacked, if not attended to, will die in 24 or 36 hours. The *gowallas* treat the disease in different ways; he only knows of one cure, that is, cauterizing with a hot iron round the swollen part of the neck. They never (he says) separate the diseased cattle from those that are not affected; does not believe that it is ever done by the Coles. Mankie is requested to make out a return of the whole number of cattle, buffaloes, goats and sheep that had died in his different villages since the commencement of the disease up to the present time.

Copy sent to the Deputy Commissioner for his information.

CHYEBAASA,

The 25th June 1870.

W. RITCHIE,

Offg. District Supdt. of Police, Singbhoom.

COLEHAN REPORT No. 4.

Mankie, Assoora, GOOMRAPER,—appears to-day and reports the existence of disease amongst the buffaloes and cattle in village Baljooree. The disease is *rog*, and commenced some three months ago; up to the present some 15 head of all kinds of cattle have died in that village; also that in his (Mankie's) village the disease *rog* has appeared; it commenced yesterday, since which time 11 head of cattle and 2 pigs have died. The cattle that have died were all attacked with swelling of the throat, and purging at the same time; has not heard as to whether the disease has broken out in any other of his villages; states that he will make immediate inquiry and report.

Copy sent to the Deputy Commissioner for his information.

CHYEBAASA,

The 27th July 1870.

W. RITCHIE,

Offg. District Supdt. of Police, Singbhoom.

PATNA DIVISION,

COMPRISING THE DISTRICTS OF TIRHOOT, SHAHABAD, PATNA, GYA, SARUN, AND CHUMPARUN.

Index of Records.

[N. B.—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Tirhoot.	Historical Sketch			Page 209.
	K. Mackinnon, Esq., M. D., Civil Assistant Surgeon, Tirhoot.	...	1st April 1836 ...	Describes the disease <i>matah</i> or <i>gootee</i> , p. 212.
	C. F. Cockburn, Esq., Commissioner, Patna.	40	27th February 1864	<i>Selections, Bengal Government</i> , p. 23. States that no cattle disease has come to the notice of the district officer.
	A. J. Elliott, Esq., Collector, Tirhoot.	93	30th April 1864 ...	<i>Selections, Bengal Government</i> , p. 56. Describes the disease called " <i>gootee</i> ."
	J. Burke, Mr., Stud Department, Poosah.	...	19th March 1864 ...	<i>Selections, Bengal Government</i> , p. 59. Describes diseases observed in the Poosah Stud.
	J. W. Dalrymple, Esq., Officiating Commissioner, Patna.	277	11th October 1866...	<i>Selections, Bengal Government</i> , p. 118. States that " <i>gootee</i> " and " <i>khoorah</i> " are known in the district.
	R. P. Jenkins, Esq., Commissioner, Patna.	43	8th February 1870	Reports that " <i>khoorah</i> ," foot and mouth disease, prevails in the District of Tirhoot.
	Ditto ditto	83	14th March 1870 ...	Reports that no cattle disease prevails in Tirhoot.
	Ditto ditto.	273	20th August 1870...	Forwards reports from the Magistrate of Tirhoot regarding deaths of cattle at Dhooly from over-feeding, and at Bazhowlee from catarrh with diarrhoea.
	E. Macnaghten, Esq., of Begum Serai.	D. O.	23rd October 1870	Letters received from indigo planters in Tirhoot in reply to a circular from this office. These are summarised at p. 212.
	T. Smith, Esq., of Shahpore	D. O.	24th October 1870	
	W. B. Hudson, Esq., of Peeprah.	D. O.	Ditto	
	W. Wilson, Esq., of Japaha	D. O.	Ditto	Ditto ditto p. 213.
	E. D. Urquhart, Esq., of Arrowah.	D. O.	2nd Nov. 1870 ...	
	J. Tripe, Esq., of Dine Chuprah.	D. O.	10th Nov. 1870 ...	

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Shahabad.	C. F. Cockburn, Esq., Commissioner of Patna.	40	27th February 1864	Selections, Bengal Government, p. 23. States that no disease has been observed.
	Ditto ditto ...	109	26th June 1864 ...	Selections, Bengal Government, p. 51. States that "gootee" is well known and just breaking out.
	A. W. Dalrymple, Esq., Commissioner of Patna.	277	11th October 1866 ...	Selections, Bengal Government, p. 116. Describes varieties of cattle disease.
	C. C. Stevens, Esq., Assistant Magistrate, Buxar.	86	8th September 1866	Selections, Bengal Government, p. 120. Describes "gootee" and "khorrah" and reports their occasional prevalence.
	J. C. C. Daunt, Esq., District Superintendent of Police.	24	2nd December 1867	Selections, Bengal Government, p. 320. Reporting the prevalence of cattle disease in the district.
	W. D. Pratt, Esq., District Superintendent of Police.	164	1st December ...	Report that sillah has broken out in the Sasseram and Rhotas Pergunnahs, p. 213.
	R. P. Jenkins, Esq., Commissioner of Patna.	353	9th ditto 1868	
	Ditto ditto ...	L	11th ditto 1869	States that the disease is dying out, p. 213.
	R. P. Jenkins, Esq., Commissioner of Patna.	80	17th March 1869 ...	Reports that there is little or no cattle disease in the Division, p. 213.
	H. Munro, Esq. ...	57	... ..	Describe the widespread prevalence of sillah in Shahabad, and states that it is of annual occurrence, p. 214.
	H. Alexander, Esq. ...	637	7th May 1869 ...	
	J. S. Armstrong, Esq. ...	107	5th June ,, ...	Reports the outbreak of "sillah" at the Berhampore fair in April.
	Baboo Jodu Nath Bose, Deputy Magistrate, Bhubooah	...	23rd March 1870 ...	Reports, in Form No. 1, outbreak of cattle disease in Pergunnah Chynepore.
	Ditto ditto ..	130	4th April 1870 ...	Forwards a further report on the same subject.
	Ditto ditto ...	133	6th ditto ...	Forwards amended statement referring to Mouzah Noroon.
	Ditto ditto ...	137	9th ditto ...	
	Ditto ditto ...	138	11th ditto ...	Forwards further report from Door-gamti Thannah.
	W. D. Pratt, Esq., District Superintendent of Police.	86	14th ditto ...	Gives particulars, in Form No. 1, of the outbreak at Noroon.
	Baboo Jodu Nath Bose, Deputy Magistrate, Bhubooah	151	15th ditto ...	Submits a further report of the prevalence of cattle disease in the Sub-division.
	W. H. D'Oyly, Esq., Officiating Magistrate.	667	25th ditto ...	Submits, in Form No. 1, a further statement of the prevalence of cattle disease.
	W. D. Pratt, Esq., District Superintendent of Police.	95	23rd ditto ...	Further particulars regarding Mouzah Noroon.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Shahabad,—continued.	W. H. D'Oyly, Esq., Officiating Magistrate.	761	7th May 1870 ...	Submits a further report in Form Index of Records, No. 1.
	Ditto ditto ...	840	19th ditto ...	Give particulars of the nature and treatment of cattle disease in Sasseram Sub-division, p. 217.
	H. Munro, Esq., Assistant Superintendent of Police.	34	6th ditto ...	
	W. H. D'Oyly, Esq. ...	972	8th June 1870 ...	Further particulars of outbreak at Bhubooah.
	The Villagers of Cowriram	...	8th ditto ...	Evidence recorded by the Commission, p. 217
	Ditto of Belooria	..	9th ditto ...	Ditto ditto p. 218.
	W. H. D'Oyly, Esq., Magistrate of Shahabad.	1537	1st September 1870	Reports that no disease has existed since June last.
	Ditto ditto ...	1649	15th ditto ...	Reports outbreak of small-pox in Chynepore.
	Ditto ditto ...	1688	22nd ditto ...	Further report on same subject.
				[These reports are summarised at p. 216.]
	A. Hope, Esq., Collector of Patna.	1238	6th Feb. 1864 ...	Selections, Bengal Government, p. 27. States that for the last 6 or 7 years cattle disease has been alarmingly prevalent.
	H. W. Alexander, Esq., Magistrate, Patna.	208	22nd ditto ...	Selections, Bengal Government, p. 28. Forwards correspondence relating to murrain.
	A. N. Cole, Esq., Deputy Magistrate, Barh.	189	7th December 1863	Selections, Bengal Government, p. 29. States that no disease prevails in his sub-division.
	Major J. Emerson, Cantonment Magistrate, Dinapore.	218	9th ditto ...	Selections, Bengal Government, p. 30. Forwards a letter from Captain Chalmers, who describes a particular mode of treatment to which he attaches great faith.
	Captain Chalmers, Deputy Assistant Commissary General.	451	8th ditto ...	
Patna.	C. F. Cockburn, Esq., Commissioner, Patna.	169	22nd June 1864 ...	Selections, Bengal Government, p. 51. Says that the disease has not been so prevalent this year as last.
	J. W. Dalrymple, Esq., Commissioner of Patna.	277	11th October 1866	Selections, Bengal Government p. 116. Reports the prevalence of murrain in Dinapore and Behar.
	Major A. Taylor, Deputy Assistant Commissary General, Dinapore.	301	27th May 1869 ...	Describes the outbreak of murrain among cattle bought at the Berhampore fair.
	Mr. Worsley ...	...	23rd February 1870	Statement, in Form No. 1, of cattle diseases prevailing in Patna District, p. 220.
	A. C. Mangles, Esq., Magistrate, Patna.	84	28th May 1870 ...	Reports scattered prevalence of disease.
	Ditto ditto ...	...	11th June 1870 ...	Reports disappearance of disease.

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Gya.	J. W. Dalrymple, Esq., Commissioner, Patna Division.	277	11th October 1866	<i>Selections, Bengal Government, p. 116. Reports that no cattle murrain has appeared since 1864.</i>
	A. B. Palmer, Esq., Magistrate of Gya.	Form 1	8th January 1870	<i>Reports the prevalence of cattle small-pox in November and December 1869 and January 1870.</i>
	Ditto ditto ...	217	21st Feb. 1870 ...	<i>Further reports from Utri and Waginginee.</i>
	Ditto ditto ...	232	24th ditto ...	<i>Report from Kheddar Serai outpost.</i>
	Ditto ditto ...	263	4th March 1870...	<i>Further report on the same subject.</i>
Sarun.	F. H. Stevens, Esq., Joint Magistrate, Gya.	291	11th ditto ...	<i>Reports decline of disease in Utri.</i> [These reports are summarised at p. 220.]
	C. F. Cockburn, Esq., Commissioner, Patna.	40	27th February 1864	<i>Selections, Bengal Government, p. 23. Forwards reports from District Officer in extenso.</i>
	C. J. Jackson, Esq., Civil Surgeon of Sarun.	33	8th ditto ...	<i>Selections, Bengal Government, p. 26. Describes a disease "berooa" among sheep.</i>
	J. J. Grey, Esq.	165	22nd ditto ...	<i>Selections, Bengal Government, p. 26. States that "sillah" or "matah" frequently prevail, among cattle.</i>
	Ditto ditto ...	3	2nd May 1864 ...	<i>Selections, Bengal Government, p. 53. Describes minutely the diseases prevalent among cattle in Sarun.</i>
Chumparun.	J. W. Dalrymple, Esq., Officiating Commissioner, Patna.	277	11th October 1866	<i>Selections, Bengal Government, p. 116. Describes "matah" and "waghah."</i>
	C. Agnew, Esq., Officiating Magistrate of Sarun.	1358	29th do. 1870	<i>Gives statistics of cattle plague from 1866 to 1870, p. 222.</i>
	C. F. Cockburn, Esq., Commissioner, Patna.	40	27th Feb. 1864 ...	<i>Selections, Bengal Government, p. 23. Quotes a description of "gootee" by the Civil Surgeon, Dr. Coates.</i>
	C. T. Metcalfe, Esq., Magistrate, Chumparun.	82	26th December 1869	<i>Reports that no epizootic prevails in the district.</i>
	Ditto ditto ...	...	4th March 1870 ...	<i>Describes the diseases which prevail in the district, but states that none exist at present, p. 221.</i>

HISTORICAL SKETCH.

In 1836, Dr. K. Mackinnon, then Civil Surgeon of Tirhoot, in reply to the circular of the Medical Board, describes the frequent prevalence of the disease *matah* or *gootee*, and gives the symptoms of that murrain. HISTORICAL SKETCH

Mr. John Stalkartt observed the same disease at Bongong, in Tirhoot, in 1845. 1845, and lost about three-fourths of about 200 pairs of bullocks.

No date can be assigned to the first appearance of cattle murrain in this Division. The oral testimony of the inhabitants of some villages in the Bhubooah Sub-division, whose evidence was recorded by the Commission on the occasion of their visit to that locality in June 1870, was to the effect, that the affection called *matah* was known from time immemorial, and broke out every two, three, or four years. Mr. C. C. Stevens, Assistant Collector of Buxar, who in 1866 inquired very fully into the cattle diseases prevailing in the same district (Shahabad), writes that both *gootee* and *khoorah* (rinderpest, and foot and mouth disease) have been known there from about 30 or 40 years, and mentions that the natives of the district assert that these diseases, as well as cholera, come from Bengal. Mr. Hope, the Collector of Behar, writing in 1864, states that the small-pox attacks cattle in that district every year, or every other year, most violently "at the conclusion of the hot weather and beginning of the rains." Mr. J. J. Grey, Collector of Sarun, discovers in the same year that *matah* is frequently prevalent amongst the cattle of the district. Here, in fact, as in every other part of Bengal, 1864 marks the period when attention was first directed to losses among horned stock from disease, and the blank in the local records of murrain, which only begin about this period to show a few vague but significant traces, simply indicates an absence of observation. These traces shall here be put down in chronological order.

The existence of cattle murrain in Behar from about 1858 is inferred from Mr. Hope's statement in 1864, that "for the last six or seven years the small-pox has been prevalent to an alarming extent among the cattle of the district." The losses from the disease are said to be an occasion of distress and ruin to agriculturists, and the description of the symptoms leaves no doubt of its being rinderpest.

Mr. A. J. Elliott, Collector of Tirhoot, mentions that 40 or 50 bullocks died of *gootee* in a factory in his district in 1859.

In 1861 *matah* is said to have been very bad in the south-east of the district of Sarun.

In 1862 there are several notices of the prevalence of cattle disease. On the Tirhoot banks of the Ganges, small-pox is said by Mr. A. M. Cole, Deputy Magistrate of Barh, to have carried off "vast numbers" of cattle. The disease *gootee* is said to have been prevalent in Chumparun, where the Civil Surgeon, Dr. Coates, made a careful inquiry into its nature, symptoms, and treatment. Segregation and "nourishing slops" are strongly recommended by this officer, who states that in this way nine-tenths of the herd will be saved. Mr. J. Burke, of the Poosah Stud, describes the symptoms of a disease which attacked the dépôt bullocks in this year, which, from the post-mortem appearances, he concluded to be *pleuro-pneumonia*.

In December 1863, several cases of *gootee* occurred among the Government cattle at Dinapore. Captain S. Chalmers, Deputy Assistant Commissary General, who furnishes this information, states that this disease had recently been very destructive in the adjoining district, and

HISTORICAL SKETCH. strongly advocates the employment of *karee neemuck* for its treatment. In the eastern part of the same district *matah* was severe in March and June, and one cattle-owner, Mr. Curtis, of Ramcolah, lost nearly a third of his stock; another, Khaggee Ramsan Ally, lost upwards of a hundred head of cattle. The symptoms related by Mr. J. J. Grey, the Collector, are most characteristic of rinderpest. In another letter written in February 1864, Mr. Grey states that the disease "last year seems chiefly to have attacked buffaloes." Mr. A. J. Elliott, Collector of Tirhoot, reports in April 1864 that "last year *gootee* appears to have been extremely prevalent in the north of the district." Foot and mouth disease attacked, in the rains of 1863, the cattle of the Poosah Stud.

In 1864, records of the prevalence of disease are more numerous and definite: *gootee* prevailed in the south of the district of Shahabad in the month of June. In the Behar Sub-division of the Patna District "*matah* raged with great severity." In the Dinapore Sub-division of the same District, *dakuha* (apparently a form of rinderpest) prevailed in July and August. Disease prevailed also in the Sub-division of Sewan, of the Sarun District, in the Buxar Sub-division of Shahabad, and in the vicinity of the Poosah Stud, in the Tirhoot District. Major C. L. Brown, Pension Pay Master, Dinapore, states that disease existed in that station in March 1864, and was carrying off large numbers. He asserts that the murrain is *gastritis*, and advocates warmly a system of homœopathic treatment.

After the effort of 1864 interest and attention seem to have flagged, and records of disease become more rare. Occasional villages of the Buxar Sub-division of the Shahabad District are said to have been visited by *gootee*. *Dakuha* also prevailed in Dinapore.

Gootee continued to prevail in a scattered way in Buxar in 1866 and *dakuha* in Dinapore. In the Sewan Sub-division of Sarun, *matah* and *waghah* (a species of rinderpest without cutaneous eruption) were prevalent. From a return received on the 1st of October 1870 from this district, 4,600 cattle are said by the police to have been attacked with *matah*, and 1,822 to have died.

From July to December 1867 both *gootee* and *khoorah* (rinderpest, and foot and mouth disease) prevailed in the Rhotas and Chynepore Pergunnahs of the Shahabad District, said to have been imported from the Chynepore hills. In Sarun 4,510 cattle are said to have been attacked with *matah*, and 1,930 to have died.

From September to December 1868 *sittlah* is reported to have prevailed in the Rhotas and Sasseram Pergunnahs of Shahabad. In Sarun 4,129 cattle are stated by the police to have been attacked with *matah*, and 1,889 to have died.

In January 1869 *sittlah* was reported to be dying out in the Bhubooah Sub-division of Shahabad; in May it was again heard of in the Rhotas and Sasseram Pergunnahs, where 42 villages were found by the police to have been affected by the disease. The same disease broke out in April and May in the villages adjoining the Berhampore cattle fair. In Tirhoot also cattle disease prevailed in the month of January; at Muddoobunee rinderpest broke out in March at the station of Dinapore among some cattle which had been bought in February at the Berhampore fair. In November and December "small-pox" prevailed in the District of Gya at several villages under the police jurisdiction of Uttri. In Sarun, the police report 5,041 cattle attacked, and 2,461 deaths among these.

In the District of Shahabad cattle disease appeared again early in the year in the Chynepore Pergunnah and Bhubooah Sub-division; the disease continued to prevail very extensively until the month of June. On the 8th and 9th of this month the affected localities were visited by

THIS HISTORICAL SKETCH. the Commission, and the prevailing disease was found to be rinderpest. This disease prevailed in the Sasseram Pergunnah also, in the months of March and April. It was heard of again in August and September in the Chynepore Pergunnah. In the month of May the same disease was reported to prevail in several villages of the Patna District, but in a very scattered way, and in June seems to have disappeared. In the Gya District the disease prevailed in January and February in the Purhul and Mohair Pergunnahs. In Tirhoot foot and mouth disease was reported in February from the Khajowly village of the Muddoobunee Sub-division, and reports came from Poosah in August that a "catarrh with diarrhœa" prevailed in some neighbouring villages. In Sarun the number of cattle attacked by *matah* is put down by the police at 3,468, and of deaths at 1,669; but no particulars are given as to locality, symptoms, treatment, &c.

DISTRICT OF TIRHOOT.

Extract from the Records of the Bengal Medical Department.

From K. MACKINNON, Esq., M. D., Civil Assistant Surgeon, Tirhoot, to the Superintending Surgeon, Dinapore Division, dated 1st April 1836.

I now do myself the honor to reply to your circular and the accompanying letter from the Secretary to the Medical Board on the subject of variolous and vaccine disease in cattle.

Existence of *gootee*.

I have had some opportunities of seeing the disease named *gootee* or *matah* by the natives, for it often prevails among the cattle as an epidemic, destroying in some seasons great numbers of them.

Varying type.

I think there can be no doubt that if there are not two kinds of this eruption affection in specific character, there are at any rate two kinds in respect to the degree of intensity, for it sometimes, although prevalent amongst the cattle, is mild and innocuous, at other times, as above stated, its attacks are fatal.

Symptoms.

The mucous lining of the mouth and nostrils is in such cases covered with an intense pustular eruption, the eruption extending, but with less intensity, over the whole body.

Eruption.

I hope hereafter to furnish more particulars regarding the progress of the disease in the milder form of eruption, which is called *kodooah* by the natives from its similarity of appearance to the grain of that name, and to distinguish it from the *gootee*.

Eruption on the udder.

Communicable.

The cow's udder is often the seat of it, and the *goallas* who milk the cows have the eruption communicated to their hands: this eruption is painful, with swelling of the hand and arm, accompanied sometimes with fever.

The result of further inquiry and personal observation upon the above subject, I shall duly communicate.

Information supplied by Indigo Planters of Tirhoot regarding murrain.

Reporter.	Names.	Symptoms.	Mortality.	Season.	REMARKS.
E. Macnaghten, Esq., of Begum Serai.	<i>Gootee</i> or small-pox.	Not given ...	25 to 30 per cent. Cites cases of two contiguous herds of buffaloes: in one instance all recovered, and in the other all died.	March or April.	The prevalence of murrain at this season may be due to the large fairs which are held in the district.
T. Smith, Esq., of Shahpore.	<i>Gootee</i> or murrain.	Refusal of food, looks dull, ears drooping, hair stands, eyes water; has diarrhoea, evacuations bloody.	50 per cent. to 75 per cent.	April to September.	Is of yearly occurrence, sometimes mild, sometimes severe; treated successfully with doses of salt and linseed oil and drenches of <i>suttoo</i> .
W. B. Hudson, Esq., of Peeprah.	<i>Dakaha</i> , so called because the animals die within first stage (<i>dak</i>).	Swelling of the throat; discharge of blood and mucus from the mouth; complete inability to eat or drink; abdomen swells in an hour or two from the time discharge is first noticed; all the glands on one side of the neck become swollen, so as to force the animal's head round into a twisted position, so that the mouth, instead of being in its usual horizontal position, is quite perpendicular. Breathing becomes quite impossible, and the animal generally dies in about 4 hours' time, i. e., from the time the first symptoms are noticed by its owner.	About 95 per cent.	Beginning of the rains.	These diseases were almost unknown till within the last ten years.
	<i>Gootee</i> , small-pox.	Usual symptoms. Describes pustules on belly and thighs.	35 to 40 per cent.	All the year round.	

Information supplied by Indigo Planters of Tirhoot,—contd.

Reporter.	Names.	Symptoms.	Mortality.	Season.	REMARKS.
W. Wilson, Esq., of Japaha.	<i>Gootee</i> , small-pox.	Begins with low fever, and ends with violent purging.	Not given.	September, October.	Whole flocks are carried off by this disease when it gets among factory cattle. Separation is practised.
E. D. Urquhart, Esq., of Arrowah.	<i>Gootee</i> or murrain, small-pox.	Refusal of food; fever; discharge and purging. Animals die in nine days or so.	75 per cent. or more.	May, June and November.	A fearful disease, spreading through herds and carrying off numbers.
J. Tripe, Esq., of Diue Chuprah.	<i>Gootee</i> ... <i>Dakaha</i> ...	Well known ... Foaming, swelling of the mouth, slight swelling of body, a desire to vomit, then convulsions set in, and death generally occurs a few hours after the attack.	Very great. Recovery rare.	During the rains.	

DISTRICT OF SHAHABAD.

From W. D. PRATT, Esq., District Superintendent, Police, Shahabad, to the Magistrate of Shahabad,—(No. 164, Camp Dhungain, dated 1st December 1868).

I have the honor to report for your information that *sillah* or small-pox has broken out since September last among the cattle in the Sasseram and Rhotas Pergunnahs.

2. In 1864 this disease showed itself in this district, but in 1865 and 1866 I hear that it did not make its appearance in Shahabad.

3. Last year (1867) Captain Daunt reported to you that 3,215 cattle, valued at Rs. 12,021-8, had died of this and of a hoof disease, but that *sillah* was the most fatal of the two.

4. This disease, *sillah*, first broke out in September last near Dehri outpost, and in that jurisdiction, from the 1st to 26th of that month, 25 head of cattle, valued at Rs. 215, died. No deaths from that part have been reported since.

5. In October the disease made its appearance in the Rhotas Pergunnah, near Tilloothoo, and since October 7 bullocks, 6 cows, and 60 buffaloes have died from it, and 2 bullocks and 16 buffaloes are still suffering.

From R. P. JENKINS, Esq., Officiating Commissioner of Patna, to the Magistrate of Shahabad,—(No. 229, dated 9th December 1868).

With reference to your memorandum No. 1688, dated 3rd instant, forwarding copy of Mr. District Superintendent Pratt's letter, reporting that *sillah* or small-pox has broken out among the cattle in the Sasseram and Rhotas Pergunnahs, I have the honor to request that you will use every endeavour to prevail on the natives to separate their affected cattle as soon as the first symptoms of the disease manifest themselves among them. I have reported the matter for the information of Government.

Memo. from W. D. PRATT, Esq., District Superintendent, Police, Shahabad, to the Magistrate of Shahabad,—(No. L, dated 11th December 1868).

With reference to his No. 1699 of the 4th instant, begs to inform him that though some cattle are still suffering from *sillah*, the disease seems to be dying out.

From R. P. JENKINS, Esq., Officiating Commissioner, Patna Division, to the Secretary to the Government of Bengal, Judicial Department,—(No. 80, dated 17th March 1869).

With reference to Government orders No. 84 of 9th January last, I have the honor to state that there is little or no cattle disease in any of the districts of this Division; only in the Sub-divisions of Bhubooa in Shahabad and Madhoobunce in Tirhoot, the disease prevailed to a slight extent about the latter end of January.

2. None of the District Officers consider the services of Dr. Farrell necessary in their districts.

SHAHABAD.

From R. P. JENKINS, Esq., *Officiating Commissioner, Patna Division, to the Secretary to the Government of Bengal, Judicial Dept.,—(No. 166, dated Patna, 12th May 1869.)*

In continuation of my letter No. 80, dated 17th March last, I have the honor to forward copy of the enclosed communication from the Magistrate of Shahabad, reporting that cattle disease is still raging in his district. Should the Government be of opinion that professional aid is necessary, I would request that it be sent up. For my own part, I do not think that any such measure will result in success, unless the people themselves are inclined to obey instructions and separate off the diseased from the rest of their cattle. I do not myself think cattle owners, as a body, will ever be induced to do this in their present state of apathy and ignorance.

Memo. from H. MUNRO, Esq., Assistant Superintendent of Police, Sasseram, to the Magistrate of Shahabad,—(No. 57).

With reference to your memorandum No. 335, dated 3rd April, the following are the answers to your questions:—

1st.—The disease first showed itself in the villages of Beraree, Nard, Nundeera, and Beratchee; the two first mentioned villages in Pergunnah Sasseram, and the other two in Pergunnah Rhotas.

In the village of Nard	...	...	...	...	15 head of cattle died.
" " Beraree	...	...	...	...	20 " "
" " Nundeera	...	...	...	...	25 " "
" " Beratchee	...	...	...	...	12 " "

Besides the above-mentioned places, the disease has spread through the following villages and carried off a number of animals:—

Pour Nadie	...	...	...	...	14 head of cattle died.
Nomdeha	...	...	...	...	7 " "
Badreeh	...	...	...	...	16 " "
Shukpoora	...	...	...	...	29 " "
Nowhatta	...	...	...	...	45 " "
Tenaru	...	...	...	...	15 " "
Teefo	...	...	...	...	17 " "
Bhuria	...	...	...	...	13 " "
Nunnudeechuk	...	...	...	...	10 " "
Bulhuddleppore	...	...	...	...	7 " "
Balama	...	...	...	...	17 " "
Beraja	...	...	...	...	2 " "
Delahra	...	...	...	...	13 " "
Namadel	...	...	...	...	8 " "
Taowlia	...	...	...	...	20 " "
Rusoolpore	...	...	...	...	12 " "
Moharajgunge	...	...	...	...	26 " "
Chundunpore	...	...	...	...	20 " "
Surja	...	...	...	...	30 " "
Gonda	...	...	...	...	7 " "
Pepra	...	...	...	...	3 " "
TOTAL	...	...	...	...	330 " "

SHAHABAD.

Pergunnah Sasseram.

Konka	...	...	...	...	7 head of cattle died.
Darawn	...	...	...	...	10 " "
Gehaminpore	...	...	...	...	4 " "
Bardhee	...	...	...	...	17 " "
Allumpore	...	...	...	...	9 " "
Soobooree	...	...	...	...	10 " "
Sekuria	...	...	...	...	16 " "
Jubbru	...	...	...	...	39 " "
Bordeeha	...	...	...	...	25 " "
Sheo Dehrée	...	...	...	...	31 " "
Roghoonathpore	...	...	...	...	30 " "
Naddana	...	...	...	...	15 " "
Nowadeef	...	...	...	...	10 " "
Dhunafruh	...	...	...	...	5 " "
Peareepore	...	...	...	...	2 " "
Sulleya	...	...	...	...	2 " "
Ajohalla	...	...	...	...	2 " "
TOTAL	...	...	...	...	233 " "

This disease breaks out every year at the same time, and is not at all unusual.

To what cause the disease is attributed, I am unable to say, nor can any one give a clear reason.

Memo. by H. ALEXANDER, Esq., Magistrate, Shahabad,—(No. 637, dated 7th May 1869).

Copy forwarded for the information of the Commissioner. The villagers in the district seem perfectly unable to contend with this disease among their cattle, nor do they appear to know of any proper cure for it. It breaks out annually. The mortality has, however, been great within the last four months, and as the disease is still prevalent, it seems to me proper to bring the matter to notice, in order that, if possible, professional aid may be procured with a view to checking it. The diseases which seem to attack cattle most are called by the Natives *sillah* or *khoorah* and *posanga*, and their symptoms are,—*khoorah* or *sillah* are said to be apparent in a loss of appetite, accompanied with insatiable thirst, a discharge from the nose, eyes, and mouth, and a roughness of the skin, which eventually breaks out in boils. The symptoms of *posanga* are somewhat similar to those of *khoorah*, only the effects are apparent internally, causing the passing of blood, which emits an unhealthy stench, and in which the contagion apparently exists.

Instructions have been sent through the Police to direct the people to keep all cattle attacked separate from others, and so shut off all communication. It is feared that the Natives, in their usual callous way, pay very little attention to these instructions, looking upon the matter as one of *kismut* or fate.

Summary of Reports regarding cattle disease prevailing in the Chynepore Pergunnah of the Shahabad District.

Thannah.	Village.	Date of outbreak.	Date of report.	Name of disease.	Number of cattle in the locality.	Number of cattle attacked.	Number died.	Number recovered.	Number still ill.
		1870.	1870.						
RAM-CHUR.	Bhagnie ...	13th Jany. ...	23rd March ...	Bagha ...	...	8	5	...	3
	Khandhidebra ...	11th " ...	" " ...	Small-pox ...	...	12	...	...	12
DOORGA-MITL.	Khursanda ...	April ...	19th April ...	Ditto ...	125	28	15	10	3
	Chumkra ...			Ditto ...	100	22	2	12	8
	Dhela ...			Ditto ...	100	30	9	17	4
BHURBOOR.	Mehdwar ...	10th Jany. ...	" " ...	Muh-Pasijah ...	...	2	2	...	...
	Orgain ...	12th " ...	" " ...	Ditto ...	...	2	2	...	...
	Khurda ...	...	4th April ...	Small-pox ...	...	8	4	4	...
	Bhourahon ...	...	" " ...	Ditto ...	...	20	16	4	...
	Radar ...	3rd Feby. ...	" " ...	Muh-Pasijah ...	...	1	1	...	...
	Do. ...	17th " ...	" " ...	Chutka ...	400	1	1	...	...
	Do. ...	25th Jany. ...	" " ...	Khoorah ...	...	8	...	8	...
	Surungpore ...	31st " ...	" " ...	Small-pox ...	...	2	2	...	...
	Dum-Dum ...	3rd Feby. ...	" " ...	Ditto ...	...	2	2	...	...
	Fokarabad ...	10th Jany. ...	" " ...	Bagha ...	...	1	...	...	1
	Ghaloon ...	2nd " ...	" " ...	Small-pox ...	...	7	1	6	...
	Kahar ...	April ...	13th April ...	Ditto ...	1,599	145	37	20	83
	Sherfoon ...			Ditto & Khoorah ...	700	50	10	...	40
	Saladpore ...			Ditto & Ditto ...	1,500	31	1	...	30
	Mahoorree ...	13th April ...	25th " ...	Ditto ...	200	9	4	...	5
	Sahamul ...	5th " ...	20th " ...	Khoorah ...	1,000	20	...	6	14
	Lobra ...	29th March ...	25th " ...	Khungma ...	500	25	...	...	25
	Khalasfoon ...	14th April ...	" " ...	Ditto ...	300	40	...	...	40
	Chund ...	15th " ...	" " ...	Ditto ...	200	25	...	...	25
	Bhamoo ...	" " ...	" " ...	Ditto ...	250	100	...	...	100
	Bagbaila ...	" " ...	" " ...	Ditto ...	70	16	...	...	16
	Dhobba ...	" " ...	" " ...	Khoorah ...	1,000	9	1	...	8
	Bhairree ...	8th " ...	" " ...	Ditto ...	200	20	...	4	16
	Tetree ...	5th " ...	" " ...	Small-pox ...	379	147	66	81	...
	Rampoor ...	13th Oct. ...	" " ...	Khoorah ...	150	15	...	...	15
	Noroon ...	22nd April ...	7th May ...	Small-pox & Khoorah ...	200	28	3	...	25
	Doom-Doom ...	14th " ...	" " ...	Ditto ...	85	7	...	...	7
	Khaira ...	" " ...	" " ...	Ditto ...	70	10	...	10	...
	Durboobee ...	19th " ...	" " ...	Ditto ...	384	40	...	35	5
	Kochandie ...	15th " ...	" " ...	Small-pox ...	190	25	9	10	6
	Mujeeham ...	" " ...	" " ...	Ditto ...	266	1	...	...	1
	Rooyab ...	17th " ...	" " ...	Khoorah ...	115	36	...	...	36
	Belomdee ...	27th " ...	" " ...	Ditto ...	250	20	...	...	20
	Baneeyoon ...	25th " ...	" " ...	" " ...	" " ...	" " ...	" " ...	" " ...	" " ...
	Peeparyah ...	" " ...	" " ...	" " ...	" " ...	" " ...	" " ...	" " ...	" " ...
	Dagoondah ...	" " ...	7th May ...	Kkoorah ...	300	12	...	...	12
	Pathanee ...	" " ...	" " ...	Ditto ...	150	35	...	...	35
	Amoorkhra ...	17th " ...	" " ...	Ditto ...	150	11	...	11	...
	Mookhree ...	13th " ...	" " ...	Small-pox ...	700	24	2	...	23
	Poimondie ...	27th " ...	8th " ...	Ditto ...	266	12	3	1	8
	Rooria ...	17th " ...	8th " ...	Ditto ...	190	37	18	14	5
	Doromhee ...	9th May ...	8th " ...	Ditto ...	262	30	10	5	15
	Seopore ...	24th August ...	12th August and 19th September	Ditto ...	115	35	28	...	7
TOTAL ...					13,166	1,214	291	261	662

[REMARKS.—This statement has been prepared rather with a view to show the distribution of the disease in the district, than for a statistical purpose. The figures are not worthy of much reliance, but they show that about 9 per cent. of stock were attacked, and that of the cases whose result is given, 52·7 per cent. died and 47·3 per cent. recovered—a very probable statement.]

From H. MUNRO, Esq., Assistant Superintendent of Police, Sasseram, to the District Superintendent of Police, Shahabad,—(No. 34, dated Sasseram, 6th May 1870).

I have the honor to forward the following information gathered regarding the cattle disease in this sub-district; although to a certain extent the disease broke out some time back, yet perhaps the information may be useful.

There are two kinds of cattle disease known here, viz., *sillah*, and *khoorah* or foul foot. It will be seen from the following that it is not known how the first mentioned disease originates.

In the Sasseram Pergunnah the number of cattle attacked during March and beginning of April was 35, out of which 25 died and only 10 recovered. The villages losing cattle were Memri, Sogonli, Sooki and Gurhar. The disease is decidedly infectious, and when it first breaks out amongst a herd of cattle, those which have not been inoculated are always attacked. Cattle that have had the pox once seldom take it again. Small red spots are visible all over the body; from the eyes and mouth proceeds a thick slimy spittle; the body becomes hot, and there is slight coughing, and when the animal has nearly succumbed to the disease, the legs are noticed to tremble very much. No swelling in the throat apparent; the faecal matter very thin. Cattle with the disease linger on for about five days and then die. Those which recover never do so under 15 days, and even at that time are so thin and prostrated as to be unable to walk. It is strange that the disease in this part of the district should be confined in a great measure to villages at no great distance from the hills.

The information I received from the south of the district was so untrustworthy, that I will only mention that in the whole jurisdiction of Akburpore only seven animals were attacked, two died, and five recovered.

A mode of treatment I learnt from the Natives was,—5 seers of curds and whey, 1 seer of leaves from the *bakain* trees,—the leaves to be powdered very fine,—1 *ghurrah* of water, 5 seers of wheat not finely powdered; all to be boiled up together to a thick state and given to the animals constantly.

I have never seen this put in force, and shall take the first opportunity of watching its progress as a restorative.

With regard to the *khoorah*, although not raging here, Mr. Charles Davies, of Rohtasgurh, kindly placed the following information at my disposal with regard to this disease. When it first breaks out the ulcerated portions of the hoof should be carefully cut away; frequent washings and application of a salve made of catechu, tobacco, and columba. When the droves affected are too numerous for efficient treatment, the animals are driven into water often, and made to run about freely on sand, which eventually cures the majority. Mr. Davies mentions another manner of death of cattle operating down to the south of the district, which, though it bears the semblance of disease, is in reality not so.

An animal suddenly grows dull, refuses food, refrains from rumination, seeks water eagerly, and the stomach suffers great distention; purgation of a most offensive nature then ensues twice or thrice, and the animal dies. The whole course seldom exceeds three days.

Mr. Davies thinks that the latter disease is brought about by chamars administering poison to the animals.

I think Mr. Davies is in a measure right in thinking so, as the attack comes on so suddenly, and the animals die in so short a time. Last year only, a lad was found poisoning cattle in that part and was imprisoned. Immediately *sillah* breaks out again, I will proceed myself and try whether the remedy used by the Natives is in reality a valuable one.

Cowriram village, visited 8th June 1870, at 6 A. M.

This village is east of Mohaneah, about 3 miles distant on the side of the Grand Trunk Road.

A bullock owned by one Protoub Rai, 6 years old, and in good condition, has been ill since for the last 10 days, during which time the animal, it is asserted, has eaten nothing; has excessive thirst; it purged watery stools for the first 2 days of attack, but subsequently has purged little. The present symptoms are,—coat somewhat rough; slight discharge from eyes; much sticky discharge from nose; muzzle very dry and very much reticulated; the animal is apparently very weak; the gum and buccal papillæ looked healthy, but the tongue was much furred; no medicine is being given; animal seemed to be recovering.

BHOYRUB RAI, GUNPUT RAI, and ROOP NARAIN COONDOO, of Cowriram, say,—this village is inhabited by 50 or 60 families, all Hindoos, including Chamars, Dosands, Coondoo, Rajpoots, and Kyasts. They own nearly 200 head of cattle, including 25 buffaloes. There are village stock.

SHAHABAD.
Rinderpest.
Mortality.

no goats or sheep in the village; the cattle have had disease for the last 15 days; we call this disease *matah-ka-niksar*; some call it *mookh-pusunja*. The losses among cattle are as follow:—

	Bullocks.	Cows.
Boyrub Rai lost ...	2	0
Protaub Rai „ ...	1	1
Gonesh Rai „ ...	1	0
Sumaropasee „ ...	0	1
Jogeeepasee „ ...	0	1
Chowdary „ ...	9	2
Samo Laul „ ...	0	1
Heera Laul „ ...	0	1
Dindyal Gun „ ...	2	0
TOTAL ...	15	7

Symptoms.

Source of disease.

Infectiousness.

Separation.

Treatment.

Foot and mouth disease.

Hoven.

Symptoms of *khoorah*.

Symptoms of *foolbaga*.

History.

Chamars.

Hides.

Poisoning

Price of cattle.

Supply of cattle.

Markets.

Beparees.

Cultivation.

The animals died after an illness of 2, 3, 4, and even of 6 days. The symptoms of the disease are,—discharge from eyes, nose and mouth; purging watery and slimy stools; ears drooping (the hair did not stand on end); off feed; great thirst; no eruption on the skin; offensive breath and stools; mouth very hot (the mouth of the affected animal was not hot). At present the bullock owned by Protaub Rai is ailing; others are all right; the village lost a bullock only yesterday. Before the disease appeared in our village, the neighbouring places of Belooria and Chatter had been affected. The cattle of all these villages graze together daily. Belooria is still suffering, but not Chatter. We consider the disease to be infectious. With exception of Protaub's bullock, which looks as if it is recovering, there has not been one case of recovery in our village. We have not the means of separating the sick from the healthy cattle; Lohora and Hera Laul lost their entire herds. We are aware of no medicine, and we apply none; some of us have, however, given a drink of *neem* or *serish* leaves as a cooling medicine. Besides this disease, there is a distemper called *khoorah*, and another called *foolbaga*, which attack the cattle; *khoorah* is not fatal, *foolbaga* is sometimes so. In *khoorah* the mouth and feet are affected, and the animal is laid up. In some cases the mouths, and in others the hoofs, get the sore first. In *foolbaga* the animal gets swelled, off feed, and dies in 2 or 4 *ghurrees* (hours). If the affected animal purges, it gets better; the disease *matah-ka-niksar* is not new. It comes to the village generally after an interval of 2 or 3 or 4 years; 4 years ago it appeared in our place, but the mortality then was not so great as it is now. The chamars have no cattle; they plough for others, and their families act as midwives. They also sell cattle hides. Only Protaub and Bhoyrub Rai buried their cattle. The skins of others were taken by the chamars. The chamars of Kasse and Ghazeeepore came here and purchased the skins from the village chamars. The chamars do poison the cattle now and then, but we have never seen it done. Ten years ago a charmar was seized in the act of poisoning Gocool's buffalo; but the matter was hushed up. It is also said that chamars get *demons* to bring on murrain. The price of cattle has increased by 25 per cent., comparing the present market with 10 years ago; we generally get our cattle from the Berhampore and Dadri fairs, 50 to 60 miles distant from this place. There are large cattle fairs in these places. The *beparees* also bring cattle once a year to the village. They come in July; they do not buy any animals from the villagers. They come from the district of Tirhoot and sell cattle on credit; they realize the money in February or March following. Laban will not be able to till his lands this year, and the zemindars will let those to others; we shall manage to till somehow or other.

Belooria village, visited 9th June 1870, at 5-30 A. M.

Case.

This village is 2 miles south-east of the Mohaneah Dāk Bungalow. A bullock, 6 to 8 years old, owned by Corbanally; condition poor; 4 days ill; discharge from eyes, nose and mouth; œdema around eyes; excoriations and apthous condition of gums and buccal membrane, especially at the angle of the mouth; breath very offensive; has been purging watery stools, mixed with blood and mucus, since yesterday; off feed, but is thirsty; mouth hot and body cold; symptoms of eruptions on ribs; coat staring; ears drooping; very weak; lies down a great deal; tongue furred.

Case.

2. A bullock owned by Bhoyrub; 5 years old; condition good; 3 days ill; slight discharge from eyes; very viscid discharge from nose; dry reticulated muzzle; discharge from mouth; excoriations and apthous condition of gums; buccal membrane is yet congested; œdema around eyes; conjunctiva much congested; ears drooping; purging as in the last case; off feed; drinks little.

Case.

3. A bullock owned by Bhoyrub; 8 years old; condition fair; 5 days ill; excoriations and apthous condition of floor of mouth, hard palate and gums, as also inside of corner of mouth; buccal membrane only congested; muzzle dry and reticulated; œdema around eyes, nose, and mouth; purging 3 days.

SHAHABAD.

4. Cow, 6 years old, belonging to the same person; condition fair; 3 days ill; off feed; great thirst; ears drooping; coat staring; excoriations on hard palate, floor of mouth, and around opening of sub-lingual gland, and upon gums; buccal membrane much congested and tumid; muzzle reticulated; eyes semi-closed; œdema of lids; mouth hot; tongue furred; vagina deeply congested, and around vulva skin tumid; on opening the lips aphtha is found; the animal is in calf.

Case.

5. One bullock recovering was seen.

Case.

6. A bullock owned by Goruck found lying on its near side, unable to rise; age 8 years; condition poor; 3 days ill; profuse discharge from eyes, nose, and mouth, and blood from Schneiderian membrane; mouth not much diseased; slight excoriations on the gums; conjunctiva much congested; muzzle very dry.

Case.

CAREBANALLEE, SHEIKH ROHUMOTALLEE, MEER SHOOJOETALLEE, and DEONARAIN, of Belooria, say,—this village contains about 100 houses and about 125 head of cattle, including buffaloes. The village is inhabited by Hindoos and Mussulmans, including chamars. It stands about a quarter mile distant from the Grand Trunk Road. The disease among cattle has been prevailing in this place for the last month and a half; it is called *chechack* or *gootee niksar*; the number that have died from this disease is 10, namely, 5 bullocks, 1 cow, and 4 buffaloes.

Village stock.
Situation.

Mortality.

The last death occurred 8 days ago; the deaths resulted from the disease that the Commission have seen here this morning; 7 head of cattle recovered. The disease is *gundwa* or infectious; the disease at first appeared in our village. There was no disease in any other village in the neighbourhood at or before the time; our cattle graze during day in the fields near or far from the road. In fact, they go in any direction they wish to go, and are kept in houses during night. It also happens that the cattle of other villages graze on the same way, and consequently with the cattle of this place. Ten years ago this village had an outbreak of similar disease; that attack was milder than the present attack; then no other village was affected; we heard from people that there was disease nearly all over the country, but in the neighbourhood there was no disease; we cannot say how the disease came to this place; the bullocks form the greater portion of the cattle. Almost in every Assar month (July) the *beparees* bring cattle from Tirhoot and we buy from them; we also get our supplies from Berhampore and Bulleah, where there are cattle fairs periodically; the bullock which sold for 10 Rs. ten years ago, fetches Rs. 12 or 14 now; the cause of this is that the number of cattle available has been reduced. Berhampore is on the railroad. The cattle bred in our country are of smaller size and give less milk than the cattle brought from Tirhoot, Berhampore and Bulleah, which are called *uttraha*, and which are larger in size and give more milk. The buffaloes and cattle during floods are sent to the Chynepore Hills (Rajmehar Hills) for pasture. They are sent there in Srabun and Bhadore (July and August) and brought back in Aughan and Pous (November and December). Sometimes the cattle during their stay in the hills get the *gootee* in the rains; many die there. The *gootee* there is more general and more severe, and kills a large number of cattle. During the rains a large number of cattle are collected there and the disease breaks out among them. The cattle bring the disease from the hills to their homes; the cattle of this village came back from the hills in October last, but they did not bring any disease with them. On this occasion a man present states that his village, named Benaitah, stands on the side of the Grand Trunk Road, and has a "serai" in it. It had the cattle murrain from February and March before last to February last, and during all this time nearly 40 head of cattle, out of 200, died of *gootee*. In our village "serai" 10 to 25, and sometimes as many as 50 head of cattle belonging to *buniah*s and carters come in in the evening, and after taking up their night's lodging go away in different directions in the following morning, and I have seen diseased and disabled cattle brought into the "serai" and left to die there. The disease has generally been *gootee*, like the distemper you see in this village, and sometimes *khoorah*. These diseased cattle coming to the "serai" spread disease from one place to another. Sometimes the carcasses of dead cattle are buried, and at others they are thrown away and taken charge of by the chamars, who take the hides and sometimes sell them, and at other times make shoes of them; they sell to a *soudagur* (merchant), who collects them in the village and takes the hides to some city. Besides *gootee* there is another fatal sickness called *mukhrusijah*; in that disease the mouth waters, the animal purges, and dies in two or three days. It appears in all seasons; the disease is also infectious. The cattle also get *khoorah*, but that disease is not fatal. We never heard of any case of cattle poisoning; we never saw any; we have occasionally suspected cases of cattle poisoning. Four days ago a milk cow, evidently in good health, died all of a sudden. It watered from the mouth, ran out of the house and dropped down dead. Dawun Roy is Theekadar of this village. The horns of buffaloes are taken away by the chamars; those of cows and bullocks are thrown away. The goats and sheep get this disease; they get it during the rains.

Infectiousness.

Source.

Grazing.

Rinderpest in 1869.

Cattle dealers.

Markets.

Price.

Breeds.

Cattle sent for pasture to the hills.
Rinderpest there.

Disease brought back to the plains.

Village Benaitah.

Rinderpest there.

Disease in a "serai."

Disposal of carcasses.

Mukhrusijah.

Khoorah.

Cattle poisoning.

Horns.

Goats and sheep.

SHAHABAD.

10th June 1870.

Post-mortem examination.

5 P. M.—*Post-mortem* examination of a cow brought, and found to have died of hoven.

6 P. M.—Another case of the same kind at village Belooria.

The first case also showed symptoms of inflammation of the fourth stomach, which was all but empty; some of the contents are preserved in a bottle for chemical analysis; the lungs were more or less collapsed, and the larynx and upper portion of the wind-pipe inflamed from entrance of foreign material.

The second case was one of simple hoven, and the lungs were emphysematous.

The fourth stomach was quite healthy. It is worthy of note that both these cases occurred in a locality and a time when rinderpest was prevailing amongst the cattle; the one was mistaken for rinderpest. Probably at this time of year, specially in this district where pasture is scanty and bad, very many cattle are lost from hoven. The cause of hoven was impaction of first stomach with coarse, indigestible, dry, non-nutritious fodder.

The two cattle were in an impoverished condition.

DISTRICT OF PATNA.

PATNA.

Diseases of cattle prevailing in the Patna District, communicated by C. F. WORSLEY, Esq., Joint Magistrate.

No.	Name of disease.	Symptoms.	Preventive or remedial measures adopted.
1	Dherka ...	Swelling of throat, difficult breathing, frothing from mouth; no change in evacuations.	The part affected is scored with a red-hot iron and verdigris is applied. Vermilion mixed with mustard oil is rubbed on the throat, and gumbhur tree bark and black pepper, ground up together and mixed in cold water, is given to the animal to drink.
2	Chechuck or matah ...	Small-pox, fever, off feed, purging offensive and watery.	Superstitious fear generally forbids treatment; spices are burnt before them.
3	Dauk ...	Dysentery ...	Spirit is generally given.
4	Goomar ...	Belly swelling ...	A mixture of pounded hurdee phool, gola, babheerung, and black jeera is given.
5	Surdee ...	Cold accompanied by a discharge of water from nose and mouth.	Pepper, kafoor, and oil are rubbed into the nose.
6	Aryas ...	Limbs tremble and animal can hardly move about.	Two and a half cups of water are sprinkled over the body.
7	Phoolbaga ...	Leaves off chewing the cud; mouth waters and belly swells.	Ghee, seernal cotton, and wine.
8	Hurna ...	Shivering fits ...	Right horn of the animal is slightly burnt.
9	Hakara ...	Hoofs of the cattle get sore.	The sore is washed with hot water and the animal is kept for several hours tied in muddy water.
10	Dakaha ...	This disease is called "itch" or "mange," and death is said to ensue in one day.	

DISTRICT OF GYA.

Cattle Disease in the Gya District.

A report in Form No. 1, dated 8th January 1870, states that small-pox prevailed in 8 monzabs of the Uttri Station between November 1869 and that date. The following statistics are given:—Stock 1,850, attacked 242 (13 per cent. of stock), died 180 (9 per cent. of stock and 74 per cent. of attacked), recovered 48, still ill 14.

GYA.

A subsequent report, dated 19th February, states that 20 fresh cases had occurred in Uttri. Another, dated 23rd February, says that the disease had appeared in the Kheddar Serai Outpost, where 10 cattle were attacked.

The District Superintendent of Police and Magistrate write as follows on the 1st and 4th of March.

Memo. from MAJOR F. N. MILES, District Superintendent of Police, to the Magistrate of Gya,—(No. 180, dated 1st March 1870).

Early in December the existence of a disease among the cattle in the villages under the jurisdiction of Uttri Sub-division was brought to the notice of the Police. From time to time the Police have reported the increase or decrease (as the case might be) of the disease. The disease has confined itself chiefly to the Pergunnahs Purbul and Mohair, north-east of Gya, and it still exists, but not to such an extent as to demand, in my opinion, personal investigation by the Committee on the Cattle Disease. The natives call the disease *chechuck*, which I understand to mean cow-pox; they believe it to be infectious; they can assign no cause as to its origin.

The symptoms are reported to be,—a rough and staring coat; small eruptions at the pores of the skin; eyes and mouth watering; hot body; labored breathing; shivering fits; swelled throat; yellow urine; thin and liquid evacuations. At the expiration of about 9 days, either death intervenes or the animal shows symptoms of recovery. No medicine is applied beyond native *poojahs*.

Memo. from A. PALMER, Esq., Magistrate of Gya,—No. 263, dated 4th March 1870.

Copy forwarded to the President, Cattle Plague Commission, with reference to his letter No. 165 of the 26th ultimo.

2. I may remark that the natives in this part are apt to designate every cattle disease by the term *chechuck*, and it is moreover a fact that they are averse to any remedial measures being applied for the relief of the cattle attacked.

P. S.—Since writing the above, a report from Sudder Station Police has come in, stating that 27 head of cattle are suffering from the disease.

The last report received is dated the 10th of March. An inquiry by the Police showed that of 20 cattle attacked only one died, and that no cases had occurred for a week. No report was received subsequent to this, and it is evident that the disease was mild and sporadic.

DISTRICT OF CHUMPARUN.

Cattle diseases prevailing in the District of Chumparun, from information supplied by C. T. METCALFE, Esq., Magistrate.

Names.	Symptoms.	Treatment.
Khoerah ...	Infectious; hoofs become affected with sores; fever; mouth and tongue get covered with blisters; lasts several weeks.	Not stated.
Dakha ...	Infectious; throat swells and closes; evacuations stopped; the animal breathes painfully, and dies within 3 hours.	Purgatives are administered.
Gootee ...	Infectious; fever; coat covered with blotches; bowels violently purged; tubercles form on tongue; throat closes.	Segregation; water <i>ad lib.</i> ; bran mashes; sulphur fumigation; complete rest.
Phoolbaga ...	Stomach swells; evacuations stopped	Simul cotton seed, green mustard oil, and salt given internally.
Rusha, Anthee ...	Apparently rheumatic affections.	

DISTRICT OF SARUN.

SARUN.

Memo. from CAPTAIN H. M. RAMSAY, District Superintendent of Police, Sarun,—No. 359,
dated 28th October, 1870.

In reply to his endorsement No. 1141, dated 31st August last, reports that the following figures are given by the Police as showing the number of cattle attacked, died, and recovered from chechack or matah :—

				Attacked.	Died.	Recovered.
1866	...	...	...	4,600	1,822	2,778
1867	...	...	...	4,510	1,930	2,580
1868	...	...	...	4,129	1,889	2,240
1869	...	...	...	5,041	2,461	2,580
1870	...	...	...	3,468	1,669	1,799
TOTAL				21,748	9,771	11,977

Memo. from C. AGNEW, Esq., Offg. Magistrate of Sarun,—No. 1358, dated 29th October, 1870.

Copy forwarded to the President of the Cattle Plague Commission, No. 1, Sudder Street, Calcutta, for information, with reference to his letter No. 452 of the 29th August 1870.

BHAUGULPORE DIVISION,

COMPRISING THE DISTRICTS OF PURNEAH, BHAUGULPORE, MONGHYR AND SONTHAL
PERGUNNAHS.

Index of Records.

[N. B.—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Purneah.	Historical Sketch ...	...	...	Page 225.
	A. Money, Esq., Commissioner of Bhaugulpore.	48	8th February 1864	<i>Selections, Bengal Government, p. 18. Describes the cattle disease which prevails in the district. States that it principally attacks cattle sent to graze in the Nepal Jungle.</i>
	G. Hayes, Esq., Deputy Magistrate, Arora Sub-division.	8	23rd February 1870	<i>Reports that small-pox—Mahamai, raged throughout his district during the months of October, November, and December 1869.</i>
	Ditto ditto ...	10	4th March 1870 ...	<i>Ditto ditto, with a description of the disease.</i>
	Ditto ditto ...	6	29th April 1870 ...	<i>Reports that cattle go to graze in the Morning in January and February and get cow-pox and foot and mouth disease, with which they return in June.</i>
	J. B. Worgan, Esq., Magistrate of Purneah.	504	14th April 1870 ...	<i>Reports that no cattle disease prevails in his district.</i>
	Ditto ditto ...	554	30th May 1870 ...	<i>Reports that in January and February of 1868-69 the disease was not prevalent to such an extent as to be reckoned "epizootic," but that there is disease, more or less, always.</i>
	The Villagers of Mudhoo-banee.	...	17th June 1870 ...	Evidence recorded by the Cattle Plague Commission, p. 227.
	Lalla Hursersaud Sing ...	...	18th June 1870 ...	
	J. B. Worgan, Esq., Magistrate of Purneah.	1784	14th September 1870	<i>States that cattle disease has been on the decrease for the last 5 years.</i>
	J. S. Carstairs, Esq., Officiating Magistrate of Purneah.	1904	15th October 1870...	<i>Reports prevalence of pox in some villages of the Cusha Amour Thannah.</i>
	F. J. G. Campbell, Esq., Officiating Joint Magistrate of Kishengunge.	11	31st October 1870	<i>A full report regarding cattle murrain in that Sub-division, p. 230.</i>

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Bhaugulpore.	A. Money, Esq., Commissioner of Bhaugulpore.	48	8th February 1864	<i>Selections, Bengal Government, p. 18. Reports the existence of chechack in the district.</i>
	Ditto ditto ...	333	6th November 1866	<i>Selections, Bengal Government, p. 128. Reports that in 1864 large numbers of cattle died in the various parts of this Division. The disease is gootee, and present throughout the year—the same epizootic described by Dr. Palmer.</i>
	S. Taylor, Esq., Magistrate of Bhaugulpore.	114	25th January 1870	<i>Reports that disease is very rare in his district, and none now exists.</i>
	Ditto ditto ...	283	11th March 1870...	<i>Reports that 30 cattle were taken ill, 20 died, and the rest recovered; also gives the symptoms, p. 231.</i>
	Ditto ditto ...	679	14th June 1870 ...	<i>Reports that there has been no disease since 11th March.</i>
Monghyr.	T. J. C. Grant, Esq., Officiating Joint Magistrate.	1381	4th November 1870	<i>Reports outbreak of cattle disease, swelling of throat and diarrhoea, in Pergunnah Chye, causing great mortality since September.</i>
	A. Money, Esq., Commissioner of Bhaugulpore.	48	8th February 1864	<i>Selections, Bengal Government, p. 18. Reports the existence of chechack in the district.</i>
	H. E. Waller, Esq., District Superintendent of Police.	9 T	10th January 1870	<i>Reports prevalence of foot and mouth disease in some parts of the district.</i>
	T. T. Allen, Esq., Magistrate of Monghyr.	81	9th February 1870	<i>Reports that cattle disease, chechack, broke out and abated in Pergunnah Bulliah, and gives a description of the disease; 12 cattle died out of 40. The symptoms detailed are those usually given.</i>
	G. W. Barlow, Esq., Magistrate of Monghyr.	166	4th March 1870 ...	<i>Reports that cattle disease, chechack has broken out at Guneshpore; 7 died out of 17 attacked.</i>
Sonthal Pergunnahs.	A. Money, Esq., Commissioner of Bhaugulpore.	48	8th February 1864	<i>Selections, Bengal Government, p. 18. Reports that chechack breaks out in the Sonthal Pergunnahs.</i>
	A. W. Cosserat, Esq., Assistant Commissioner, Deoghur	527	2nd April 1869 ...	<i>Reports the outbreak of a distemper among cattle; remarks on their wretched state, want of food, and measures adopted, with apparent success, to limit the outbreak, p. 232.</i>
	Ditto ditto ...	540	5th April 1869 ...	
	Ditto ditto ...	1157	6th August 1869	
	E. Stewart, Esq., Deputy Magistrate, Rajmehal.	2272	18th December 1869	<i>Reports that no epizootic of cattle disease exists in the Rajmehal District.</i>
	Evidence recorded in the village of Sahebgunge.	...	13th June 1867 ...	Page 235.

HISTORICAL SKETCH.

The information obtained from this Division is very meagre.

HISTORICAL SKETCH.

The Commissioner, A. Money, Esq., C. B., writing in 1866, states that the inquiries which he had made "lead to the conclusion that a disease called by the natives *gootee* or small-pox is never absent from this part of the country; that it attacks cattle during the winter months; and that it closely resembles the epizootic described by Dr. Palmer." Other reporters confirm the truth of this remark, and the periodical appearance of murrain in various parts of the Division at intervals of one or more years is a well understood and acknowledged fact, while data are wanting to determine when this periodical prevalence first commenced. The evidence obtained by the Commission in several villages around Purneah proves that the appearance of disease stretches beyond the recollection of living men.

The inquiries made by order of the Government of Bengal in 1864 elicited the fact that *chechack* or small-pox was a well known disease among cattle in all the districts of the Division.

A practice prevailing in the district of Purneah was then brought to light which tends to provide for the frequent appearance and widespread of contagious disease. Cattle are yearly driven for grazing in January and February from every part of the district to the Morung or Nepal Terai, where they remain till the middle of June. Both rinderpest and foot and mouth disease are perennially present among the herds on these grazing grounds, and these diseases are carried back by the cattle returning to their several villages. This practice prevails very extensively in India—indeed wherever the grassy slopes which encircle the base of hills are without easy distance. Writing again in November 1866, the Commissioner reports that in 1864 an unusually large number of cattle died in various parts of the district. He also remarks that the foot and mouth disease is a common one.

An interval of several years now elapses in which no written or printed report exists of any murrain among cattle. That disease was absent from the Division is improbable in the highest degree, and the District Superintendent of Police of Purneah, in a letter dated 14th May 1870, states that the disease was on the decrease during the previous 5 years. This shows that it was prevalent in that district, and though reports are wanting from the others, it may fairly be concluded, from the analogy of other parts, that it might have been found in the other districts as well.

From January to June 1868 both rinderpest (*matah*) and foot and mouth disease (*choam ussia*) are said to have attacked the cattle of Purneah, more particularly in the police jurisdictions of Kishengunge and Babungunge. These diseases prevailed among the cattle which went to the Morung. In 1869 the disease seems to have been brought back with the herds, and prevailed in the Arrourah Sub-division from October to December. In Monghyr also the existence of *chechack* is reported in December in the Bulleah Pergunnah, while in the Sonthal Pergunnahs rinderpest prevailed in the Nalla and Kurron police stations in March and April. The decline of the disease is attributed to the active efforts made by the police in the way of enforcing segregation and cleanliness. In 1870 the disease continued to prevail in the Bulleah Pergunnah of Monghyr in January and February, and was reported from the Chukye police station in March. Foot and mouth disease appears to have prevailed simultaneously. A few cases of *mahamai* are said to have occurred in the Kishengunge Sub-division in February, and rinderpest was found by the Commission to

HISTORICAL SKETCH. prevail in the neighbourhood of Purneah in June. The cattle had just returned from the Morung and brought the disease back with them. Another report was received in October, when the existence of disease was discovered in several villages of the Cushmanour Thannah.

In February 30 cattle were attacked at Luchmunpore Ekdera, in the Bhaugulpore District, with a peculiar disease, not named, whose symptoms were,—shivering, falling down, stoppage of evacuations, flow of fluid from the mouth, and death in 3 or 4 hours (poisoning?); 20 of these cattle died. Further reports were at once solicited, but no seizures or deaths, in addition to these, appear to have taken place.

A later report from Bhaugulpore mentions that great mortality had been caused in the Luchmunpore police station and Chye Pergunnah of that district in September and October from swelling of the throat and diarrhoea, attributed by the natives to noxious grasses.

DISTRICT OF PURNEAH.

PURNEAH.

Modhoobanee village, visited 17th June 1870, 6 A. M.

This village is 2 miles out of the station. A male buffalo, 15 months old; condition fair; profuse discharge from eyes and nose, and some discharge from mouth; coat staring; well marked excoriations on the gums and buccal papillæ and floor of mouth; purging watery stools; off feed and great thirst; ill four days; ears drooping; muzzle dry; offensive breath; animal very weak; eruptions inside thighs, anus, and under throat and neck, as also on cheek.

RAM TAHAL, DOOKHARAM MONDUL, NEELA GOALLA, LUCHMUN GOALLA, POSUN GOALLA, FOTEE GOALLA, WOOMROO GOALLA, of Modhoobanee, say,—that this is a large Hindoo village containing about 500 families owning 1,500 head of cattle, more or less, including buffaloes. A few of this number, say 250, are kept in the village throughout the year. The rest are annually taken to the Morung for pasture. The cattle are taken there in Pous (December) and brought back in Jeyt (May). In the hills the cattle are let loose day and night in the jungle. Other villages of this district send their cattle there at that time. The Morung jungles are nearly 60 miles distant from our village. There is at present not much disease among our cattle. Only two buffaloes of Ramdyal's are ill of *gootee*. During the stay of our cattle at the Morung there were no deaths from *gootee* there, but other villages lost several cattle from that disease. The *gootee* was raging in the Morung in the month of Bysak (April). The two animals now laboring under *gootee* came back from the Morung 15 days ago. Our opinion is that the disease, which is contagious, came from the Morung. Two years ago there was *gootee* in our village, and nearly 40 head of cattle died. The last attack commenced in Kartick (October), and disappeared at the latter end of Aughun (November). The disease appears in a place at intervals of 2, 3, 5 and 10 years. The disease has first commenced in our village. We do not separate the sick from the healthy, or the healthy from the sick. In the first place, we have not got sufficient room, and in the second place, one or two animals separated from the rest of the herd do not feel comfortable. The cattle in our place are not at all housed either in the rains or in the winter; they are kept in an open place day and night. When the cattle die we throw the carcasses into the field and the chamars take the skins. The vultures eat up the flesh. We do not take the price of the hides. Ramdyal had in his custody 200 head of cattle, and of that number he lost 18 two years ago; not one recovered. Before the month of October, 2 years, there was no disease; not even after the return of the cattle from the Morung. The animal that Ramdyal lost 7 days ago also had been to the Morung and came back with the other cattle. There are large cattle markets at Ronta, Doomga, and Foolberiah, but we go about in the villages and make our purchases. The price of cattle has increased 25 per cent. from what it was 10 years ago. The disease is always in the country, and I saw it when I was a boy. We are not aware of any party taking buffaloes or cattle to Assam or any other place. The people of Muzzufferpore take the cattle; but dealers generally come once a year here from the north-eastern corner of the district and make large purchases of cattle and buffaloes, and they take them away to different places. It has never happened that cultivation was suspended owing to the loss of cattle. There are large tracts of waste land here. There are chamars in our village. We have not heard or seen any case of cattle poisoning.

A buffalo cow, 5 years old; condition fair; said to be ill since yesterday. The appearances observed are,—buccal membrane very much congested; effusion around eyelids; eruption on the throat; muzzle dry; ears drooping; congestion of vagina, with a small aphthous ulcer; conjunctivæ very much congested; general cutaneous congestion; extremities œdematous.

Morunga village, one mile out of the station.

A buffalo heifer, 2 years old; condition fair; owned by one Amrit (returned from the Morung 9 days ago); ill six days; slight discharge from eyes, nose, and mouth; subcutaneous effusion all round eyes; excoriations on lower gums; intense congestion of buccal papillæ; tongue much furred; breath offensive; most extensive cutaneous eruption—the most severe case hitherto seen. The eruptions are on the cheeks, inside throat, under abdomen, and inside thighs and over udder; the eruption is not scurfy and scabby as has generally been noticed, but the whole skin is deeply congested and covered, especially inside the thighs and under the throat, with fissures from which water oozes, and inside the near thigh along the groin (the side on which the animal lies down) there is a thin layer of purulent matter all over the skin, and here again the fissures are more like pits of pox and of a confluent type. The animal is very weak; all four legs are œdematous; purging blood and mucus; very offensive. The owner states that the animal is better, and believes that she will get well. No segregation has been attempted; the sick keep with the rest of the herd in the fields; 2 or 3 of the others have had the disease, and 3 or 4 others appear to be becoming affected. The people are aware that the disease is contagious, but as they have not the means of separating the diseased animals, and as a rule very few, not more than 10 per cent., of those attacked die, they never attempt to segregate.

PURNEAH.

Gootee imported from the Morung.

8th June 6 P. M.

Gootee is said always to return with the cattle coming home from the Morung (pasture land at the foot of the hills). It is said that those which bring it with them generally recover, and those that become affected afterwards often die.

Sultanpore, 40 miles from Purneah, is famous for gootee. Mr. Cockburn, District Superintendent of Police, has heard that people sometimes give the scabs of gootee with a view of poisoning animals.

Evidence of Lala Hurprosad Singh.
Hide trade.
Advances.

Contracts.

Annual supply of hides.
Increased.

Price of hides.
Increased.
Gootee hides.

LALA HURPROSAD SINGH says,—I am Gomasta of Sheikh Munnoo Khansamah, who is a hide merchant. We get our supplies of hides from the villages in the District of Purneah and Siligoorie. We buy uncured hides in the open market, as also make advances to chamars. We make advances from Rs. 10 to Rs. 20, and take an agreement from them on stamped paper, wherein they bind themselves to supply a stipulated number of hides within a given time. Some of the chamars fulfil their contract in due time, others do not; a few run away with the money. My master has lost nearly Rs. 16,000 in consequence of the chamars not acting up to their contract. For the last 2 years we have been buying 3,000 hides annually; these include a few goat and sheep skins. Before that time we purchased only a thousand or less. The increase is owing to the increase in the price of hides in the Calcutta market. We cure the hides in our place and then send them by rail, as also by boats, to Calcutta, to Isakhana arutdar of Chinapara, in Calcutta. He acts as an agent and sells the hides for us; we allow him so much commission. Formerly it cost us Rs. 20 to 25 the score of *dagi* and *bedagi* hides; now the price has doubled. We sell a score for Rs. 50. We do not take gootee hides; they are almost useless, and are *dagi*, and we do not buy them. Last year we purchased 2 gootee hides. They were filled with pits, and they did not sell anywhere. There are in this zillah 7 or 8 hide dealers; some of them purchase as many as 25,000 hides each annually. I can show deeds granted by the chamars. We have got decrees against 2 or 3 chamars for the amount advanced to them, but we have not been able to execute the decree. They are poor and could not pay.

The following is a transcript and translation of one of the deeds alluded to by this witness:—

सही पैयारचंद मोची
जो लिखा सो सही
निशान वन्द सहीकी बकलम
श० कलकत्ता
श० वकीलिया प० माजर

श्री शेख मनु खानसामा महाजन।

लि० पिआरचंद मोची पैशर रमानो मोची शा० श्रुक्की परगने हवेली आगे सबलग यचीश रुपैया नगद २५ दादन वरशा वर० मा० लावा शिकप्रसाद शाध मोहरी के लिखा करार कर लिख देतेहैं जो औवल मालहलाली गोरान् किल्ली ८ बेदाग बेकाट किल्ली किनी बत्तीस रुपैया वा दोयम वा सियम वा पक्केल रदी शावीक खाता मोताविक कीमत मोजरा लेगे माल अन्दर दश रोज के लैन वजार गुदाममो दाखिल करेगे अगर अवादा मोताविक माल आदाय नही करे या कुक् कमती दाखिल करे तो जिस कदर रुपैया बाकी रहेगा हरजा उस कदरसे लेना लगाये के महाजन अपने जात वा जायदात से आदाय करेगे और माल शिवाय माहाजन मजकुरके दिगर वगर बेचे तो हरजा उसका किल्लि रद पांच रुपैया का हिसाबसै लगाय के जिस वखत महाजन रुपैया वापस चाहेगे विना उजर दना करेगे यह करार सो रुपैया लिया तमसुक अपने खुसीसो लिख दाखिल किया के वाखत जो उनके काम आवे। ता० १७ जुन सन १८७० शाख अठारह।

गवाह

दशई मोची शा० जोवारा शेख मियाजान शा० डोटवा प० शीतौ

गवाह

द० जैराम ईशर रामभरोस जिला पुरनिया शा० कलकत्ती ता० १७ माह जून सन १८७० मर्शहा व० दुरमह मोची प० नरपु मोची शा० वनीकउआ प० एवेली करब

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PURNEAH.

४० हर वरश दर मन
मोहरम शा० वीप्रहयतवर
प० माज

सही शेख महम्मद कन्द जोली
खा शा० शही न दशखद

श्री शेख मनु खानसामा महाजन।

लि० शेख महम्मद कन्द पैशर शेख सोनाउल्ला शा० डोटवा परगने हवेली आगे ७ जोसे मबलग दोशो २०० रुपैया दादन वरशा वरशलेके करार करतेहैं वा लिखदेतेहैं जो औउल बा लोहा दाग कुरान किल्ली कीनी चौतीश रुपैया वा किल्लीरत इयाने रही किल्ली कीनी यन्दर रुपैया वा पक्केल कील्ली कीनी साटै सात रुपैया के हिसाब सो कीमत मोजरा लेगे और माल लगायत् माह अपरेल सन १८७० शाख अंगरेजी तक लैन वजार गुदाम मो दाखिल करदेगे अगर करार मोताविक दाखिल नही करे या कुक् कमति दाखिल करे तो जिस कदर बाकी हमारे पास रहेगा हरजा उस कदर से लेना लगायके महाजन मजकुर का अपने जाज वा जायदात से देना करेगे और माल शिवाय महाजन हाजाके दूसरेके हाथ बेचे तो हरजा उसका किल्लि रद पांच रुपैया का हिसाब सो लगाय के जिस वखत महाजन चाहेगे विना उजर दाखिल करदेगे इस करार पर रुपैया दादन लिया तमसुक अपने खुशी वा राजी मो लिख दिया कि औवखत जो उनके काम आवे ता० १० माह अपरेल सन १८७० शा० अंगरेजी मोकरर यह जो परगने हवेली जो लिखा गया शा० भुलसे परगना शिताउहै वा आजीव ता० सन शदर।

सही शेख महम्मद कन्द
परगने आउर है मगर
गलति है पर लाजा
खाजिका मो क
रुमे करद
करते है

४० हर वरश दर मन
काटोव

गवाह
दशई मोची शा० लैन
वजार

गवाह
अग्रदो मोमन शा० लैन वजार
प० दुबेली

गवाह

न० २८५

उ० श्री योगिन्द्र विश्वास ई० जिला पुरनिया मो० काशरि कालेकटरी मन १८५०
ता० २ एप्रिल।

कलकत्ती सेक शोनाउल्ला

मा० डोरिया प० श्रीपुर १ केता १।

PURNEAH.

To—*Sheikh Mannu Khánsámá, Merchant.*

The writing of Piárichand Mochí, son of Ramáni Mochí, of Sadhu-auli, in the Pergunnah of Haveli, sheweth,—

I have taken the sum of Rs. 25 as an annual advance from Lálá Siva Prosád Sádih, mohurrir, and I give in writing this engagement that I shall supply, in instalments of eight, first class (*awal*) goods slaughtered, without mark, without *rents*, at 32 Rupees, or second class (*doem*), or third class (*siyam*), taking the price at the rate recorded in the old rejected account books (*khátá*). I shall deliver the goods within ten days at the Line Bazaar Godowns. If I do not deliver goods within the contract time, or deliver in smaller quantity, then the merchant can recover the amount of the loss from the balance of money in his hands or from personal (*ijut*) or real property. Further, if I should sell goods to others besides the merchant named, then I shall, calculating the loss at Rs. 5 per instalment, pay the amount without any objection whenever the merchant will demand the money. I have taken money under this engagement, and submitted a bond written of my free will that it may be of use to him.

Dated 17th June (sun) 1870.

Witness, Witness, Witness,
DASAYI MOCHI, of Lábará. SHEIKH MEAJAN, of Dotowa,
Pergunnah Sitan.

Signature of Piárichand Mochí.

Whatever is written is all right.

Signature by mark with the pen of (i. e. per) Sheikh
Allahbukosh, of Bakemiyah, in Pergunnah
Májar.

From F. J. G. CAMPBELL, Esq., Offg. Joint Magistrate of Kishengunge, to the Magistrate of Purneah,—(No. H, dated 31st October 1870).

With reference to your memo. No. 1885 of the 10th instant, I have the honor to submit the following report on the disease amongst the cattle along the line of the Ganges and Darjeeling Road north of Kishengunge.

2. I travelled along the road stage by stage, according to the programme intimated to you in my letter of the 17th instant, No. 290, and the information now communicated is as reliable as direct personal enquiry could make it, though its value is of course affected by my want of professional knowledge.

3. The diseases which, as I have been informed, prevail are three, called in the vernacular—

I.—*Gootee, matah.*

II.—*Kunjala* or *khoralá.*

III.—*Chapchapia* or *chamatsia.*

4. Cattle are annually liable to be attacked by disorders from the month of April till the end of October or the close of the rains, and the testimony has been general that the present year has not been exceptional in this sub-division, at all events in respect of either the number of cattle attacked or the virulence of the diseases. I examined the Overseers and Thikadars of the Bullock Trains owned both by Government and the Darjeeling Carrying Company and several villagers, and at a village four miles from Illuabaree I personally inspected three cattle said to be attacked with *matah* or *gootee*.

5. I shall now describe the symptoms as I have learnt them. In *gootee* the animal first becomes depressed and refuses food, either solid or liquid; it is next attacked with alternate hot and cold fits; the eyes, nostrils, and mouth next become affected, and discharges from them take place, and the tongue swells; pustules generally break out, but are sometimes absent; the urine is passed red; the faecal evacuations are watery and clay-coloured; the glands of the throat swell on both sides under the jaws, and this swelling, if excessive, generally proves fatal. The crisis of the disease is reached within 7 to 21 days.

6. In *kunjala* the symptoms are similar to the above, except that, instead of a general eruption over the body, ulcers break out on the cloven part of the hoofs and on the inside of the mouth.

7. In *chapchapia* the symptoms are simply tumours and inflammation of the soft parts of the hoofs, refusal of food, and incapacity of locomotion.

8. Whether the two former are merely varieties of the same disease, or distinct disorders, I am of course unable to say. The natives consider them distinct; at all events, I think the third disorder has no connection with the others, as the majority of the symptoms are absent.

8½. The disorders are fatal in the order in which they have been mentioned.

Names.

Season.

Symptoms.

9. There can be no doubt that the two first are highly contagious; whether the last is so or not I have not been able to ascertain satisfactorily, owing to the want of a habit of careful observation amongst the natives. PURNEAH.
Contagiousness.

10. As to the *origo malorum*, I could get no information beyond the assurance that "Alla knows;" but by universal consent the hills and Terzai in the neighbourhood of Darjeeling and Julpigoree are the *foci*, the disease each year regularly taking a direction from north-east to south-west. Origin.

11. The people are fully alive to the advantages of segregation and carry it out on a small scale, but the majority are too poor and apathetic to thoroughly enforce it. A man with a few thatched huts and cultivated patches of land is obliged to bring his cattle to the village *hanja* or grazing ground, and the infection is thus spread. Something might be done if the chowkeedar of every village, on the outbreak of the disease, were compelled to report it, and the villagers to set aside a portion of the general grazing ground for the reception of diseased cattle and the burial of the carcasses of the dead ones. Officers in their cold weather tour may try preservatives, but the diseases are not then rife, and the promises made by the villagers would be quite certain of non-fulfilment the next hot weather and rains. On the other hand, any penal enactment on the subject would create a more formidable theme for false and malicious charges than that already afforded by Sections 352 and 143 of the Penal Code. Segregation.

12. I have distributed the instructions of the Cattle Plague Commissioners pretty freely. These papers and inquiries were at first regarded with suspicion, as if there was an *arrière pensée* of some tax underneath them.

13. As a rule, no curative treatment is adopted in any of the diseases. Sometimes a *ghuni* or inoculator is employed, who goes through some gibberish of an incantation and sometimes administers "Bhela," oil or turpentine, and a weed called *aimjur* (of which I enclose a specimen), but generally rests content with his incantation. The more intelligent natives use local applications to the sores,—of bluestones, asafetida, and tobacco; but no one to whom I spoke appeared to have particularly clear notions of the rationale of these remedies, or in what their curative properties and effects consist, and how they operate. Treatment.

14. The late excessive rain has caused great mortality amongst the cattle all along the road, simply from exposure and want of shelter. They have not died from any of the diseases under report.

15. In conclusion, I have to express my obligations to Ahmed Hossein, Mostazeo of Bolonjha, who procured me much information, and promised to have the instructions of the Cattle Plague Commissioners translated into the local papers and circulated freely amongst his ryots.

DISTRICT OF BHAUGULPORE.

From the District Superintendent of Police, Bhugulpore, to the Magistrate of Bhugulpore,—(No. 136, dated 28th February 1870).

On the 22nd February 30 cattle were taken ill at Luchmunpoor Ekdera, 8 miles north of Colgong Station, out of which number 20 died the same day and the remainder recovered.

The symptoms appear to have been,—

1st.—A shivering fit, ending shortly in the animal falling down.

2nd.—Stoppage of urinary and faecal evacuations.

3rd.—After death a flow of fluid from the mouth.

4th.—Death ensued generally within three or four hours from the seizure.

5th.—The name of the disease is unknown, and it has not, so far as known, extended or continued. No remedial measures were adopted.

This report is made with reference to the Magistrate's memo. No. 1327, dated 21st December last, and this Office memo. No. 61 of 22nd ultimo.

DISTRICT OF SONTAL PERGUNNAHS.

From J. W. DALRYMPLE, Esq., Commissioner of the Bhugulpore Division, to the Assistant Commr. of Sontal Pergunnahs, Deoghur,—(No. 19, dated 13th April 1869).

I have the honor to acknowledge the receipt of your letters, No. 527 of the 2nd instant and No. 555 of the 6th instant, with enclosures, and to intimate my entire approval of the orders you have given to your Assistant at Nalla, with a view of checking the epidemic which has broken out among the cattle there.

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From A. W. COSSERAT, Esq., Assistant Commissioner, Sonthal Pergunnahs, to the Commr. of Sonthal Pergunnahs, Bhaugulpore,—(No. 527, dated 2nd April 1869).

I have the honor to report for your information that the rubbee crops of this Division have all been gathered in, and the grain brought in the market. The slight fall in the prices is indicative of a fair result from the harvest, and, I may say, puts an end to any fears about actual scarcity. No signs of any suffering from scarcity have shown themselves anywhere. I regret, however, to report the prevalence of cholera, almost in an epidemic form, in the town of Deoghur itself, and its existence in some degree throughout the district, but it has not been reported among the laborers on the Chord Line. I purpose making a tour throughout the length of the line, and to confer with the engineers and the gentlemen employed by the contractors as to the best measures for preventing anything like a panic, which will prove most disastrous among the imported laborers should cholera break out among them, a thing that may be expected. In Deoghur it has been bad enough to cause nearly a panic. Some suitors before the Courts have been attacked and died, and generally people are afraid to come to the place.

2. I have on my own responsibility organized a conservancy establishment of sweepers to thoroughly clean and sweep the place, with a view as far as possible to check the disease, but the excessive heat of the weather, and the comparative cleanliness of the place, leave me little hope of succeeding without a change in the weather and some good fall of rain. But little has been done towards treating those who are attacked, from the unwillingness of the patients to be taken to hospital, and the anxiety of the relatives of the people attacked to be near them and attend them; and it is next to impossible that the patients should each be visited at their homes.

3. Among the cattle too, in the Nalla Division, a virulent distemper has broken out, which is very fatal in its effect and is spreading fast. The cattle at this season of the year are most wretched objects from want of sustenance, as all the grass is parched up. They are barely able to crawl about from place to place, picking up the few *mohooah* blossoms that are left after the owners of the trees have picked up what they could—blades of grass here and there—and in their weak condition they are unable to withstand any sickness, and die off rapidly. All that can be done has been done by the Assistant Superintendent and Sub-Assistant Commissioner of Nalla to try and persuade the owners to keep the diseased cattle separate from the healthy, but the task is an extremely difficult one, owing to the apathy of the owners themselves. I have instructed the Sub-Assistant Commissioner to have recourse to small fines when his orders are wilfully and glaringly neglected. If this disease spreads further, I fear the worst consequences for the ryots; but although the prospects are gloomy, I am bound to say that serious damage has not yet been done, except in one or two villages.

4. I would solicit your early instructions on the subject.

From A. W. COSSERAT, Esq., Assistant Commissioner, Sonthal Pergunnahs, to the Commissioner of Sonthal Pergunnahs, Bhaugulpore,—(No. 555, dated 6th April 1869.)

In continuation of my letter No. 527 of the 2nd instant, reporting the outbreak of an epidemic among the cattle in the Sub-division of Nalla, I have the honor to enclose copy of my letter No. 540 of the 5th instant, containing certain instructions to the Sub-Assistant, Commissioner of Nalla, for your approval and sanction.

From A. W. COSSERAT, Esq., Assistant Commissioner, Sonthal Pergunnahs, to the Sub-Assistant Commissioner of Nalla,—(No. 540, dated 5th April 1869.)

Distemper among
cattle in Nallah
Sub-division.

In acknowledging receipt of your demi-official letter No. O of the 3rd instant, reporting the outbreak of a distemper among the cattle in some villages in your Sub-division, which is very fatal in its effects, I have the honor to state that I approve generally of the measures that you have adopted. The Assistant Superintendent, who visited Nalla at the close of last month, also reports the epidemic among the cattle, and having adopted similar measures for preventing its spread.

2. I would request your visiting a village in which the disease is worst,—some one in which the preventive measures would be more likely to be needed than in any other,—and personally supervising these measures, and also inquiring into the nature and symptoms of the complaint, and if it can be ascribed to any known cause; if not, what the popular belief is among the cattle owners as regards the cause of it.

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3. The cattle in the Nalla Sub-division are, I suppose, like those in the other Divisions of the Sonthal Pergunnahs, entirely dependent on grazing for sustenance, and it would be impossible to shut them up and feed them, as the means of the owners would not permit of it. Under these circumstances, some measures should be adopted to keep them apart while out grazing, as well as when they are locked up for the night. You should therefore, on your visit to the village, have an enclosure made round a tree, and the affected cattle kept in the enclosure for the night; no possible harm can come to them by exposure at night in this weather. The enclosure should be sufficiently far from the village where the other cattle are to be kept, and on the side where they would have to go out for the purpose of grazing. The watering-places for the healthy cattle should be separated from that used by the affected cattle, and the grazing ground should also be defined by a boundary.

Segregation suggested.

These things should be publicly done, and in the presence of the heads of villages and the principal cattle owners, and the sheds in which the cattle are kept cleaned with dry-earth strewn an inch or two deep all over the floor; this will not take more than a few baskets full of earth obtained from an adjoining field, and which the owners can get themselves. These men should be given clearly to understand that any infringement of the orders will be taken severe notice of, and that you expect their assistance in having them carried out, and where there is neglect that similar notice will be taken of it.

Sanitary measures suggested.

The chowkeedars of the village should be required to report regularly whether the orders are carried out, and whether the disease increases or is checked, also the number of deaths: their reports will of course go to the police stations and outposts, and you will get them in due course.

Chowkeedars to make periodical reports.

It is very likely that two or more adjoining villages may have the cattle in them suffering; under these circumstances it should be your object to give out portions of grazing grounds to each village, so that the grazing grounds of affected cattle should not adjoin those of the healthy cattle: for instance, the villages of A and B may be situated north and south of each other; if the diseased cattle from A were sent to the south of A, those from B ought to be sent north of B. This arrangement should be followed as far as possible.

Mode of segregation.

Your utmost endeavours should be used to induce the people to take kindly to these measures, and it should not be enforced with the severity of harshness, for it is not at all unlikely they may think it is an interference with a concern of theirs. Such, however, is not the case; it is on public grounds the measures are adopted.

When you visit the village, you should give due notice to the Head Police Officer within whose jurisdiction it is situated, and direct him to attend on you, and after he has seen your action in the matter, he can safely be entrusted with having the same measures carried out, under his own supervision or that of his subordinates, in the other villages where it may be necessary.

Particular care should also be taken to warn people in whose village there is no disease, not to allow their cattle to mix with those in a village that are suffering; and for this purpose, directly the disease makes its appearance, the villagers or owners should give notice to their neighbours.

Quarantine.

It should be impressed on the heads of the villages that you hold them responsible to you for the due discharge of their duties in this respect.

I have sent a copy of this letter to the Assistant Superintendent of Police for his information and guidance, and I have no doubt he will give you every assistance in his power.

Memo. from J. W. DALRYMPLE, Esq., Commissioner of the Bhaugulpore Division,—(No. 318, dated 21st August 1869).

Forwarded to Government, with reference to orders No. 237 of 24th April last.

From A. W. COSSERAT, Esq., Assistant Commissioner of the Sonthal Pergunnahs, Deoghur, to the Commissioner of the Bhaugulpore Division,—(No. 1157, dated 16th August 1869).

With reference to your office memorandum No. 58, dated 1st May 1869, forwarding Government letter No. 237 of the 24th April, on the subject of the late outbreak of epidemic among the cattle in the Sub-division of Nalla, I have the honor to report as follows.

2. Mr. Dawson, Assistant Superintendent of Police, had occasion to visit Nalla about the end of March last, and reported on the 26th that an epidemic had broken out among the cattle, and that it was very fatal in its effects. To use his own words, he says, "I learnt that

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cow-pox had broken out among the cattle in the Nalla Sub-division, and that numbers of them were dying. There is no outward appearance of the disease, but I presume from experience that the natives know at once that they are attacked." "The animal attacked," he further reports, "dies, usually, in three or four days."

Segregation not prac-
tised by people.

3. As is usual among the natives of the class, they make no effort to cure or prevent the spread of the disease, which the Assistant Superintendent reports was the case among the people whose cattle were suffering at Nalla. He adds that he found diseased cattle and healthy locked up in the same pen, and his recommendation that they should be separated, and that the shed in which disease had broken out should be abandoned until it was purified, was not appreciated. His suggestion was met, he says, by the excuse that cattle not housed were more liable to be attacked; whether this was a mere excuse or not I am unable to state; but if it were true, it is a peculiar and remarkable feature in the distemper or rather the susceptibility to take it, and which was found to exist in the great horse epidemic that broke out at the Cape not many years ago; but I believe that the assertion was not true, and was made more by way of framing an excuse to evade the orders, for cattle were actually exposed in the open air so long as the disease lasted, as will be seen hereafter, and the result proved it to be a proper measure.

Measures adopted.

4. Very properly, the Assistant Superintendent acted promptly in the matter, and on his own responsibility issued the following instructions, which were energetically enforced:—

1st.—To persuade the owners of cattle to keep them out in the open plains, and carefully to separate all those that showed any symptom of the disease.

2nd.—To whitewash or in some other manner to render sheds occupied by cattle in which disease had appeared innocuous.

3rd.—To give strict orders to prevent the cattle of any village in which the disease had appeared from wandering among the cattle of other villages, and if they do not obey the instructions to proceed against them under the Indian Penal Code for such neglect.

5. Subsequently Mr. Fraser wrote demi-officially and gave the same information, and reported having adopted the same precautionary measures, viz., keeping the diseased cattle apart from the healthy. Mr. Fraser from the first wrote confidently on the subject, and seemed to think that the precautionary measures could be successfully carried out.

6. The outbreak was reported to you by this office letter No. 527 of the 2nd April last, and the instructions I issued to the Sub-divisional Officer and Assistant Superintendent of Police, conveyed in this office letter No. 540 of the 5th April (a copy of which was forwarded to you with this office letter No. 555 of the same date), met with your approval. I need not therefore recapitulate them here, as they are known to you. These form the precautionary measures that were observed. I was unable to give any instructions about the treatment of the sick animals, the greater part of which died after being attacked.

7. The treatment adopted by the natives was to give the cattle suffering a mixture of resin and cotton seed. If this was followed by excessive shedding of tears it was a favourable symptom, and the animal generally recovered.

Result.

8. The precautionary measures adopted were most actively carried out, and it is satisfactory to report that as early as the 13th April, that is, seventeen days after they were resorted to, a perceptible decrease in the disease was noticed, and it gradually but surely died out.

9. The disease made its appearance in the south of the Nalla Sub-division in the villages of Amehatour, Bohoopore, Amlajaree, Dolabur, Paharpore and Mohailpore. It also showed itself in a very slight and mild form in the villages of Madhopore and Bharadee, in the jurisdiction of the Kurron Police Station, which adjoins the Nalla Sub-division. The symptoms of the disease, which was most infectious, were as follows:—When first attacked the animal was afflicted with purging, swelling in the throat, water issuing from the eyes and mouth, and a general lassitude, and refused food. The discharges were in all cases very offensive.

10. The measures adopted were a complete success, and by the end of May the disease had disappeared entirely.

11. The total number of cattle that died from the disease is stated, as near as can be, at 714. The village of Dolabur, Amloogoora, Seetamary, Amlachatoor, and Bahoopore suffered most. Mr. Fraser personally superintended the measures adopted for the segregation of the diseased cattle in four villages.

12. The loss has not been such as to affect the agricultural operations of the people.

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13. The causes of this disease are not known for certain. It is called *bussunto*, and appears annually, but in a very mild form, about the same season of the year. It is believed that the want of proper food, and the substitution of bad food in consequence, is principally the existing cause. The severe drought this year greatly aggravated the distemper, and it commenced with alarming virulence.

14. I do not think I am far wrong in saying that if it had not been for the very active steps taken to separate the diseased animals from the healthy, and other necessary precautions, that the loss of cattle in the district would have been very great, and it would have materially affected the agricultural operations of the district. Credit is due, for their prompt measures, to Messrs. Dawson and Fraser, and the Sub-Inspectors at the Thannahs.

15. No measures were taken to dispose of the dead animals or for the destruction of their hides.

Sahebgunge village, visited 13th June 1870, 6 P. M.

Sahebgunge Station is on the banks of the Ganges. Saw 9 cattle belonging to the Serang of the Caragola Ferry Steamer *Cassejee*. Man in charge states that *gootee* or *jugudumba* attacked the cattle of this neighbourhood 3 years ago; of his present 9, 6 were then in his shed; 1 only of the 6 was attacked and recovered, and is now in the shed; the symptoms described were those generally given, but eruptions were especially remarked by this man. The attack commenced in the month of June. The man has not heard of any disease since that time.

RAJSHAHYE DIVISION.

COMPRISING THE DISTRICTS OF RAJSHAHYE, BOGRAH, DINAGEPORE, MALDAH, MOORSHEDABAD, PUBNA, AND RUNGPORE.

Index of Records.

[N. B.—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	HISTORICAL SKETCH ...	...	...	Page 239.
Moorshedabad.	R. J. Scott, Esq., Commissioner, Rajshahye.	24 Ct.	22nd February 1864	Selections, Bengal Government, p. 19. States that a disease resembling small-pox is prevalent in the district.
	W. Le F. Robinson, Esq., Officiating Commissioner, Rajshahye.	26	18th January 1867	Selections, Bengal Government, p. 146. No disease has prevailed since 1864.
	J. Anderson, Esq., Officiating Joint-Magistrate of Moorshedabad.	29	12th January 1870	Reports the existence of a few cases of bussunto in the village of Bokahara within the Police Station Jellinghee.
	Baboo Taraprosad Chatterjee, Deputy Magistrate, Jungipore.	669	23rd May 1870 ...	Reports outbreak of cattle disease in Samul, Mirzapore Thannah.
	F. G. Millet, Esq., Magistrate, Moorshedabad.	792	15th June 1870 ...	Report the outbreak of cattle disease in Belooriah, Mirzapore Thannah.
	Ditto ditto ...	805	Ditto ...	
	Baboo Taraprosad Chatterjee, Deputy Magistrate.	822	17th June 1870 ...	Describes the disease prevalent at Samul and Belooriah, and states that it has disappeared.
	Ditto ditto ...	855	23rd June 1870 ...	Reports outbreak at Khalilpore in Mirzapore Thannah.
	Ditto ditto ...	210	30th June 1870 ...	Further report on same subject.
	Ditto ditto ...	211	Ditto ...	Reports a fresh outbreak at Belooriah.
	Weekly Returns ...	...	14th June to 5th December.	[These returns are summarised at p. 243.]
	Villagers of Beercóonda ...	...	19th June 1870 ...	Evidence recorded by the Cattle Plague Commission, p. 245.
	Ditto of Belooriah ...	...	Ditto ...	
	Ditto of Bansbelooriah ...	...	20th June 1870 ...	
	Ditto of Dohalee ...	...	Ditto ...	
Rajshahye.	R. J. Scott, Esq., Commissioner, Rajshahye.	24 Ct.	22nd February 1864	Selections, Bengal Government, p. 19. Reports that cattle small-pox was prevalent 8 years ago. Mr. Cockburn gives a table of cattle diseases.
	J. Cockburn, Esq.			
	T. Norman, Esq., Joint-Magistrate of Rajshahye.	71	27th January 1870	Reports outbreak of "bussunto" in November 1869 at village Fut-tongapara—43 deaths.
	W. L. Heely, Esq., Magistrate, Rajshahye.	120	28th June 1870 ...	Reports outbreak of "bussunto" in 8 villages of the Nattore Sub-division, Singrah Thannah—65 deaths; symptoms as usual.

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Bograh.	W. Le F. Robinson, Esq., Commissioner.	26	18th January 1870	<i>Selections, Bengal Government, p. 146. Reports prevalence of cattle disease in 1866; gives careful detail of symptoms.</i>
	T. F. Bignold, Esq., Magistrate, Bograh.	122	21st January 1870	} Forwards an elaborate statement prepared by the Police showing the prevalence of cattle disease in the district, p. 248.
	District Superintendent of Police's Tabular Return.	...	...	
	T. F. Bignold, Esq., Magistrate, Bograh.	275 Ct.	23rd February 1870	<i>Reports severe outbreak of cattle disease at Sheriakandee Police Station.</i>
Maldah.	Ditto ditto ...	506	6th April 1870 ...	Describes the symptoms of the cattle attacked at Sheriakandee, p. 249.
	R. J. Scott, Esq., Commissioner.	24 Ct.	22nd February 1864	<i>Selections, Bengal Government, p. 19. Reports the periodical prevalence of cattle disease in Maldah.</i>
	Baboo Umbica Churn Rai, Deputy Magistrate, Maldah.	15	11th January 1870	<i>States that no cattle disease prevails in the district.</i>
Dinagapore.	R. J. Scott, Esq., Commissioner of Rajshahye.	24 Ct.	22nd February 1864	<i>Selections, Bengal Government, p. 19. States that the disease prevails in the district annually.</i>
	W. R. Larminie, Esq., Magistrate.	30	20th January 1870	<i>Promises to furnish information in two months.</i>
	E. A. Westmacott, Esq., Magistrate.	299	20th April 1870 ...	Forwards a statement in Form No. 1 of disease prevailing in the district and the mortality during the two preceding years, p. 249.
	Magistrate of Dinagapore...	477	4th June 1870 ...	<i>States that cattle plague exists in the district in a sporadic form.</i>
Rungpore.	R. J. Scott, Esq., Commissioner.	24 Ct.	22nd February 1864	<i>Selections, Bengal Government, p. 19. States that a number of cattle die every year of small-pox, followed by diarrhoea.</i>
	W. Le F. Robinson, Esq., Commissioner.	26	18th January 1867	<i>Selections, Bengal Government, p. 146. States that cattle disease has raged at intervals during the last two years.</i>
	T. Norman, Esq., Officiating Magistrate.	520	21st June 1870 ...	} Report that cattle disease appeared in every part of the district in January and February 1868-69, and that there was no export of cattle at that time.
	District Superintendent of Police.	225	18th June 1870 ...	
	F. G. Millet, Esq., Magistrate, Rungpore.	695	9th August 1870...	Forwards a detailed statement of the prevalence of cattle disease in 1868 and 1869, summarised at p. 249.
Pubna.	W. Le F. Robinson, Esq., Commissioner.	26	18th January 1867	<i>Selections, Bengal Government, p. 146. Cattle disease well known in the district.</i>
	Magistrate of Pubna. ...	7	5th January 1870	<i>States that cattle disease is not known in the district.</i>

HISTORICAL SKETCH.

Abundant evidence exists that cattle murrain visits the districts of this Division frequently and severely, though a very continuous or detailed account of its prevalence cannot be given; neither can any date be assigned to its first appearance. As early as 1832, Dr. Macpherson, then Superintendent of Vaccination at Moorshedabad, observed that cattle were liable to what is called *matak*. There was at this period a very universal endeavour made to discover natural cow-pox. The supply of vaccine lymph obtained from England was unsatisfactory in its results, and it became known that cattle were liable to an eruptive affection to which the natives applied the same name as they applied to human small-pox. What could this possibly be but cow-pox. Dr. Macpherson accordingly selected some cows suffering under this malady, clothed them in blankets, and removing the crusts which he found developed on the udder on the 9th and 10th days of the disease, used these to vaccinate children, and succeeded in producing a vesicle, to all appearance vaccine. From the vesicle so produced lymph was taken, sent all over India, and used for vaccination. This discovery took the medical men of India by surprise, and produced no little agitation at the time. Efforts were made elsewhere to imitate Dr. Macpherson's practice, and the experiments conducted in Sylhet, described under the Dacca Division, and the observations of Dr. Duncan Stewart in Calcutta, presented in the papers relating to the Presidency Division, were the offspring of the Moorshedabad experience. Dr. Stewart, however, while sharing in the admiration and appreciation accorded to Dr. Macpherson's "valuable discovery," makes some very suggestive remarks upon the subject. This sagacious physician wonders why the lymph of the vaccine vesicle of the cow was not used instead of the crust, and remarks that the stages of progress of the pock were not minutely described. We now know that if the cases selected by Dr. Macpherson were what is now called *matak* in the cow—and this is exceedingly probable, for the murrain seems to have been extensively prevalent in the district—he might look in vain for a well defined vesicle or pustule, and that the eruption is essentially crusty or scabby *ab initio*. The most remarkable peculiarity noted in describing the effects of the inoculation of human beings with these crusts is,—that the effects were more severe than those caused by the usual vaccine virus, and this was looked upon as rather an advantage, inasmuch as it recommended the procedure to the natives of the country, who had hitherto been accustomed to the more violent manifestations of variolous inoculation. In Calcutta the lymph soon became mixed up with that hitherto in use, and there is an absence of accurate detail as to its behaviour and results in other places. It was, no doubt, soon superseded by the regular supply, and it does not appear that, with the exception of the unfortunate Sylhet experiments, any effort was made at Moorshedabad or elsewhere to repeat Dr. Macpherson's practice.

The following precis of Dr. Macpherson's proceedings is extracted from the "Transactions of the Medical and Physical Society of Calcutta," in which these and other interesting papers received by the Medical Board on this subject are printed:—

An account of some experiments relative to vaccination, by G. G. MACPHERSON, Esq., Superintendent of Vaccination, Moorshedabad,—dated 29th November 1832.

Dr. Macpherson quotes a circular from Medical Board, dated 4th June 1831, to the effect that public confidence has been so shaken in the powers of vaccination, owing to its failing in many instances to protect against severe and even fatal attacks of variola, that it is desirable to institute a series of investigations and experiments for the purpose of regenerating the virus, and restoring it to its pristine activity, if so be that it has degenerated.

Dr. Macpherson remarks that in his own experience he has invariably found vaccination prophylactic against variola, and cites instances of vaccination, induced with difficulty and imperfectly, modifying a subsequent attack of small-pox. He also suggests that much spurious vaccination is practised.

He states that small-pox prevailed severely in Moorshedabad and its vicinity in May, June, July, and August 1832; he tried to induce variola in cows by inoculation and covering with contaminated blankets, but this was only followed by fever, and a few ulcers on the abdomen in one case. Two cattle inoculated from these ulcers showed no symptoms of disease. He next vaccinated two cows, which febrered, and one had on the 5th day a vesicle from which two children were inoculated, but only spurious vaccination was induced. He proceeds,—“on inquiry amongst the natives, I learnt that the cows in Bengal are subject to a disease which usually makes its appearance about the latter end of August or early in September to which the same names are given as to variola in the human subject, namely, *bussunto*, *matah*, or *gootee*, and on the 24th of August I was informed that several cows belonging to a native of Moydapore were affected. I consequently determined on again attempting to regenerate the vaccine virus from the original source.

The animals which were at first affected, amounting in one shed to 18 or 20, had been for a day or two previously dull and stupid. They were afterwards seized with distressing cough, and much phlegm collected in the mouth and fauces. The animals had apparently at this time no inclination for food, or at all events they were unable to satisfy their hunger. Their suffering seemed to be greatest on the 5th and 6th days, when there was considerable fever, and pustules made their appearance all over the body, especially on the abdomen, which terminated in ulceration; the hair falling off wherever a pustule had run its course. The mouth and fauces appeared to be the principal seat of the disease, being in some instances one mass of ulceration, which in all probability extended to the stomach and alimentary canal. In those cases where the mouth was very much affected, the animals died apparently from inanition; whereas in those cases in which the power of mastication or even of swallowing was retained, recovery was much more rapid than might have been expected, from the previous severe sufferings and reduced state of the animal. The mortality may be calculated at from 15 to 20 per cent.”

He next remarks on the severity of this disease as compared with cow-pox, as described at home, on the suppression of the secretion of milk in India, and on the non-liability of human beings to infection—a belief firmly held by natives. He now selected two cows belonging to one of his vaccinators suffering from *matah*, covered it with blankets, leaving the teats and udder exposed, and “on the 7th day two small pustules appeared on the teats of one, which dried up on the 10th, and the crusts were removed on the 12th day.” From these 11 native children were inoculated. In six no effect whatever appeared; two had very slight inflammation on the 3rd and 4th days; two had considerable local inflammation and slight heat of surface on the 5th, 6th, and 7th days, but no vesicle formed, although there was marked induration round the puncture. “The remaining child’s arm was slightly inflamed on the 4th morning, and a vesicle was apparent the next day, which continued to increase till the 9th day, when I was much gratified to find that it assumed all the characteristics of the vaccine.” The child, 5 months’ old, suffered much from fever for 4 days. In subsequent vaccinations the symptomatic fever was particularly severe. The disease was now disseminated. Two of the children thus vaccinated were inoculated with small-pox, and both were found protected; 5 children thus vaccinated were exposed to small-pox infection without result. Several European children were successfully vaccinated. During the prevalence of *matah* among the cattle no case of small-pox among human beings occurred.

The disease *matah* again broke out severely in Moorshedabad in April 1833. The experiments above described were again tried, but Dr. Macpherson failed to obtain pustules. The mortality among cattle was great. A child was inoculated from a pustule on the udder of a cow. Slight inflammation of the arm ensued on the 4th and 5th days—no other result. There was no coincident small-pox among men, and no other animals were affected.

In 1834 small-pox prevailed among men in Moorshedabad. Variolation was again attempted on cows and calves, but unsuccessfully.

Dr. Macpherson writes on the 4th of January 1835 that no case of *matah* had come to his notice since 1833. The unfortunate Sylhet experiments had by this time been published and discussed, and evidence collected elsewhere by the Medical Board placed the severity of the newly discovered disease of cattle in such a strong light that the mind of the profession refused to accept it as an approved substitute and representative of vaccinia, and the whole matter appears to have dropped.

There now ensues a blank of 21 years in the history of cattle disease in this Division, but there is a distinct statement in a letter written by Mr. R. T. Scott, the Commissioner of Rajshahye, in February 1864, that “small-pox” was epidemic among the cattle of the Rajshahye District 8 years before then. Mr. Cockburn, the Manager of extensive estates in the same district, states that *bussunto* “prevails throughout Bengal,” and has been on the increase during the past three or four years. In 1864 more careful inquiries were made regarding cattle diseases, and in this Division the results were the same as throughout the whole of Lower Bengal, namely, that cattle murrains were found to be frequent and fatal. “Murrain” in Maldah is said to have “visited the district periodically, commencing in the month of August and extending up to the end of April, fluctuating in its severity and carrying off a great many cattle.” In Moorshedabad a great number of cattle are said to die annually from epizootic disease. Several villages in this district were visited by the Cattle Plague Commission in June 1870, and the universal testimony was that frequent outbreaks of the disease *matah* or *bussunto* prevailed. One man of 90 years, the *mundul* of a village, stated that he had seen the disease four times in his life, and that it prevailed there when he was a boy 10 years old. This removes the disease back to 1790. Other statements were much to the same effect, some saying that they had seen the disease 10 years ago, some 20 years ago, and so on. The same is said of the Rungpore District. In Dinagore *gootee* is asserted to prevail frequently, and “often sweeps off herds of cattle.” In Rajshahye *bussunto* occurs at intervals of 2 to 4 years. In fact, the same tale is everywhere told in nearly the same words, and its burden is summed up in the expressions “periodical prevalence” and “great mortality;” and it is curious to observe here what is equally evident in other places, namely, that men, such as agents of, estates, zemindars, &c., who obtain a more intimate acquaintance with the rural life of India lay a greater emphasis upon this matter. The experience of the Commission has abundantly affirmed the truth of this observation, and shown that, unless in seasons of great and exceptionably severe mortality, the people endure their losses uncomplainingly, and that in order to get at the real state of the case, the smooth stolidity or unconcern which would ignore, conceal, or deny the existence of disease among their cattle must be disregarded, and a searching, house to house, and village to village, investigation made. The only record of disease in 1865 is from Rungpore, where the Commissioner, Mr. W. Le F. Robinson, writing in January 1867, states, on the authority of the Magistrate, that disease, evidently rinderpest from the symptoms assigned to it, raged at intervals during the two previous years. A belief prevailed that disease was brought into the district during the Bhootan war by the strange cattle passing through it, but the truth of this is doubted by the Commissioner, who remarks that the disease was known in the district before, and that not many cattle passed through the district, though a great many were taken out of it. In 1866 a similar disease prevailed in Bograh very severely, and not more than 5 per cent. of the cases recovered. It is curious to note, now that the symptoms of the prevailing murrains come to be more closely investigated and better understood, that there is a tendency to doubt the propriety of calling them small-pox. This feature is very well illustrated in Mr. Robinson’s letter. He compares the cattle disease prevailing in Bograh to cholera, and while a very

correct and detailed description of the symptoms renders it manifest that the murrain was nought else than rinderpest, and precisely *what the Commission has found the natives call by their names for small-pox*, it is said, in Rungpore, that "all agree that it is different from other diseases prevalent among cattle, *such as small-pox*." The great difficulty has always been the absence of pustules, which is pointedly noted in the case of the Bograh disease. As this matter, however, has been amply discussed, in treating specially of the nature and symptoms of cattle disease, it need not be further enlarged upon here.

Two elaborate statements received from the districts of Rungpore and Dinagepore, showing the prevalence of cattle disease in each Police Division of these districts, evidence the wide prevalence of *bussunto* and other diseases during this year, 1868. It appears also from a letter written by H. C. Wake, Esq., C. B., Deputy Commissioner of Darjeeling, in June 1864, that the cattle of these districts are driven to graze in the Terai during the dry months of the year. This practice provides, as in the case of the Purneah District (see Bhaugulpore Division), for keeping up infectious disease. Cattle are driven to one tract of country from hundreds of different places, from one or more of which infectious disease may be conveyed. This spreads among the herds which are in free association with each other, and when the time comes for the cattle to return to their several villages, the disease returns along with them, and is thus carried to places where it had not previously existed. Under these circumstances it is probable that very few, if any, young cattle escape being attacked with the disease, and *they thus acquire a protection which accounts for only a certain proportion of stock being in any one season seized with the disease*. In 1869 disease continued to prevail extensively in Rungpore and Dinagepore; it also broke out in Bograh and Rajshahye in November, and in Moorshedabad in December. This latter outbreak has continued to prevail and spread throughout this district up to the end of December 1870.

The localities principally affected have been in the Sudder and Jungipore Sub-divisions.

In Rajshahye also reports of a severe outbreak of *bussunto* were received in June from the Nattore Sub-division.

In the district of Bograh the disease of 1869 continued to prevail during the months of January and February, and in the Dinagepore District reports received in April showed that the disease was still prevailing extensively, 678 head of cattle being noted as still ill when the investigation was made.

DISTRICT OF MOORSHEDABAD.

Summary of weekly returns received from the District of Moorshedabad, showing the prevalence and mortality of the disease *Bussunto* from 14th June 1870 to 5th December 1870.

Pergunnah.	Thannah.	Village.	Date of first return.	Date of last return.	Number attacked.	Number died.	Number recovered.
Gowas & Noanagan	Mirzapore	Samal	14th June 1870	.....	100	50	50
Ekbarsahy	Ditto	Beluria	Ditto	1st August 1870	51	27	24
Gankar	Ditto	Monigram	3rd July	24th October	89	47	42
Nowanagore	Ditto	Khalipoor	Ditto	12th July	34	27	7
Kasipni	Ditto	Bhurkunda	Ditto	14th August	57	41	16
Gonkar	Ditto	Jaiar	6th Ditto	6th July	2	...	2
Shahazadpore	Ditto	Khurty	7th August	7th August	8	4	4
Ekbarsahye	Ditto	Sheetalpara	Ditto	14th Ditto	9	4	5
Guncun	Ditto	Gangada	5th September	21st November	43	36	7
Nowavagur	Suti	Kyadanga	17th July	.....	4	4	...
Rajshahye	Ditto	Kadia	18th November	.....	18	18	...
Ditto	Ditto	Mohindiapur	17th July	.....	9	9	...
Sultanabad	Ditto	Bungoata	18th November	.....	25	25	...
Sultungial	Ditto	Dahina	22nd July	.....	10	7	3
Foteysing	Bhurutpore	Sheinparah	16th July	.....	1	1	...
Monohurshahye	Ditto	Shesooah	Ditto	.....	2	...	2
Foteysing	Ditto	Bhurutpore	Ditto	31st July	13	9	4
Foteysing	Ditto	Roygram	16th July	15th August	19	19	...
Ditto	Ditto	Mondolpore	24th Ditto	.....	1	1	...
Ditto	Ditto	Hamidhatty and Nilsundee.	31st Ditto	Ditto	7	4	...
Ditto	Ditto	Binodeah	8th August	.....	2	2	...
Ditto	Ditto	Doorgapore	15th Ditto	31st Ditto	10	10	...
Ditto	Ditto	Alloogram	Ditto	11th September	6	4	2
Kantonagur	Ditto	Khoyrah	Ditto	.....	2	2	...
Foteysing	Ditto	Hamidbatty	22nd Ditto	.....	2	1	1
Ditto	Ditto	Andoolia	Ditto	.....	3	1	2
Ditto	Ditto	Govindpore	Ditto	31st August	60	61	8
Ditto	Ditto	Poorinderpore	Ditto	5th September	42	30	12
Gopinathpore	Ditto	Ghoneshsampore	Ditto	Ditto	34	31	...
Foteysing	Ditto	Chandalpore	Ditto	.....	4	4	...
Ditto	Ditto	Hamidhatty Pile-kundy.	31st Ditto	10th October	11	10	1
Ditto	Ditto	Kadkhally	Ditto	.....	2	2	...
Ditto	Ditto	Sashparah	5th September	.....	1	1	...
Monohurshahye	Ditto	Kamulpore	18th Ditto	.....	2	2	...
Govindpore	Khargram	Kandooree	16th July	8th August	138	91	47
Khorgam	Ditto	Ditto	Ditto	5th September	25	8	17
Foteysing	Ditto	Roypore	24th Ditto	31st July	11	9	2
Govindpore	Ditto	Parbuttupore	8th August	22nd August	5	3	2
Khorgam	Ditto	Colgram	Ditto	.....	8	8	...

MOORSHEDABAD. Summary of weekly return received from the District of Moorshedabad, showing the prevalence and mortality of the disease Bussunto from 14th June 1870 to 5th December 1870.—contd.

Pergunnah.	Thannah.	Village.	Date of first return.	Date of last return.	Number attacked.	Number died.	Number recovered.
Mahanundy	Gokurna	Gokurna	8th August 1870	5th September 1870	56	40	7
Ditto	Ditto	Ginpara	Ditto	"	58	33	25
Ditto	Ditto	Notoongram	Ditto	"	31	16	15
Ditto	Ditto	Chatra	Ditto	"	6	6	...
Ditto	Ditto	Jamna	Ditto	"	27	13	14
Ditto	Ditto	Hazarpoora	Ditto	"	43	27	16
Ditto	Ditto	Shamtaparah	Ditto	"	24	12	12
Ditto	Ditto	Goutta	15th Ditto	"	60	35	25
Ditto	Ditto	Wooddy Chandpore	Ditto	"	2	2	...
Ditto	Ditto	Nobogram	22nd Ditto	"	17	15	2
Ditto	Ditto	Palandah	Ditto	"	1	1	...
Foteysing	Ditto	Kallisunkerpore	Ditto	"	14	14	...
Mohalundy	Ditto	Jinparah	Ditto	"	4	4	...
Ditto	Ditto	Jogonathpore	23rd Ditto	"	18	18	...
Ditto	Ditto	Mohalundy	31st Ditto	"	35	20	15
Foteysing	Ditto	Barra Shatooe	Ditto	"	24	10	14
Khargram	Ditto	Bhogobanhati	Ditto	"	21	11	10
Foteysing	Ditto	Chomregueha	Ditto	"	155	135	20
Ditto	Ditto	Kathalea	Ditto	"	30	2	28
Ditto	Ditto	Knala	Ditto	"	12	2	10
Ditto	Ditto	Sreebuttee	Ditto	"	21	4	17
Ditto	Ditto	Arwah	Ditto	"	24	8	16
Ditto	Ditto	Seensear	Ditto	"	15	10	5
Ditto	Ditto	Shoongee	Ditto	"	26	7	19
Ditto	Ditto	Chundparah	5th December	"	2	2	...
Mohalundy	Ditto	Shaneparah	11th September	"	18	17	1
Ditto	Ditto	Ramessurpur	Ditto	"	8	5	3
Ditto	Ditto	Dangaparah	Ditto	"	4	4	...
Foteysing	Ditto	Boonbie	17th Ditto	"	3	3	...
Ditto	Ditto	Koomarsund	14th November	"	1	1	...
Ditto	Ditto	Baloon	23rd October	"	6	4	2
Ditto	Ditto	Sokepoor	14th November	"	1	1	...
Gopinathpoor	Ditto	Mohegram	7th Ditto	"	1	1	...
Baharan	Bhudrihaut	Jakpoor	9th July	"	80	67	13
Ditto	Ditto	Dohaul	Ditto	"	184	132	52
Ditto	Ditto	Emannagur	Ditto	"	4	4	...
Gowas	Ditto	Chaumgram	30th Ditto	"	6	6	...
Ditto	Ditto	Dengaparah	Ditto	"	16	4	12
Bohurul	Ditto	Burungeo	13th August	"	8	8	...
Muspur	Ditto	Rushoorul	Ditto	"	1	1	...
Gowas	Ditto	Boora	Ditto	"	85	34	51
Ditto	Ditto	Megha	17th Ditto	"	20	17	3

Summary of weekly returns received from the District of Moorshedabad, showing the prevalence and mortality of the disease Bussunto from 14th June 1870 to 5th December 1870,—contd.

MOORSHEDABAD.

Pergunnah.	Thannah.	Village.	Date of first return.	Date of last return.	Number attacked.	Number died.	Number recovered.
Bohurul	...	Bhudrihaut	...	21st August 1870	...	5th September 1870	...
Gunkur	...	Ditto	...	5th September	...	10th Ditto	...
Ditto	...	Ditto	...	10th Ditto	...	...	...
Gysabad	...	Ditto	...	3rd December	...	...	...
Mohalundy	...	Kulleangunge	...	6th July	...	...	...
Asudnugur	...	Ditto	...	5th September	...	10th September	...
Goysabad	...	Dewansarye	...	...	...	...	...
Echlampore	...	Ditto	...	16th July	...	...	...
Ditto	...	Ditto	...	3rd December	...	...	...
Chonakhally	...	Ditto	...	21st August	...	...	...
Ditto	...	Ditto	...	Ditto	...	...	...
Gysabad	...	Ditto	...	17th September	...	...	...
Gowas	...	Gowas	...	30th July	...	...	...
Muraripore	...	Assunpore	...	15th October	...	21st October 1870	...
TOTAL					2,205	1,441	764

[Remarks as to symptoms, treatment, &c.—The symptoms assigned are those usually given. In the villages Kyadanga and Mohindrapoor the disease was called *Dakraj*; symptoms as follows:—loss of appetite, languor and dozing, swelling of the throat, tears, foaming at the mouth, coughing. Death generally ensues within 24 hours of the attack.

The mortality among attacked is 65·3 per cent., and the percentage of recoveries 34·7.

Beercoonda, two miles distant from Bockhara Railway Station, 19th June 1870, Sunday.

Visit to Beercoonda

AHURUDDY MUNDLE, SHECK TALIB, SHECK NUFFUR, BESSONAUTH ROY, ATROO SHECK, of Beercoonda, say,—that this a Mahomedan village, inhabited by 60 or 70 families, a few of whom are Hindoos. They owned before the recent outbreak of *bussunto* 200 or 250 head of cattle, the bullocks forming the majority. The disease appeared at first at a village called Sarol, two miles to the east of this village, in the month of Falgun last (February); on the 10th or 12th Bysack (May) last the disease broke out in this place in the house of one Shedoo Sheck. The symptoms of the disease are,—running from nose and mouth; the animal looks stupid; the skin becomes hot; it refuses food, and its ears droop; after 3 days purging sets in, and it passes blood and watery stools, and dies in 5 or 6 days. The following are the losses:—Shedoo lost 2, Shohah 1, Warick 3, Dilwar 1, Onanth 1, Teloo 1, Sheenoo 3, Gasloo 1, Mosham 1, Horoo 1, Careem 1, total 16, and from old age one bullock belonging to Gozloo Sheck. Our cattle graze during the day in the neighbouring fields, where the cattle of other villages also feed; they are housed during night and fed with straw and oil-cake; we throw the carcasses into the fields as usual, and the chamars take the skins and make shoes, &c.; they also eat the flesh of dead cattle. [One of the informants, the *mundle* of the village, 90 years old, says that he has seen this disease four times in his life, and the first attack seen by him was when he was 10 years old]. We have never seen or heard of any cases of cattle poisoning. The value of cattle has risen 50 per cent.; for instance, a cow or bullock that cost Rs. 10 ten years ago now sells for Rs. 15. The *Pikars* (dealers) from other districts and from distant villages come to our place four or five times every month, and having 10 to 25 head of cattle for sale, we buy cattle of them. One attack of *bussunto* gives immunity to the second attack. *Khoorah* attacks animals often; this is not fatal.

Village stock.

Date of outbreak.

Losses.

Grazing.

Housing.

Disposal of carcasses.

History.

Cattle poisoning.

Price of cattle.

Supply of stock.

Second attack.

Case No. 1.—Saw at Beercoonda a bullock, 6 months old; condition fair; ill 14 days; dry muzzle; discharge from eyes and nose; ears drooping; off feed; eruptions (miliary) all over the body; eyes oedematous; very weak; lies down; off drink; excoriations of gums and floor of mouth; cough; difficulty in swallowing, and shows pain after it; purged blood and mucus for 11 days; the bowels have improved a little; breath offensive. The owner says that he has lost 3 cattle, and this is the 4th attacked; has sustained a loss of Rs. 33; is obliged to borrow money; he will buy from the *Pikars*.

MOORSBEDABAD.

Case No. 2.—A calf, 5 months old; condition poor; profuse discharge from eyes, nose, and mouth; the gums and buccal membrane are much congested, and there are slight excoriations; offensive breath; ill two days; off feed; refuses to suck; very weak; has great difficulty in walking; coat staring.

Case No. 3.—Another case was seen recovering, but the excoriations of the gums, which have been very severe, are healing.

Case No. 4.—Another cow recovering; eruptions of udder and thigh healing.

Belooria, four miles off Railway Station of Bockhara.

Visit to Belooria.
Case.

Saw a bullock, 7 years old; 3 days ill; condition fair; discharge from eyes, nose, and mouth; muzzle dry; excoriations on buccal membrane, gums, and floor of mouth; drooping ears; very weak; off feed and drink; has not yet commenced purging; coat staring, but no eruption; lying down.

Evidence of villagers.

Village stock.

Losses.

Sheep.

BANY CHOWDHRY, BUNWARYAL CHOWDHRY, RAMESSUR ROY, SHORBO CHUNDER MOOKERJEE, and TINCOWRIE BUNDOPADHYA, of Belooria, say,—that this village is inhabited by upwards of 100 families, all Hindoos. There were in our place nearly 300 head of cattle, but out of this number we have lost 60 cows and bullocks of *bussunto*, which broke out in the month of March, and it continues still. [This very day the chowkeedar reported that none were sick.] We have lost 5 or 6 sheep from that disease. The following gives the details of losses:—

Names.	Had.	Has.	Lost.
Bany Madhub Chowdhry ...	31	5	26
Bunwary Chowdhry ...	25	18	7
Rajkisto Mookerjee ...	10	8	2
(lost two sheep also.)			
Ramtonoo Shahoo ...	12	12	0
Dwarick Roy ...	5	2	3
Koonjo Kur ...	4	2	2
Kheday Mundle ...	5	4	1
Gooroo Dass ...	10	6	4
Luckhee Bania ...	1	1	0
Rutton ...	2	1	1
Ramessur Roy ...	7	4	3
Ramessur Maul ...	3	0	3
	1	0	1
TOTAL ...	6	3	3
	112	66	56

TOTAL

Infectiousness.

Segregation.

Source of rinderpest.

Rinderpest in 1862

or 1863.

History.

Season.

Mortality.

Effect on cultivation.

Foot and mouth

disease.

Recent losses from

rinderpest.

Loss in money.

Hides.

Cattle poisoning.

Instance.

Explanation of chow-

keedars.

We consider the disease to be infectious; we did not separate the sick from the healthy. We have no means of doing this. The disease appeared at first at Paolee, and at the latter end of Falgoon (February). Redhoy Maul purchased one bullock from that village, and brought it to our village. The disease soon after broke out at Belooria. Paolee is 2 miles distant, east of this village. There was also disease at Foolshore and Gangerdah, half a mile distant; 7 or 8 years before this there was an outbreak of *bussunto* in this place. During the life of Bany Madhub Chowdhry, he has seen 3 or 4 outbreaks. The disease generally breaks out in February and March. The mortality this time is greater than the mortality on the last occasion. We never knew of land being left fallow owing to many cattle dying of *bussunto*. We had *khoorah* last year, but none died from it; one or two cattle are known to have died of *khoorah*, but, as a general rule, it seldom proves fatal. One cow belonging to Bany Chowdhry died of *bussunto* yesterday; Luckhee Bania lost her cow the day before yesterday; 2 days ago, on the 17th, Gooroo Churn Dass lost 1 cow; on the 16th Ramdyal Roy lost his cattle; on the 15th Gooroo Churn Dass lost another animal. We calculate our loss to be at least Rs. 800 by the death of the cattle during the present outbreak. The chamars take the skin of the carcasses thrown into the *baghar*, and they eat the flesh. The chamars sell the hides to the *Pikars*, who come from Berhampore and Calcutta. They also make shoes. The chamars do poison cattle occasionally, but we do not consider this murrain to be the result of poisoning. Two years ago we seized a charmar in the act of poisoning cattle. They had given *sombolkhar* poison (arsenic). We punished them and then let them off, and since then cattle did not die so suddenly as they used to do before the seizure.

The chowkeedar Ram Chunder said that he was not aware of the death of the cow yesterday belonging to Bany Lal Chowdhry. He did not know that Luckhee's cow died the day before yesterday; can't also say whose cattle died 2 days ago.

The other chowkeedar, Gopal Sing, says that he is a new man and does not know the names of the ryots; does not know of any cow dying yesterday; has heard that Luckhee lost an animal, but can't say from what disease; can't say who lost cattle on the 16th.

Visit to Belkhona, 20th June 1870.

Rinderpest in 1868.

No sickness now; had *bussunto* 2 years ago; 9 attacked and 3 died.

Visit to Telongol.

Had *bussunto* 3 years ago; 15 attacked and 14 died; no disease now.

Visit to Basbelooria, 20th June 1870, 7-30 A. M.

RAMLAL MUNDLE, RUGHO NAUTH DASS, UNONTO LAL MUNDLE, MADHUB MAUL say,—that we had *bussunto* among our cattle in the months of March, April, and May last, and we lost from that disease 50 to 60 head of cattle, the value of which we estimate at Rs. 1,000. There is no disease now. There were nearly 250 head of cattle in our place before the outbreak of murrain. The symptoms of the disease are;—off feed; purging blood and mucus; eruptions on the body, which generally appeared on the 3rd or 4th day; discharge from eyes, nose, and mouth; ears drooping; excoriations in the mouth, and offensive breath. The cattle died from the 3rd to the 15th day. There was neither then nor before then any such disease in any other villages. The disease is contagious, but we did not separate the sick from the healthy. Nearly 12 years ago there was another outbreak of *bussunto* among cattle, and the mortality was as severe then as now. On the former occasion the Dohalee village had the attack first, and it came afterwards to our place. The cattle of our village and of the neighbouring villages graze together on a common pasture. We do not purchase cattle in any fairs or markets, but make our purchases in the surrounding villages by private bargain. We buy our cattle generally in the months of January, February, March, April, and May, these being the months when we prepare for tilling our lands, and till them. In Bysack last (April) some of the villagers purchased 5 head of cattle from several other villages. There was no disease in those villages as far as is known to us. The newly purchased animals did not suffer. The carcasses are thrown away and the skins are taken by the chamars. Eighteen years ago one Goluck Kotol of our village could not till his land for want of cattle which had died of murrain. We shall somehow or other get on this year, but several of us will have to borrow money. There was disease also at Emamnuggur and Dohalee, but none at Jugpore.

Two cases were seen recovering; a 4-tooth cow; excoriation of mouth all but healed; dung is getting into good order; eruptions desquamating; animal still weak. Another very much in the same state, but eruptions not present; both have still a thick discharge from the nose.

Visit to Dohalee.

Saw a cow, aged 6 years; condition poor; ill 9 or 10 days; discharge from eyes and nose; purging dysenteric stools; has commenced to feed a little; did not eat at all for 5 days; salivated for several days; there is still a slight discharge from mouth; a large excoriation and aphtha in the vagina; excoriations on the gums are healing.

A bull calf, 2 years old; ill 7 days; condition fair; very viscid discharge from eyes, nose, and mouth; excoriation and aphtha on the buccal membrane; eruptions on shoulders, and weak; purging blood and mucus; off feed for 5 days; has commenced to pick up a little.

A bullock, 13 years old; condition poor; ill 7 days; purging dysenteric stools; off feed; discharge from eyes, nose, and mouth; excoriations on hard palate; ears drooping; eruptions on shoulders, neck, and ribs; animal recovering.

A bull calf, 2 years old; condition fair; ill since day before yesterday; off feed; excoriation and aphtha on lower gums; no eruptions; purging; ears drooping; slight discharge from eyes, nose, and mouth.

A bull, 7 years old; condition good; ill 5 days; excoriations on buccal membrane, gums, and palate; very viscid discharge from eyes and nose; ears drooping; off feed; refusing to drink; purging watery and offensive stools since yesterday.

RAMESSUR CHUCKERBUTTY, CHUNDER NARAIN CHUCKERBUTTY, MODOOSOODUN CHUCKERBUTTY, PURMESSUR SINGH say,—that this is a Hindoo village and contained before the murrain 500 head of cattle, of which we lost 50 within the last 15 or 20 days; the disease is called *bussunto*, and appeared in our village in the middle of May last. Twenty years ago there was a similar outbreak here; no one aware of any other previous attacks. The mortality then was not so severe as now; there is still disease in our village, and nearly 20 head of cattle are suffering. The symptoms now seen by the Commission were seen by us in the cases that ended fatally. The ordinary bulls of the village serve the cows; we do not get any bulls from any other provinces. The *Pikars* bring cattle 3 or 4 times a year; there is no cattle market near our place. The loss estimated by death is Rs. 500, at the rate of Rs. 10 for each head of cattle. Only 12 head of cattle died during the attack 20 years ago. It raged in the month of September.

The disease this time broke out in Belooria at first. Twenty years ago the adjoining village of Dingapara was attacked first. We consider the disease to be infectious; we cannot segregate, for we have no means for separating. We give no medicine, as we know of none. There is no cow doctor here. We give *doob* grass, but it is not eaten. The sick cattle refuse food for 4 or 5 days; when appetite returns we know that the animal is recovering.

MOORSBEDABAD.

Rinderpest in 1867.

Evidence of villagers.

Rinderpest in March

to May.

Losses.

Village stock.

Symptoms.

Contagiousness.

Segregation.

Rinderpest in 1858.

Source of disease.

Supply of cattle.

Purchases.

Disposal of carcasses

and hides.

Effect on cultivation.

Cases.

Visit to Dohalee.

Case.

Case.

Case.

Case.

Case.

Evidence of villagers.

Village stock.

Loss.

Rinderpest in May

1870.

Rinderpest in 1850.

Bulls.

Cattle trade.

Loss in money.

Source of disease.

Infectiousness.

Segregation.

Treatment.

Feeding.

DISTRICT OF BOGRAH.

BOGRAH.

Statement showing the prevalence and mortality of Bussunto in the District of Bograh,
dated 21st January 1870.

Thannah.	Village.	Date of outbreak.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
Bograh	Sooltangungepara	15th December 1869	125	10	7	1	2	The symptoms detailed are those usually given. The percentage of stock of number attacked is 23, and of deaths 12; deaths per cent. of attacked 52.
Panchbibee	Khoredopara	15th September	84	28	18	9	1	
	Bazoorree	"	405	82	48	28	6	
	Beernagore	"	343	15	7	1	7	
	Chuckbarkut	"	29	40	28	8	4	The treatment noted is separation, cleansing of sheds, root of peepul plant, dry ginger, and leaves and bark of <i>Jatay</i> , salt, <i>maree</i> of stale rice and plantains.
Badulgachee	Poorana Appoll	28th December	800	1	...	...	1	
	Roghonathpore	20th August	144	68	64	2	2	
	Daol	"	90	44	37	6	1	
	Sreepore	24th December	215	18	7	7	4	
Dhoomut	Ghoogoorapara	Not ascertained	150	25	10	5	10	
	Awlah	"	175	150	25	118	7	
TOTAL			2,060	481	251	185	45	

Statement showing the prevalence and mortality of Battan or Foot and Mouth Disease.

Sheriakandee	Phoolbaree	December 1869	200	100	...	25	75	Attacked per cent. of stock ... 37.
	Horina	"	100	25	...	5	20	Died " of attacked ... 1.
	Shomushpore	"	100	50	...	25	25	Died " of attacked ... 4.
	Ramchunderpore	"	100	50	3	20	27	Treatment consists of the application of tar and turpentine to the affected parts.
	Bytabhanga	"	200	150	...	25	125	
	Sagoldhora	"	426	208	1	200	7	
	Boroekandee	"	175	25	...	10	15	
	Kootulpore	"	1,000	400	...	175	225	
	Benipore	"	200	57	...	50	7	
	Dhoierkandee	"	225	25	...	10	15	
	Kurnibaree	"	180	19	...	6	13	
	Deodenga	"	225	105	...	100	5	
	Maseerpara	"	525	250	...	50	200	
	Dhap	"	225	100	2	28	70	
	Daroonia	"	294	200	1	25	174	
	Dewoolibaice	"	200	100	1	25	74	
	Charpacoree	"	660	75	...	47	28	
	Kooripara	"	125	25	...	15	10	
	Baoetana	"	113	38	...	18	20	
	Kajla	"	97	32	...	10	22	
	Narchee	"	800	300	...	270	30	
	Jatholida	"	100	25	2	10	13	
TOTAL			6,270	2,359	10	1,149	1,200	

Statement showing the prevalence and mortality of Bussunto and Battan.

Gobindgunge	Chandipore	September 1869	80	26	14	...	12	Attacked per cent. of stock ... 43
	Shohagipara	"	80	10	8	...	2	Died " of attacked ... 32
	Barna	"	155	86	70	10	6	Died " of attacked ... 75
TOTAL			285	122	92	10	20	

From T. F. BIGNOLD, Esq., Offg. Magistrate of Bograh, to the President, Cattle Plague Commission,—(No. 506, dated 6th April 1870.)

In reply to your letter No. 171 of the 28th February, I have the honor to state that the symptoms of the murrain in Sheriakandee are as follows:—

2. The animal at first coughs; after 4 or 5 days appears dull and neglects to feed; viscid saliva is discharged from the mouth, and blood from the nose; the mucous membranes of the nose and mouth are covered with sores; sores also break out on the body, and blood is discharged from the anus, and the animal generally dies within 8 or 9 days from the appearance of the cough. It is said that the mortality is greatest among those cattle which are allowed to drink copiously of water.

3. A ryot of Modhupore informs me that he had 5 cattle affected; the symptoms were cough, dulness, chilliness, loss of appetite, bristling of the hair, diarrhoea, sore mouth; no sores on the body, and no swelling of the feet. He knew of another case in which 9 were affected from the same disease, of which 8 died.

4. Another ryot gives a similar description; two cows were affected in his village and both died.

5. The Police of Modhupore reported 71 cattle ill at the beginning of March, and 21 new cases, 8 deaths, and 17 recoveries during the month.

6. The absence of sores on the body appears to distinguish the disease existing in Modhupore from that in Sheriakandee.

DISTRICT OF DINAGEPore.

DINAGEPore.

Information regarding diseases of cattle in the Dinagepore District, furnished by E. A. WESTMACOTT Esq., Magistrate,—dated 20th April 1870.

The villages affected were as follows:—111 in Bansibari Thannah, 10 in Chintaman, 6 in Porganja, 7 in Thakurgam, 7 in Ranisankol, 27 in Pabnitullah, 10 in Gungarampore, 30 in Ranigunga, 5 in Habra, 21 in Birgunga, 25 in Kotwali, 101 in Pateram, 88 in Nawabgunga, 344 in Porsa: total 792 villages.

The diseases are called *halhalia* (হলহলিয়া), *chapechapa* (চপচপা), *bussunto* (বশন্ত), *dheri* (ধেরী), and *kanrai* (কানরাই).

These have prevailed for the last two years.

The stock belonging to the villages is estimated at 2,52,219; 44,759 animals were attacked (17 per cent.), 22,362 died (9 per cent. of stock and 50 per cent. of attacked), 15,437 recovered (6 and 34 per cent.), and 678 are still ill. The diseases are infectious; cause not known; the symptoms described are those usually assigned to *bussunto*.

DISTRICT OF RUNGPore.

Information regarding cattle disease in Rungpore furnished by F. G. MILLET, Esq., Officiating Magistrate, and founded on reports prepared by the Police, dated 9th August 1870.

RUNGPore.

The returns obtained by the Police refer in most cases to the months of January and February 1868 and 1869. The reason of this is that the inquiries made referred pointedly to these months, with a view to discover whether the disease was conveyed to Assam by the herds of buffaloes exported from this district in that season. In some cases the Police have given the mortality for the whole year. The statements are, in brief, as follows:—

1. *Nesbetgunge Police Station*.—Twenty-nine villages; diseases *bussunto* and *baidh* or cholera; symptoms those usually assigned; appeared in January and disappeared in April; mortality 600. "Usual exportation goes on during the prevalence of the diseases, but only to near districts."

2. *Rungpore Station*.—Three villages; diseases *bussunto* and *baidh*; mortality 19 from former and 20 from latter. Same remark regarding exportation.

3. *Molong Outpost*.—Fifteen villages; disease *bussunto*; mortality 275. Exportation to near districts only.

4. *Peergunge Station*.—Fifteen villages; diseases *bussunto*, *baidh*, and *pain in stomach*; mortality in 1868, 99 of *bussunto*, 168 of *baidh*, and 12 of *pain in stomach*; in 1869, 218 of *bussunto*, 157 of *baidh*, and 5 of *pain in stomach*. Exportation to adjacent districts only.

5. *Sadoolapore Station*.—Diseases *bussunto*, *johorbaw*, *data*, *suah*, *sengabaw*, *bengabaw*, *hapa-dhura*, and *horapjeerah*; symptoms not given; mortality 4 or 500.

6. *Cheelmarry Station*.—Seven villages; diseases *bussunto*, *golafoola*, *benga* or *paster-bednah*; mortality in 1868, 1,106; in 1869, 553, of *bussunto*, for the whole year.

7. *Baroonie Station*.—Twenty-six villages; diseases *bussunto* and *golafoola*; mortality 2,556. No exportation.

8. *Buqueah Outpost*.—Eight villages; diseases *bussunto* and *khoorye*; mortality 2,000. No exportation.

9. *Kowargunge Station*.—Six villages; disease *bussunto*; mortality in 1868, 90; in 1869, 131.

10. *Foorunbarry Station*.—Thirty-two villages; diseases *bussunto*, *golafoola*, and *khrameena*; mortality 135.

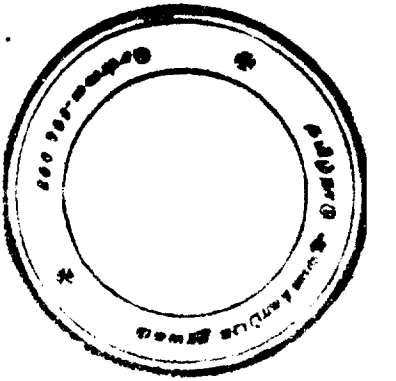
11. *Darwanee Station*.—The disease *bussunto* raged over the whole station; mortality in 1868, 1,055; in 1869, 1,306.

12. *Dimlah Station*.—The diseases *bussunto* and *khoorye* raged over the whole station; mortality 4,389.

13. *Bhowangeegunge Station*.—Three-fourths of the cattle died of *bussunto* in March and April.

14. *Bagdowar Station*.—Twelve villages; disease *bussunto*; mortality 934.

The total mortality in 1868 and 1869 amounts to 16,227. The only inference which can be drawn from these returns is that the diseases mentioned are very common and cause much loss of cattle yearly.



COOCH BEHAR DIVISION,

COMPRISING THE DISTRICTS OF DARJEELING, JALPIGOOREE, GOWALPARAH, AND THE STATE OF
COOCH BEHAR.

Index of Records.

[N. B.—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Darjeeling.	Historical Sketch ...	...	.....	Page 253.
	<i>Dr. J. McClelland, Inspector General, Medical Department.</i>	...	29th Feby. 1864...	{ <i>Selections, Bengal Government, p. 38. Describe the outbreak of cattle disease in 1861 during the Sikhim Campaign.</i>
	<i>Surgeon J. C. Collins</i> ...	...		
	<i>H. C. Wake, Esq., C. B., Deputy Commissioner of Darjeeling.</i>	130	4th June 1864 ...	<i>Selections, Bengal Government, p. 51. Reports on cattle disease in 1861.</i>
	<i>H. M. Herrold, Esq.</i> ...	...	15th August 1866 ...	<i>Selections, Bengal Government, p. 129. Describes cattle disease at Darjeeling in 1865-66.</i>
	<i>Colonel J. C. Haughton, C. S. I., Commissioner of Cooch Behar.</i>	120	25th Jany. 1870 ...	{ Information regarding cattle disease in Bhootan and Darjeeling, p. 255.
	<i>Major B. W. Morton, Deputy Commissioner of Darjeeling.</i>	8 C	19th do. ...	
	<i>G. Rosamond, Esq., Inspector of Police at Darjeeling.</i>	...	5th October 1870 ...	<i>Reports appearance of cattle disease.</i>
	<i>Major H. P. Wynch, District Superintendent of Police, Darjeeling.</i>	A	Do. do. ...	<i>Forwards the proceeding; thinks that the disease is a kind of foot rot.</i>
	<i>Ditto ditto</i>	...	Do. do. ...	<i>Reports sickness and deaths among cattle.</i>
	<i>Ditto ditto</i>	346	7th do. ...	<i>Reports sickness and deaths among cattle, p. 255.</i>
	<i>Ditto ditto</i>	347	8th do. ...	<i>Reports on the outbreak at Kurseong.</i>
	<i>Major B. W. Morton, Deputy Commissioner of Darjeeling.</i>	...	Do. do. ...	<i>Reports on the outbreak at Kurseong, p. 256.</i>
	<i>Major H. P. Wynch, District Superintendent of Police, Darjeeling.</i>	349	10th do. ...	<i>Further report of the same outbreak.</i>
	<i>Ditto ditto</i>	...	Do. do. ...	<i>Report in Form No. 1, p. 256.</i>

Districts	From whom received.	Number.	Date.	Reference and Purport.
Darjeeling—continued.	Evidence recorded at Kurseong and on the road to Darjeeling.	...	19th and 20th October 1870 ...	Evidence recorded by the Cattle Plague Commission at Kurseong and Darjeeling. ... P. 257.
	Evidence of Tenchung recorded at Darjeeling.	...	22nd October 1870	... P. 258.
	Evidence of Nerboo, Interpreter, Deputy Commissioner's Court.	taken	23rd do. ...	... P. 259.
	Evidence of Geelong of Sikkim.	taken	Do. do. ...	... P. 260.
	Evidence of Jungpen of Thibet.	...	Do. do. ...	... P. 260.
	Evidence of Mr. John White, Hotel-keeper, Sonada.	...	24th do. ...	... P. 260.
Gowalparah.	Statement furnished by Baboo Goonabhi Ram Burooah.	...	7th April 1870 ...	Report in Form No. 1 ... P. 261.
Cooch Behar.	Lieutenant Colonel W. Agnew, Officiating Commissioner, Cooch Behar.	1238	29th August 1866 ...	Selections, Bengal Government, p. 115. Describes severe prevalence of murrain in Eastern Dooars in 1865.

HISTORICAL SKETCH.

In this, as in other Divisions, no precise date can be assigned to the first appearance of murrain among cattle, and the officials and inhabitants concur in asserting that plagues of various kinds have been of frequent occurrence, and that these occurrences extend beyond the recollection of the present generation. HISTORICAL SKETCH

On this subject, Baboo Goonabhi Ram Burooah, Extra Assistant Commissioner of Gowalparah, writes,—“The oldest of men living cannot give any satisfactory account on this subject (history). The increase of communication between one place and another has brought and spread the plague.” “Plagues

occurred in Gowalparah in 1851, 1852, 1868, and 1869.

Between these years also the plagues raged in the district, but in them it was very severe.” Mr. Wake, C. B., Deputy Commissioner of Darjeeling, mentions that in 1860 there was a great deal of

loss of cattle from disease in the hills, and that it appears to have been imported from below (the Terai). Surgeon J. C. Collins, writing

in 1861, states that during the time that preparations were being made for the Sikkim Campaign in 1861, a

very fatal disease broke out among the Commissariat cattle employed in bringing up stores from the plains. This outbreak was described by several witnesses

(Sikkim men) examined by the Cattle Plague Commission, who also deposed that the disease affected the cattle of several Sikkim villages at the time. They

further informed the Commission that rinderpest, known there as *yor*, was well known in Sikkim, and appeared periodically from time beyond recollection in

their country. A man from Thibet—Jungpen, a cattle doctor—was examined on the same occasion, and testified to the prevalence of the same disease known

as *chunneah* in Thibet, and his account of the spread of the disease east and west from Sarka, the salt producing district, will be found at page 260. Foot and

mouth disease (*khuchha*) was known in both countries, also in Bhootan. Both these diseases affected wild as well as tame ruminants.

Rinderpest is stated by Mr. Wake to have been prevalent in the Terai in 1863. He also mentions that numbers of cattle of all

kinds died of the same disease. Most of these came during the cold weather to graze, returning to Rungpore, Purneah, and

Dinapore at the commencement of the rains. The next record of cattle plague is contained in the evidence of Mr. John White of Sonada, who states

that in 1864 at Maldram, about four miles on the Sonada side of Kurseong, a Lepcha named Ramprost owned

150 head of cattle, and lost them all from a kind of dysentery. They passed blood, and the interior of the rectum was seen to be of a dark, bloody,

liver colour: “these cattle had no sore feet.” Mr. Herrold, Manager of the Bullock Transit Train, finding that plain cattle did not stand hill work, sent

men early in November 1865 to collect cattle of the hill breed from the Morung. A few days after their

arrival, towards the end of December, two became ill, one at Darjeeling and the other at Kurseong, on the same day: these died within 36 hours. The remainder, which had been with the diseased cattle for a whole night in the same

shed, were removed, but they “dropped off day after day (of the same disease), until on the 15th of December I had not one left of the herd of upwards of 40

head.” The symptoms described by Mr. Herrold are such as to leave no doubt that the disease was rinderpest.

Lieutenant Colonel Agnew, writing in August 1866, states that cattle disease somewhat similar to the Calcutta epizootic is not uncommon in the

Dooars and Cooch Behar, and that in the Eastern Dooars it proved very fatal last year (1865). The Deputy Commissioner of the Dooars reported that the

carcasses of diseased cattle were to be seen in every village, and no precautions were taken to remove dead bodies.

Mr. Herrold's cattle again suffered in 1866. He says,—“In March I purchased 70 head of cattle from Nepal, and a week afterwards the foot and mouth disease, called by the natives *khuratie*, broke out among them. In April the first disease mentioned (rinderpest) broke out again among some new cattle the Commissariat had purchased from Bhootas, and in a very short time nearly all died. Some of these cattle, in a diseased state, were continually moving about the cart-road spreading infection, by which I lost very nearly 150 head of draught cattle, several head of milch cows and calves, and a great many natives in the vicinity of the cart-road lost their buffaloes and cows. I believe this disease is very common in Nepal; natives call the disease *dosalin*—plague.” The Darjeeling Municipality now took over charge of the train lately under Mr. Herrold's management, and at the depôt at Sonada a great many cattle died,—in fact, so many, that the train was closed for a time. Mr. J. White, who had charge of this depôt, states that all the cattle purged and passed blood. Mr. White further states that the disease has occurred yearly in the hills since that period. Rinderpest also prevailed in Hopetown (Mr. John Stalkartt's tea garden) in 1866.

Baboo Goonabhi Ram Burooah states that rinderpest was very severe in Gowalparah in 1868 and 1869.

Early in September 1870, foot and mouth disease broke out at Sooknee on the new cart-road between Silligoree and Kurseong. It had previously been heard of at Titalyah and Silligoree on the Darjeeling road, and it spread stage by stage up the hill until it reached Darjeeling. Kurseong and Darjeeling were visited by the Cattle Plague Commission in October. The disease was found to be foot and mouth disease; the mortality was found to be very great on account of the contractors having to work their cattle after they became affected, in order to fulfil their contracts. It was ascertained that the mortality of cattle belonging to contractors was between 40 and 50 per cent., while the deaths among the cattle of owners who had no contract was only about 12 per cent.

The statistics furnished by the Police are as follows:—

LOCALITY.							Attacked.	Died.
Darjeeling	...	...	...	...	...	...	137	28
Kurseong	...	...	...	...	...	...	333	140
Mateagurh	...	...	...	...	...	...	323	...
Sonada	...	...	...	...	...	...	45	17
Phansigurh	...	...	...	...	...	...	43	2
TOTAL							881	187

The mortality is about 21 per cent., rather less than a mean between the rates ascertained by the Commission to prevail amongst the cattle of contractors and private owners.

DISTRICT OF DARJEELING.

DARJEELING.

From Major B. W. MORTON, Deputy Commissioner of Darjeeling, to the Commissioner of the Cooch Behar Division, Julpigoree,—(No. 8C, dated Darjeeling, the 19th January 1870).

I have the honor to acknowledge receipt of your letter No. 2879, dated the 20th ultimo, and your endorsement No. 21, dated the 4th instant, forwarding questions with regard to cattle disease.

2. As I have already reported, there is no such disease in this district at present, and I presume that no replies to the questions of the Commission are called for from me. I have, however, had one of the most intelligent of the natives of this district, Tendook, agent of Cheebo's heir, examined, and I forward his replies to the questions so far as the land leased to his principal is concerned.

3. I may add that I have examined cattle owners in the district, and that their statements tally with those of Tendook. They assured me that the visitation of 1865 was very severe, that scarcely any animal which was attacked with the disease survived, and that they looked to prevention (by segregation) rather than to any cure of the disease.

4. It may be interesting to note that the natives of these hills believe that, whilst cows, Pigs, sheep, and goats are all liable to the disease, pigs, of which there are great numbers in this district, are never attacked.

Information furnished by TENDOOK BHOOTEA.

The locality is known as Cheebo's illaqua, lying between the Chota Rungeet River and Nepal Frontier.

The name of disease is *Flookho* (in *Lepcha*). It broke out in November 1865. One hundred cattle were attacked, and they all died. The number of cattle belonging to the village was five hundred. The disease is supposed to be infectious. It came from the plains, first appeared in Darjeeling, and then spread to my illaqua.

The symptoms are as follows:—

The hair or wool, as the case may be, stands on end.

There is a disease in which eruptions at the cleft of the hoof and under the hoof occur; this is not very destructive, it may be cured; but the worst type of disease shows no eruptions: this was the kind that appeared in 1865.

The eyes and mouth water, and there is frothing of the mouth too; the body is cold; there is little or no cough, but the breathing is labored; there are shivering fits, but not till the cattle are about to expire; they go off in a shivering fit; both throat and tongue swell and there is difficulty of breathing; the urine is red, as if slightly mixed with blood; fecal evacuations watery.

The fat cattle die in about 4 hours from the commencement of the attack; the lean ones hold out a whole day; but all invariably succumb to the disease.

No medicines are known, and nothing had recourse to except the *munter*, or incantations of the Lamas; they go through all this over a vessel of water, and the water—simply ordinary water—is given to the infected cattle, but they never recover.

From Major H. P. WYNCH, District Superintendent of Police, Darjeeling, to the Deputy Commissioner of Darjeeling,—(No. 346, dated Darjeeling, 7th October 1870).

I have the honor to state that from a report received from Kurseong it appears that the cattle disease appeared in this district about the middle of September.

Buggutheer Sirdar of Sepaijora has 42 bullocks sick, and 2 have died.

Persad Sing of Chuttuckpore has 25 bullocks sick, and 9 have died.

Sadagur of Chuttuckpore has 25 bullocks sick, and ten have died.

Bulbeer of Sepaijora has 4 bullocks sick.

Patlee Tapur of Sepaijora has 2 bullocks sick.

Ajub Lall of Sepaijora has had disease amongst his cattle commencing from the 1st October; 11 are sick.

Poorun Lall has also had disease amongst his cattle commencing from the 1st October; 5 are sick.

Bullee Tapur has had disease amongst his cattle from the 1st October; 1 sick.

Teybur has had disease amongst his cattle from the 1st October (Sepaijora); 2 sick.

Attar Jee has had disease amongst his cattle from the 1st October (Sepaijora); 1 sick.

Mila Persum of Chuttuckpore from the middle of September; 5 sick.

Kanjee Bhootea from the middle of September; 14 sick.

Kurboree Lepcha of Gyaburee, since the middle of September; 50 bullocks sick, 6 died.

Ali Mohamed of Ghabaree, since the middle of September; 31 bullocks sick, 29 died.

Chutterma of Sookna Terai, since the middle of September; 16 sick, 23 died.

Mohamed Khansamah of Sookna, since the middle of September; 16 sick, 4 died.

DARJEELING.
Name of disease.

Uzeer Ali of Kurseong, since the middle of September; 19 sick, 7 died.
The disease is called *chupchoopia*, and affects the mouth and feet.
Jugbeer Tapa of Chuttuckpore since the middle of September; 7 bullocks sick, 1 died.
Luchman Pakamis, since the 1st of October (Chuttuckpore); 2 bullocks sick.
Bhuggun of Chuttuckpore, since the 1st of October; 12 sick.
Juman Sing of Chonabuttea, since the middle of September 1870; 34 bullocks sick below Kurseong, 25 died.

I have told Inspector Thomas, V. C., who has been ill lately, to call on Sub-Inspector Luchmee Kant of Kurseong Police Station for an explanation as to why I did not at once receive a report of this sickness, and to tell me the exact date it broke out. The Head Constable of Kurseong Police Station writes that up to date, 5th October, in the Kurseong District, 517 bullocks were sick, and 116 had died.

Full report from the Terai will follow from Inspector Golam Kadir.

From Major B. W. MORTON, Deputy Commissioner of Darjeeling, to the President, Cattle Plague Commission,—(dated Darjeeling, the 8th October 1870).

I have the honor to acknowledge receipt of your letter No. 495, dated the 5th instant, on the subject of the outbreak of cattle disease in this district, and to reply as follows:—

2. The cattle disease at present prevalent in this district appears to be of an epizootic nature; some cattle appear to have contracted the disease in the plains, and to have communicated it to other cattle in the hills.

The disease seems to have first appeared in the district in the latter end of September, and since to have rapidly spread.

The symptoms, the District Superintendent reports, are those of foot rot and throat disease.

3. I am not in a position to answer all the inquiries made in the printed paper which accompanied your letter under reply.

I am sending your letter to the District Superintendent of Police, and full information will doubtless be procured by the time the Commission arrives in the district; meanwhile I have the honor to forward all the communications I have received up to date from the Police, and to state that whilst the disease appears to be for the present confined to the cart-road, I much fear that it will be communicated to cattle throughout the district.

Information supplied by Major H. P. WYNCH, District Superintendent of Police, Darjeeling, in Form No. 1,—(dated 10th October 1870).

Cattle disease prevails in the District of Darjeeling, chiefly about Kurseong, Gyaburee, Sonada, and Rhumtshool—all close to Kurseong.

Statistics.

The name of disease in the vernacular is *chupchoopia*. The date of outbreak of disease was about the middle of September 1870. The number of cattle attacked was about 500 bullocks and buffaloes up to 5th October 1870 in the Kurseong illaqua, and part at Rhumtshool, Darjeeling. The number of cattle which have died is about 140 or 150. The number of cattle which have recovered is not yet known. The number of cattle still ill is about 350 up to 5th October in the Kurseong illaqua and at Rhumtshool.

Symptoms.

The disease is not confined to any particular village, but seems to have attacked the cattle employed in road-traffic from Sukna in the Terai, up the new road *via* Gyaburee, to Rhumtshool near Darjeeling. The disease is highly infectious. It is supposed to have been brought up from the plains, having followed the line of traffic on the new cart-road.

The symptoms of the disease are as follows:—

No alteration takes place in the appearance of the coat. There is a sore on the hoof. It seems that after this appears the cattle lick the part affected, and thus become diseased in the mouth, which causes the tongue to swell. The mouth only waters; the body is hot; there is no cough or labored breathing; a slight quivering is to be observed; there is swelling of the tongue, but no difficulty in breathing; there is no change visible in the urinary or faecal evacuations; the average duration of attack before recovery or death is from 3 to 8 days.

Treatment.

Medicine was administered by the persons from whom these inquiries were made, *viz.*, the Moonshee of the Darjeeling Carrying Company and the Duffadar of the Government Train between Darjeeling and Rhumtshool, who are believed to be the best authorities. They state that in few cases do the cattle recover.

KURSEONG.

Kurseong, 19th October 1870.

Cases of foot and mouth disease.

The Commission arrived here and inspected five bullocks near the Kurseong Bazaar affected with foot and mouth disease. Police Inspector Thomas, V. C., and several cattle owners were present, and all stated that the disease from which the bullocks have been dying on the line of road between Silligoree and Darjeeling during the past month is the same disease as shown by the bullocks now inspected.

Evidence of WAZIR ALLI, Contractor of Government Bullock Train; WALLI MAHOMED KHAN, Contractor of Government Bullock Train; KARBARRY, Contractor, Lloyd's Carrying Company; JUMMAN SING, Contractor, Lloyd's Carrying Company, and his son CHINTA.

They have charge of different stages of the trains. The order is to carry 8 maunds Load carried. (8 x 40 seers) in each cart; but latterly, during the last three months, much heavier loads have been put in the carts, *i. e.*, from 10 even to 14 maunds. Wazir Alli keeps 14 bullocks; all his bullocks have become sick from *chupchoopia* (*i. e.*, sore mouth) and *khorent* (*i. e.*, sore feet). Ten of the 14 have died up to date since August. The disease first appeared in August. It was brought by cattle coming up from the plains, and spread gradually stage by stage from Silligoree to Kurseong; some of the cattle belonging to the villages close to the road side have also become affected.

The symptoms of this disease are as follows:—

Symptoms.

1, sore mouth with offensive breath; 2, fever for two or three days; 3, loss of appetite, but very great thirst; 4, blisters form on the mouth and on the tongue, and the skin peels off. Sometimes a little blood comes away from the mouth, afterwards the feet and fetlocks from the hoofs to midway between the knees and fetlocks become swollen. The animal becomes very lame. Blisters appear between the clefts of the hoofs and all round between the hair and the hoofs. The blisters break and discharge water, and in some cases flies blow the sores and maggots form in them. The urine is passed in a very slight quantity, is high coloured, and sometimes even bloody in appearance. Purging has not been noticed, but in a few cases the dung has been soft from feeding on green grass. No blood has been observed in the dung. The whole body of the diseased animal often stinks very offensively, and in severe cases the bullock does not eat at all.

Intense fever sets in and the animal dies in two days. The average duration of an attack is from 15 to 20 days. The reason why so many of the cattle have died is because the contractors are obliged to provide cattle to draw the carts, and many owners have not had a sufficient number of cattle to allow the sick ones to remain at home and rest.

The disease *matah*, *seetlah*, or *gootee* is known to these men. Jumman Sing and Hisson and Karbarry remember seeing many cattle dying from *matah* about five years ago. When cattle have *matah*, they have sore mouths, but not sore feet, and they purge a great deal, and the purging blood is passed. Eruptions too are frequently thrown out all over the body, and the coat stands on end. The disease comes up from the plains; at least it did so five years ago. The same disease attacked sheep, goats, and pigs five years ago, and was very fatal. Jumman Singh lost 149 head of cattle, out of 150 which he had, of foot and mouth disease. He lost all the sheep and goats he had, *i. e.*, three sheep and six goats. Walli Mahomed Khan had 32 pairs of bullocks before the disease broke out in August, of which he lost 20 pairs; has about 26 still ill, including the 24 he recently purchased. Jumman Sing had 65 bullocks before the disease broke out, of these 25 have died; has purchased 26 since the disease broke out; has still 20 so ill that they are not fit for work.

Evidence of MODAN MOHAN DOLLAR, dated 20th October 1870.

I am Agent for the Calcutta and Darjeeling Carrying Company at Kurseong, and have been so employed for upwards of a year. I have 60 bullocks employed on the road between Kurseong and Darjeeling, and three carts ply daily each way; one pair of bullocks draw a cart. The order is that each cart is not to carry more than 10 maunds. The disease which is now raging amongst the cattle first appeared six or seven weeks ago. I first heard of the disease at Sukna at the foot of the hills, and then at Chunbhatte, six or seven miles off. It gradually ascended the hill stage by stage. If the contractors are not able to supply the number of bullocks contracted for, we hire other bullocks (at present at the rate of Rs. 2 a stage, but the contract rate for bullocks for working daily is Rs. 18 a month) and deduct the amount from the contractors' monthly allowance. I weigh the different cart loads of goods in my office; but the bullock contractors are not present. At the present time, on account of the sickness of the bullocks, we have not been able to forward much of the goods we have in hand, and as Mr. Lloyd has guaranteed that he will forward goods from Darjeeling to Calcutta in six weeks, or pay demurrage at the rate of two annas a day for each package, we are most careful to forward goods with the least possible delay. The cattle of Lloyd's Train did not suffer last year. The rate of speed contracted for is half a mile an hour on the hill, and two miles an hour on the plain. Some of the contractors on the line have been obliged to use sick cattle. There is no clause in the agreement obliging the contractor to keep any spare cattle above the number contracted for.

Evidence recorded on the road from Kurseong to Sonada, dated 20th October 1870.

KURSEONG TO SONADA.

PATTUN SINGH, a pensioner, and his son DARYAFT SING, living at Dhobee Dora, had 16 bullocks; all of them became sick of foot and mouth disease; one died and 15 are recovering. Has no contract; works his bullocks on his own account.

Kurseong.	DUNJEE RAM of Sipahi Dora, Contractor for the Government Train, keeps at this place
Sickness and loss.	12 bullocks and two cows, of which three bullocks have died. Two died in one day, and the remainder are still ailing.
Foot and mouth disease in 1866.	ASAB TAPPA, bullock keeper, on his own account keeps 11 bullocks. Three have died; the others are recovering. Saw the same disease four years ago, but it was not so severe then as it is now; remembers that the disease <i>matah</i> attacked cattle seven years ago in Mr. Herrold's time, and the Carrying Company lost a great many cattle from <i>matah</i> .
Rinderpest in 1864.	
Sickness and loss.	DOYAL TAREE keeps 12 bullocks on his own account. Aso has five cows and two calves. All have been ill and three have died within the last 15 days. We bullock keepers never stall-feed our animals, we merely allow them to graze. The disease which has lately been amongst them is known here by the names <i>khurent</i> , <i>bagher</i> and <i>baghooli</i> . It attacked the cattle last year; occurs nearly every year; but it has never been so severe before as it is on this occasion.
Feeding.	
	LACHOOMAN SING states that three and a half years ago <i>gootee</i> attacked the cattle on this road.
Symptoms.	The symptoms of the disease are as follows:—
Rinderpest in 1867.	Mouth sore and discharging; eruptions on body, but not on feet; offensive breath; profuse purging; but he did not observe that blood was passed.
Foot and mouth disease.	JUNGLOO, living on the road side, four and a half miles from Kurseong, cartman, had eight pairs of bullocks; sold four pairs to different contractors; the remaining eight animals are sick now.
Symptoms.	The symptoms which he has observed are as follows:—
	Sore mouth; could not eat at first; sore feet; are now eating a little, but their hoofs remain sore and render them unfit for work. Has lost none, but when a bullock becomes sick he at once takes him from work. He has no contract. Those bullock keepers who have contracts are obliged to continue working their cattle when sick; hence why they have lost so many.
Sick animals worked.	BANSI is a cartman and has two pairs of bullocks. Has no contract. All four bullocks have been sick and are recovering; he took them out of work directly they appeared sick.

Chuttuckpore, six and a half miles from Kurseong, three miles from Sonada.

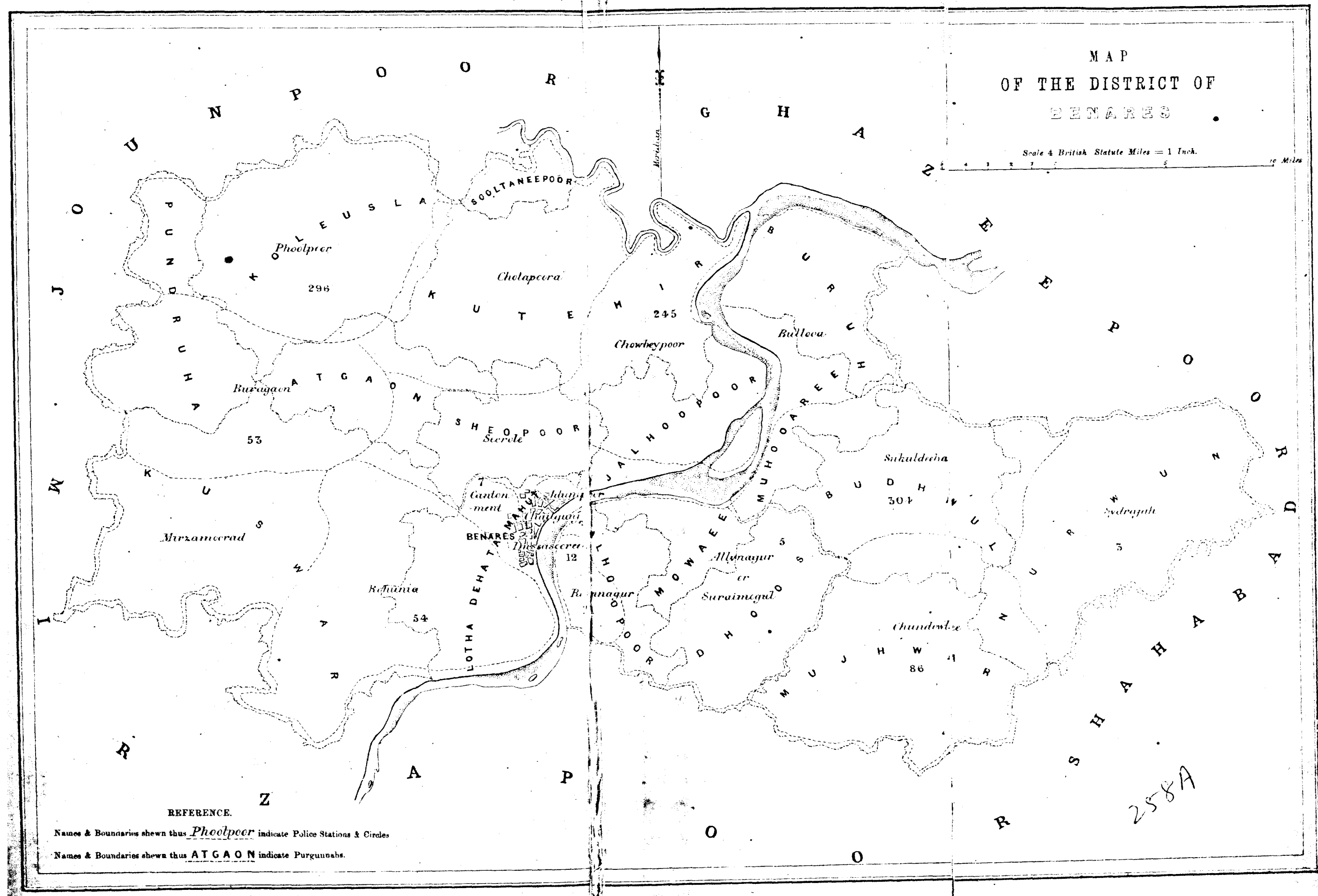
Sickness and loss.	ACHAL, servant of SAUDAGAR, Contractor, Government Bullock Train, had in this place 26 bullocks under his charge, of which 13 have died from <i>khoorah</i> during the last six weeks.
Loss.	PERSHAD SINGH, Contractor for Government Bullock Train, states that he keeps 13 pairs of bullocks for the train, and has lost 15 bullocks from <i>khoorah</i> . When he was a Clerk in Mr. Herrold's employ, he saw the cattle of the train attacked with <i>matah</i> in 1865 and 1866, and a great many of them died.

Evidence of TENCHUNG Bhootea, Darjeeling, dated 22nd October 1870.

Murrain during the Sikhim Campaign.	Tenchung Bhootea states that,—I have lived in the Darjeeling hills for the last 25 years and upwards, and am an agriculturist in Sikhim. I was there during the Sikhim war, and murrain broke out amongst the cattle of the British force. The symptoms shown by the sick cattle were,—drooping of the ears, and two or three days after the mouth watered, and purging commenced. The best conditioned cattle succumbed in four or five days, and the weak lingered for seven or eight days and then died. The color of the dung was reddish, and something white was mixed in it; it was mucus. I did not see any blood; the breath and dung were offensive, as also the body; I did not look inside the mouth. I did not observe any running from eyes and nose, nor any eruption on the body. [On first being questioned, the deponent said that the affected cattle became lame, but subsequently he was not quite positive about this].
Symptoms.	
Foot and mouth disease in Sikhim.	The deponent says that nearly six months after another murrain broke out among Commissariat cattle in Sikhim, and then the clefts of the hoof were sore. The hoofs dropped off; the affected animals died. I cannot be positive when the first casualty occurred amongst the cattle, but, as far as I can recollect, I think the first death from purging disease took place a fortnight after the British had left Darjeeling, and I am of opinion that the animals took the disease from Darjeeling.
Origin of disease.	
Rinderpest rare.	The purging murrain raged for some time, and then appeared the hoof disease, and there was disease among cattle during the war as long as the campaign lasted. The sickness was amongst Commissariat slaughter cattle. I had never before the Sikhim Campaign seen the purging disease, which in Sikhim language is called <i>yor</i> . The hoof disease I have often seen, and I had seen it in Sikhim and Darjeeling before the war. It is called <i>khuchha</i> , and appears in some place or other every year. I have, however, heard from my father that he had seen the disease <i>yor</i> amongst the cattle. I cannot say how and whence this disease came; I had been to Thibet, but I never happened to hear that <i>yor</i> was known amongst the Thibet cattle. We have medicines for the cure of this disease, but I doubt them. The deaths from <i>yor</i> are many more than from <i>khuchha</i> . The merchants who sell goods at the bazaar of Lassa came from Talloom Khalassa, Jegulethee, Guongchee, Faree, and Loka. From Lassa I and several like myself from Sikhim
Foot and mouth disease common.	
History.	
Thibet.	

MAP OF THE DISTRICT OF BENARES

Scale 4 British Statute Miles = 1 Inch.



and Darjeeling bring blankets and ponies and sell them in Darjeeling, Rungpore, Julpigoree, Purneah, Assam, and sometimes Calcutta. The goods are brought from Lassa upon ponies, donkeys, and yak cattle. Their feet are like those of ordinary cattle; they have large horns. I have not seen any die, but I have heard that yak cattle die of heat. I cannot describe the Yaks. symptoms before death. I have seen the diseases *gor* and *khuckha* among sheep and goats, but not among horses; I don't know whether they attack the yak cattle or not. I do not know whether the diseases ever attacked the wild animals or not. Out of 20 head of cattle affected with *gor*, four or five only may survive. In case of the *khuckha* disease, with proper care and Mortality. treatment not one will die.

Evidence of NERBOO, Interpreter, Darjeeling, dated 23rd October 1870.

Nerboo, Interpreter of the Deputy Commissioner's Court at Darjeeling, aged 42, a native of Sikhim, says that his birthplace is 4 days' march from here. Has been 24 years in Government service; left home 30 years ago; visited his native place six years ago. Had, 11 years ago, about 30 head of cattle; this was just before the Sikhim war; but during the war a disease called *gor* broke out amongst the cattle of the British army then at Rungheet. My cattle were 16 miles off the British camp, and there was no road for cattle from the camp to my farm; no cattle were brought or came in any way from the camp to my farm. But the disease *gor* attacked my cattle and killed all but one. How the disease came from the British camp to my farm I have no idea. The villages nearest the army were not those first attacked, but the disease appeared in villages like my farm some distance off, and then other villages nearer to the camp became affected. My idea as regards the contagiousness of *gor* is this, that if the disease is amongst stock, some take it and some do not. Sheep and goats also take *gor*, and these animals died from it in the camp like the cattle. I never had cattle affected with *gor* before, and never knew of *gor* in my own country. The only diseases I knew before that attack of *gor* were *foko* and *katcha* (foot and mouth disease). [The symptoms of *foko* described by deponent are those of hoven].

The symptoms of *gor* that occurred during the Sikhim war were:—

Coat staring; loss of appetite; great thirst; discharge from mouth (did not examine inside mouth), eyes, and nose; evacuations bloody; excessive purging with great force.

Cattle in good condition died more quickly than poor animals, generally in from 3 to 5 days.

In Thibet cattle are hardly ever seen; yaks are the beasts of burden generally used, and they bring merchandise from all the surrounding parts. When a Thibetan comes here, he is astonished to see our cattle. He never has heard whether yaks are affected with *gor* or other diseases; indeed he knows little about yaks.

The Thibet merchants also bring some of their goods on ponies as well as on yaks.

In Sikhim and Thibet cattle are not used for agricultural purposes; the land is worked by hand labor.

Evidence of GELOONG, of Sikhim, dated 23rd October 1870.

I am 37 years old; left my country 25 years ago; have not visited my country since. My village, called Pandham, is six days' march from here. I had 20 to 25 cattle in Sikhim, and brought 15 of them to this place. I still have 20, including calves. The only disease I have seen is *khachha* (foot and mouth disease). I was not in the Sikhim war, but heard that the disease *gor* broke out among the Commissariat cattle. The hides here are not sold, but are used for making beds. I never heard of any cattle poisoning. The cattle here chiefly come from Bhootan, rarely from the plains. The Bhootan cattle are much larger than those on the plains. The lowest price of a cow is Rs. 15, and the best cows fetch as much as Rs. 30 to 35. Bullocks fetch from Rs. 30 to 35; each cattle owner keeps his own bull. We don't give our cattle anything to eat, they are allowed to graze; even our cows are not stall-fed. The hill cattle are not usually taken down to the plains; I have heard of hill cattle being taken down to the plains, but they die of heat.

Evidence of JUNGPEN, a cattle doctor and a native of Lassa in Thibet.

I own cattle, and have seen disease of two kinds amongst cattle. One is *khuckha* and the other *chooneah*. The former is the foot and mouth disease. In the latter the affected cattle purge, the stool being mixed with streaks of blood and mucus; sometimes they also water the mouth, and matter-like stuff comes out of the nose. They eat little or nothing, but are very thirsty; and if they drink a large quantity of water they die very quickly. I have seen three outbreaks of this disease. The *chooneah* appears in Thibet every 4, 5, or 6 years. The disease would stick to one place, provided the diseased cattle are not allowed to go out elsewhere, or its flesh were not sent out of the place; but if otherwise, the disease is sure to go wherever the diseased animals go, or flesh. The last outbreak in Lassa was in June, as also a former outbreak.

DARJEELING. Mr. J. White. History. Origin of disease.	This disease (<i>chooneah</i>) has been in my country for the last 50 years or so, for I have heard my father say that during his lifetime there was an outbreak of this fatal disease. The disease is supposed to come from a country in the west, from which place the salt is brought to Lassa on yaks and sheep. The Bhootas call the country to the west <i>Chhungtsakha</i> (<i>chhung</i> means "west," <i>sakha</i> "salt.")* The sheep and goats in our country also get the disease, and those wild animals which have feet like cattle. I have seen in the jungles of Thibet a kind of wild goat dying of <i>chooneah</i> . On one occasion I saw 100 yaks belonging to the Thibet Rajah die of this disease, and on another occasion I saw at a watering place in the jungles 10 wild sheep lying dead from <i>chooneah</i> . I know that sheep and yaks that carry salt from the western country sometimes die of <i>chooneah</i> , not at the place where salt is made, but on their way to Lassa. In my country the urine of a male child of 8 years, black salt, musk, a stuff called <i>shekatmeum</i> , something like salt, and obtained on the salt grounds, are given. This medicine is given to the sick cattle internally, and it is applied to the sore mouth, and they recover in 5 or 6 days. This is the medicine for <i>khachha</i> disease; there is no medicine for <i>chooneah</i> (rinderpest). This is a very fatal disease, and there is hardly a case of recovery from it. It is something like <i>matah</i> (human small-pox). There are no eruptions in this disease. We have no hot weather in Thibet; during the cold season we wear jackets made of skin, and in other months those made of cloth.
Sheep and goats, &c.	
Treatment.	

Evidence of MR. JOHN WHITE, dated 24th October 1870.

Disease in 1864.	I am 38 years old. I have been in these hills for the last 10 years. I came here as a soldier in Her Majesty's 6th Foot, and for the last 6 years I have been an inn-keeper at Sonada and Darjeeling. During the whole of these 10 years I have had something more or less to do with cattle. The first time that I saw disease amongst cattle was in 1864, at a place called Maldram, about four miles the Sonada side of Kurseong. A Lepcha named Ramprost had in that year at Maldram about 150 head of cattle (buffaloes, bullocks, and cows); all these died of dysentery. They passed blood, and you could see some distance up the rectum, which had the appearance of being dirty, bloody, liver-colored: these cattle had no sore feet and they never appeared lame. I did not observe any other symptom. The next time I saw disease amongst cattle in these hills was in the year 1865. This was amongst the cattle belonging to Mr. Herrold's Transit Train from Punkhabaree to Darjeeling; a great many of these cattle died, and I saw some of them sick. They purged and passed blood. I don't remember these being lame, but at that time I was employed at some little distance at Hopetown. In the year 1866 the Municipality undertook charge of the train lately in Mr. Herrold's charge, and I was employed at Sonada to look after the depôt for two months; during that time the Municipality of Darjeeling lost a great many cattle, in fact so many, that they had to close the train for a time. The symptoms shown were purging and passing of blood, and total loss of appetite. I don't remember other symptoms. The natives said that this disease (purging and passing of blood) is always brought by the cattle that are brought from Nepal and from the interior of Nepal; and I have not heard of its having been brought from Bhootan. The reason why it is believed that the disease was brought from Nepal is that the newly-imported cattle are always the first to get the disease. It breaks out immediately after the arrival of new cattle: the newly-arrived ones are first attacked, and then the disease spreads amongst other cattle which have been on the hills for some time. In the same year (1866) Mr. John Stalkartt lost upwards of 50, out of about 64, head of cattle which he had in his tea garden at Hopetown. These cattle also died of the purging disease.
At Maldram.	
Symptoms.	
Disease in 1865.	
Symptoms.	
Disease in 1866.	
Symptoms.	
Source.	
Imported cattle.	
Small-pox.	At the end of 1866 my own cattle were attacked, some with small-pox and some with the purging disease; my stock consisted of 58 head of cattle. The symptoms of those attacked with what I call small-pox were,—loss of appetite, mopishness, coat staring, hair turned the wrong way, and on passing the hand all over the body, the skin was found covered with lumps of the size of a bean. These lumps did not break: some of these were afterwards attacked with the purging disease. The skin about the udder and thighs looked red and cracked-like. The cows affected stopped giving milk. I lost 6 cows, 1 bullock, and about 17 or 18 young stock; all of these died of purging; about half of my cattle did not get disease. Those cattle of mine which recovered have not suffered from a second attack, although there has been disease amongst cattle in the neighbourhood every year since about September or October. I believe the disease to be contagious, because it always breaks out first among the working bullocks, especially those which have lately come from Nepal. In 1868 I bought the herd of a gentleman leaving Kurseong; the herd consisted of 23 head of cattle. They were attacked with disease in October, and all died except one. The only symptom was constipation of the bowels, and nothing else. The remainder of this herd and my other cattle were immediately afterwards attacked with the purging disease. The rest of the new herd died except one, and, if I remember rightly, I lost also about 20 of young stock of my old herd. The new cattle had been purchased from Mr. Mann, of the Forest Department. Probably Mr. Mann's herd
Second attack.	
Contagiousness.	
Geography.	

* The salt works spoken of by witness are found on the map to be in longitude 85°, latitude 30°, in a straight line about 150 miles north-west of Mount Everest. Chornapary is about 180 miles west of Sarka (the salt works) on the borders of a large lake (latitude 36°, longitude 81°). Janglachi is about 150 miles west of Lassa (latitude 29°, longitude 88°). Lassa is in longitude 91°, latitude 29°. The inhabitants of these different places meet once a year at Sarka, and invariably yaks, sheep, &c., laden with salt returning to Lassa, &c., become affected with *chooneah*, (rinderpest,) and some die on the road. The cattle going from Lassa to the salt works continue healthy, but those returning become diseased.

became affected from a change of pasture. Kurseong is a warmer and milder climate than Sonada, and the herbage is of course drier up at Sonada than at Kurseong in the month of October. I know that foot and mouth disease occurs more or less every year in these parts since the year 1868. I have heard that the purging disease has occurred amongst the cattle of my neighbourhood, but I have not lost any of my old cattle from it; and I am inclined to believe that all of them have had the purging disease some time or other, as I have lost young stock since 1868 from the purging disease. I know that the foot and mouth disease, which is now so prevalent here, is so contagious, that I don't allow my cattle to go out on the road for fear of catching the disease, and consequently not one of my cattle has been affected.

Sonada, 24th October 1870.

ULLEE KHAN, about 45 years old, states that,—I am a Chupprasee employed under the Calcutta and Darjeeling Carrying Company. I am a native of Chupra in Behar, but I have been in the hills of Darjeeling in different capacities for the last 17 years. I have been in this depôt for the last 8 or 9 months. The Company have lost 22 bullocks from a disease that we call *khocrak*. The mouth salivates and the hoof gets sore, and the affected cattle gradually die; they are however never off feed. There are still 27 bullocks ill here: we have not allowed the sick cattle to work. We apply a lotion of alum, bluestone, and some bark, and wash the mouth and hoofs therewith. Never before have I seen a like disease here or elsewhere, although I heard on previous occasions that cattle had died in the hills of certain sickness. What that sickness was I was never told. I have also been told that a disease called *matah* attacks the cattle.

DISTRICT OF GOWALPARAH.

Statement furnished by BABOO GOONABHI RAM BUDOOAH, Extra Assistant Commissioner, Gawalparah, dated 7th April 1870.

The following information applies to the Gawalparah District.

The value of cattle in this district is as follows:—

Now a bullock costs Rs. 16, cow Rs. 12, male buffalo Rs. 20, female buffalo Rs. 35. Ten years ago a bullock cost Rs. 12, cow Rs. 8, male buffalo Rs. 15, female buffalo Rs. 25.

Bullocks, male buffaloes, and in certain localities even cows, are employed in ploughing lands. People who have several sorts of cultivation employ them throughout the year.

Bullocks and male buffaloes in certain localities are employed as beasts of burden. They are treated in various ways, but not with so much care and attention as the nature of the case demands.

Female buffaloes and cows are all—at least those that are fit—used for dairy purposes.

Cows are kept in houses or sheds, buffaloes in the open air, near bheels, &c. The sheds are built of bamboo and grass. They are from 20 to 100 cubits in length, and 10 to 20 cubits in breadth, without any opening, with the exception of the door for ventilation, or in certain cases without any proper reed wall round the house. The calves are kept in a separate room, and the cow-keeper also sleeps in that room. In certain localities cows are at night kept in *machans*. Fire always burns in the sheds.

Bullocks, &c., graze in the fields. At home they are allowed to eat dry or green grass, *bhoosee*, mustard cakes, *kalai*, or rice mixed with salt; they drink the water of rivers, bheels, &c.; the grasses on which they feed are called *durba*, *kolie*, *nara*, *nal*, *khogra*, *bhor*, *pura*, *kher*, &c.

Cattle are housed at night in all the seasons of the year. In certain places cows are not taken much care of during the months of Magh (January), Phalgun (February), and Cheyt (March), *i. e.*, after the *solee* crop is reaped.

Cattle are herded and driven to *churs* or islands with new grass and jungle, as well as herding places adjacent to *bheels*, &c. The distance does not exceed ten miles.

The general condition of cattle depends on the nature of the locality, pasture, and care; on the whole, the condition is healthy.

No special measures are adopted for this purpose; no bulls are kept. With regard to buffaloes, wild buffaloes (male) are preferred to domestic ones for breeding purposes; when a wild bull (buffalo) is in the *bathan* or herd, great care is taken not to disturb him.

Cows are imported very seldom from Rungpore, Mymensing, Cooch Behar, and certain other adjacent districts.

Buffaloes are brought for sale from Purneah, Mozuffarpore, and other districts. The average price of a female buffalo is Rs. 20, and a cow Rs. 10.

There is a class of men who buy and sell cows and bullocks in markets and villages. A seller must be identified by a known person before he can sell cows, &c.

People from Purneah, &c., who trade in buffaloes here, stop in certain places whence they sell them.

GOWALPARAH.

Export.

There is very seldom any export of cattle; bullocks for agricultural purposes are occasionally exported.

Hide trade.

There is no export of hides. *Moochees* or *chamars* are the persons who have now commenced to deal in hides. The number appears to have increased of late.

Garrows sell hides in the *hats*, and the value (highest) per hide is Re. 1. The *beparees* of Dacca get hides from Calcutta, &c., for sale.

Mortality.

The ordinary mortality is 4 per cent., and that from plague 40 per cent.

History.

The oldest of men living cannot give any satisfactory account on this point. The increase of communication between one place and another has brought and spread the plague more and more. Plagues occurred in 1851-52, 1868-69: between these years also the plague raged in the district; but it was very severe.

Contagiousness.

Plagues are contagious diseases. Villages which have less or no communication with places where plague prevails suffer less from its effects.

Season.

Plagues prevail in Kartick (October), Magh (January), Phalgun (February), Bysack (April), and Jeyt (May).

Different varieties are apt to prevail at different seasons; diarrhoea and sore leg and swelled throat and tongue prevail after the rainy season, as well as when the rains first commence. *Bussunto* or small-pox prevails in Magh and Phalgun: this disease rages virulently for one month, generally from full to new moon, and *vice versa*.

The proportion per cent. of attacked is 60 per cent.; the proportion per cent. of recoveries 20 per cent.; the proportion per cent. of deaths 40 per cent.

Liability.

Symptoms.

Cattle of less than three years of age are most liable to *bussunto*; it especially prefers weak animals. Its symptoms are as follows:—

There is shivering in certain cases; the appetite and rumination are less than usual; the skin is hot; sometimes the hairs fall off, even in slightly touching the body, and sometimes not; the tongue and throat swell; there is difficulty in breathing, and cough; also looseness of bowels, mucus being passed in most cases; the secretion of milk is suppressed; the animal stands or lies down with closed eyes and drooping head; appears very dull and inactive.

Contagiousness.

I am of opinion that the disease is contagious.

Sanitary measures.

No sanitary measures are adopted. The sick and healthy are not separated.

The carcasses are mostly thrown into the open fields, on river banks and uninhabited localities; carcasses are never buried.

Moochees near the stations take away the hides when they can, but, generally speaking, no separate measures are adopted for their disposal.

I believe that cattle epidemics either precede or follow cholera epidemics.

Weather.

Cattle plague breaks out generally before or after the rains. Heavy falls of rain rather increase the mortality.

ASSAM DIVISION,

COMPRISING THE DISTRICTS OF KAMROOP, DURRUNG, NOWGONG, AND LUCKIMPORE.

Index of Records.

[N. B.—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Assam.	Historical Sketch ...	.....	...	Page 267.
	Officiating Secretary, Board of Revenue, Lower Provinces, to the Secretary to the Government of Bengal, Revenue Department.	....	17th January 1854	An account of the murrain which prevailed in Assam in 1853. This and the three following papers are printed in the Journal of the Agri-Horticultural Society, Vol. XIII, page 270.
Seebaugor.	Dr. Long, to Captain Holroyd, Deputy Commissioner of Seebaugor.	.....	12th August 1853 ... 28th September 1853	Describes the symptoms and post-mortem appearances of the plague of 1853.
Luckimpoore.	Assistant Surgeon A. Maclean.	54	14th November 1853	Ditto ditto.
	Captain Dalton ...	146	18th November 1853	On the same subject.
	Colonel Agnew, Officiating Commissioner of Assam.	4	19th January 1864	Selections, Bengal Government, page 5. Gives extracts from the reports of District Officers referring to cattle disease.
Assam.	Lieut.-Col. Hopkinson, Commissioner of Assam.	322	11th August 1866...	Selections, Bengal Government, page 114. Reports on an outbreak of rinderpest in August 1865 in Cherrapoonjee, Kassia Hills.
Durrung.	Major Lamb, Deputy Commissioner of Durrung.	612	3rd October 1867 ...	Selections, Bengal Government, page 166. Reports on an outbreak of cattle disease in the western part of the district.
	Dr. A. Imthurn, Civil Surgeon.	50	10th September 1867	Details the symptoms of the disease—rinderpest.
	J. J. S. Driberg, Esq., Extra Assistant Commissioner, Mungledye.	229	13th September 1867	Selections, Bengal Government, page 169. Describes the murrain which prevailed in the Mungledye Sub-division.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Durrung, —contd.	Major Lamb ...	{ 456 470 506	{ 19th August 1867 22nd August 1867 2nd September 1867	{ <i>Selections, Bengal Government,</i> page 172. <i>Further reports</i> <i>on the same outbreak.</i>
	Ditto ...	.....	1st February 1870	Statement in Form No. 4, p. 270.
	J. J. S. Driberg, Esq., of Mungledye.	.....	20th January 1870	Statement in Form No. 4, p. 270.
	C. P. Bruce, Esq., Tea Planter, Mungledye.	.....	12th January 1870	Evidence recorded by Cattle Plague Commission, p. 272.
	J. D. Campbell, Esq., Tea Planter.	.....	Ditto ...	Ditto ditto, p. 273.
	Major Lamb, Deputy Commissioner, Durrung.	1222	8th January 1870	Reports on murrain in the Orang Mouzah, from June to December 1869, p. 273.
	G. Grant, Esq., Extra Assistant Commissioner, Durrung.	1175	29th December 1869	
	Colonel Hopkinson, Commissioner.	252	5th September 1868	A careful description of murrain which prevailed in Kamroop in April and June 1868, p. 274.
	Dr. Purves, Civil Surgeon of Gowhatty.	73	30th August 1868	
Kamroop.	Syed Sekawut Hossein, Pensioner, Gowhatty.	.....	15th February 1870	Evidence recorded by the Cattle Plague Commission, p. 276.
	Baboo Gunga Nauth, Moon-siff and Subordinate Judge of Gowhatty.	.....	Ditto ...	Ditto ditto, p. 277.
	Colonel R. Campbell, Gowhatty.	.....	Ditto ...	<i>States that disease was so severe in 1849 and 1850 that the carcasses could not be removed. Information referring to several Mouzahs of the Kamroop District, showing that rinderpest and foot and mouth disease prevailed extensively in that district in 1869 and 1870.</i>
	Assistant Commissioner of Kamroop.	Form 1	Ditto ...	
	Colonel Agnew ...	154	18th May 1869 ...	
Assam.	Ditto ditto ...	195	18th June 1869 ...	Reports outbreak of murrain in Sebsaugor and Luckimpore in April and May, p. 277.
	Captain Campbell ...	4	3rd January 1870	Gives a further report of the progress of murrain in the several districts of Assam, p. 279.
	John Campbell, Esq., Extra Assistant Commissioner, North Luckimpore.	{ 80 22	{ 4th September 1869 22nd March 1870...	Return in Form No. 1, showing 112,415 deaths from cattle disease, from 30th March 1869 to 30th January 1870, p. 282.
Luckimpore.	Ditto ditto ...	.....	26th March 1870...	Information regarding an outbreak of cattle plague in the North Luckimpore Sub-division, p. 282.
	S. Campbell, Esq. ...	.....	26th January 1870	Statement in Form No. 4, p. 284.
	Captain Gregory, Deputy Commissioner of Luckimpore.	877	15th January 1870	Ditto ditto, p. 287.
	Ditto ditto ...	.....	9th February 1870	Describes the murrain prevailing in the District of Luckimpore and the sanitary measures adopted to check it, p. 289.
	District Superintendent of Police, Luckimpore.	.....	30th November 1869	Evidence recorded by Cattle Plague Commission, p. 290.
				<i>States that the villagers of Madarkhat objected to have their cattle treated by Mr. Farrell's Salootries, because of their want of success and their conveying the disease from one place to another.</i>

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Assam.	Mr. Farrell ...	Letter ...	10th January 1870	{ Details his observations on cattle murrain in the 24-Pergunnahs, Jessore, and Assam, p. 292.
	Ditto ...	Evidence	21st January 1870	
	Ditto ...	Letter ...	21st February 1870	
	Ditto ...	Report ...	2nd April 1870 ...	
	Dr. J. B. White ...	Letter 70	2nd October 1869...	{ Gives nature, symptoms, and treatment of the prevailing murrain, p. 308.
	Ditto ...	Letter ...	11th January 1870	
	Ditto ...	Evidence	11th February 1870	
Luckimpore.	B. E. C. Comber, Esq., Tea Planter, Assam.		10th February 1870	{ Evidence recorded by the Cattle Plague Commission at Debrooghur. ... p. 312.
	Rev. E. H. Higgs ...	.....	Ditto ...	
	Baboo Nobin Chunder Burooah.	.....	11th February 1870	
	H. E. S. Hannay, Esq., Tea Planter, Assam.	.....	Ditto ...	
	Captain J. F. FitzG. Colagan.	15	22nd February 1870	Information in Form No. 4, p. 321.
	Alliga, Mouzahdar of Lahowl, near Madarkhat.	Evidence	27th January 1870	{ Evidence recorded by the Cattle Plague Commission at Madarkhat. ... p. 322.
	Colia, Mouzadar of Ekra-toolee, Mattibar.	.....	28th January 1870	
	Mathbas, Mouzahdar of Meripittar.	.....	29th January 1870	
	Sadun Chunder, Seris-tadar, Political Agent, Debrooghur.	.....	30th January 1870	
	Futtick Ram, Mohurir, Farmer.	.....	31st January 1870	
	Dhoni Ram, Mohurir, Mut-tuck Tea Co., Limited, Lahowl.	.....	Ditto ...	
	Muliah, Mouzahdar of Jugibahar.	.....	Ditto ...	
	Borick, Mouzahdar of Madarkhat.	.....	Ditto ...	
	Villagers of Madarkhat ...	... ..	1st February 1870	
	Lahor ...	.....	Ditto ...	
	Muloha ...	.....	Ditto ...	
	Moosah Kolita ...	.....	Ditto ...	
	Hood Gossain ...	.....	2nd February 1870	
	Mohun Gossain ...	.....	3rd February 1870	
Assam.	Colonel Agnew, Commissioner of Assam.	118	6th April 1870 ...	Forwards reports from District Officers on the subject of the importation of buffaloes, p. 333.

HISTORICAL SKETCH.

It is certain from the oral testimony of several inhabitants of Assam, obtained by the Commission on the occasion of their visit to that province, that cattle disease prevailed there previous to the British occupation. This event dates from 1824, when Assam and its Dependencies were annexed to the British territories during the first Burmese war. They were formally ceded by the Burmese by the treaty dated 24th February 1826. The ceded territory was attached to the Commissionership of the north-east and Rungpore. In 1833 the territory of Upper Assam (the Districts of Luckimpore and Sebsaugor, excluding Suddya and Matack) was placed under the administration of Rajah Poorundur Sing, but in consequence of the failure of that Chief to provide adequately for the protection and well-being of the country and its inhabitants, and in consequence also of his neglect to render the stipulated tribute, the territory was resumed in 1838. After resumption it was administered by the Government of India in the Political Department, through the Commissioner of Assam and Governor General's Agent, North-Eastern Frontier, till 1839, when by a proclamation, dated 31st July, it was annexed to Bengal. The earliest murrain of which information could be obtained was that which

1797.

occurred in the District of Sebsaugor in the year 1722, Sicabda (1797). This fact was communicated to the Commission by Baboo Mohun Chunder Burooah, Moonsiff of Debrooghur, who had heard the circumstance mentioned by his father.

Veterinary Surgeon Farrell writes in his report, dated the 2nd April 1870, as follows :—"I came across an old Gossain who produced a book written in the

1818.

Assamese character, and read from it that in the year 1818 the Burmese invaded the country with a large army, and that soon after their arrival in Assam a great plague broke out amongst the army cattle and destroyed them all, spread into the country, and committed similar devastation." The next notice of murrain is by Major Thomas Lamb, Deputy Commissioner of Durrung, who states that the first plague known

1825.

in that district occurred in 1825, but that no detailed account of it is procurable. A witness, Mohun Gossain, deposed that murrain existed in the District of Rungpore or Sebsaugor 10 or 12 years before the English took over the government of that district (1838). Another witness, Gunga Nauth Nauth, Moonsiff and Subordinate Judge of Gowhatty, while informing the Commission that a plague prevailed in Tezpore in 1848, said that his father, then a man of 50, told him that a similar plague had prevailed when he was a young man of 28 or 30. This again gives the year 1824 or 1826. He also stated that before the British rule there was no regular communication between Assam and Bengal. The only cattle that ever came into the country were a few sent to the Assam Rajah by the Rajahs of Gwalparah and Cooch Behar in the shape of buffaloes. Another witness, Hood Gossain, aged 65, a resident of Lahowl, District Luckimpore, and a

1830.

1848.

1849.

1850.

Government pensioner, told the Commission that cattle plague had occurred in the year 1830 or 1831. The next outbreak of which there is any record or recollection is that which took place in Durrung and Kamroop in 1848, 1849, and 1850. The murrain at Tezpore was witnessed by Colonel R. Campbell, who says :—"In 1849 and 1850 plague attacked cattle at Tezpore, and so many cattle died that it was found impossible to remove them." In

1852.

1853.

1852 and 1853 a severe murrain prevailed throughout Assam. Mr. Grote, Secretary to the Board of Revenue, estimates the total mortality at 120,000 cattle. The symptoms and *post-mortem* appearances of this plague were carefully described by Drs. Long and Maclean in the Journal of the Agricultural and Horticultural Society, volume XIII, page 270. The disease is said by Dr. Maclean to have commenced in Kamroop in 1852, and gradually to have worked up the valley through Nowgong and Sebsaugor to

HISTORICAL SKETCH. Luckimpore. The Revd. E. H. Higgs, a resident of Debrooghur, carefully studied the disease in that station in 1854 and 1855. He states that it was imported from Golaghat by a detachment of sepoy's rejoining their corps at Debrooghur. He also states that at that time the natives informed him that the district was visited by murrain every 20 years, and that since 1855 it has prevailed more or less every year throughout the district.

In 1864 the Commissioner of Assam reported upon the subject of cattle murrains in reply to a general circular issued by the Government throughout Bengal. The outbreak of 1853 is mentioned by the Deputy Commissioner of Nowgong, who put down the number of deaths at 21,625 in that district.

The Deputy Commissioner of Sebsaugor states that in 1856 there was great mortality among cattle. From Kamroop the following report was received by the Commissioner:—"A cattle murrain, apparently similar to that mentioned in the correspondence," (Madras) "has been known in this district during the past eight years (1856-64) in the months of April and May and September and October." Cattle murrain visited the District of Durrung in the years 1860, 1861, and 1862; and the Deputy Commissioner observes that the tracts visited in 1860 were those in which the disease made

least havoc in its next visit, and that one attack of the disease confers immunity from a second; and in the Sebsaugor report it is stated that "domestic animals alone were not attacked, as deer and other wild animals were found dead in the jungle with the same symptoms." Dr. White also stated in evidence that rinderpest prevailed in the Luckimpore District in 1861, and that outbreaks have been of yearly occurrence since then. Mr. J. D. Campbell, a Tea Planter

of Mungledye, Durrung, mentioned that during the monsoon of 1864 foot and mouth disease prevailed in the district; and Mr. Driberg states that this disease is very common in that district, but seldom fatal. Colonel Agnew's general conclusion in 1864 was, that disease had prevailed in different districts of the province at various intervals within the last 10 years. Colonel Hopkinson, writing in August 1866, states that in the Kossyah Hills, and notably at Cherrapoonjee and its vicinity, a cattle disease was prevalent in August 1865, and showed itself to be very fatal. No reports of any epizootic disease among cattle had been received by him from the other districts since 1864.

Captain John Gregory informed the Commission that there was murrain among cattle in Nowgong in October and November 1866. A violent outbreak of cattle murrain took place in the western portion of the Durrung District, more particularly in the Sub-division of Mungledye, in 1867. The disease commenced in April and subsided in September. The loss, according to the return submitted by Major Lamb, the Deputy Commissioner, was 5,971 head of cattle. Mr. A. Imthurn, the Civil Medical Officer, gives the symptoms of this outbreak; he mentions particularly that no unsound state of the hoof was perceptible, and no case of recovery heard of. This description and the evidence of Messrs. Driberg, Bruce, and Campbell leave no doubt that the outbreak was one of rinderpest.

In 1868 severe murrain broke out in Kamroop. The disease appeared with great severity in April, May, and June, and affected not only cattle, but also sheep, goats, pigs, and wild animals. Dr. Purves' description of the disease leaves no doubt that it was rinderpest. It also prevailed at the same time in the Kossyah Hills and spread gradually into Central and Upper Assam, namely, into Nowgong, Sebsaugor, Durrung, and Luckimpore. The fortnightly reports of mortality

called for by the Commissioner and summarized in Appendix No. 3 show that during the years 1869 and 1870 murrain continued to prevail in all the districts of the Division. The disease was introduced into North Luckimpore in March 1869 by a batch of Bengalee buffaloes passing through the villages of Narainpore and Bangfang, near the Dikrang river. One of these buffaloes died of murrain close to the camp of the Deputy Commissioner. The disease spread through the sub-division during the succeeding months before it had appeared in the southern part of the district. The introduction of the disease into Debrooghur and its vicinity was precisely similar to the mode in which it was imported in 1854, namely, by a detachment of sepoy's rejoining the head quarters of the 42nd Assam Light Infantry from Golaghat, where the disease was raging. This happened in June 1869. This Division was visited by the Commission in January and February. An hospital was established near Debrooghur and systematic operations conducted. A large mass of information was obtained from officials, planters, and natives, and is printed in detail in the sequel. The information obtained with regard to this Division is very complete, considering the difficulties in collecting it—physical and moral—which exist; and as here the first impressions of the Commission were gained and the most deadly disease witnessed, the evidence amassed has not been curtailed. Towards the close of the year the disease gradually died out, and from the December reports it appeared that only a few scattered cases were occurring.

DISTRICT OF DURRUNG.

DURRUNG.

Major T. Lamb. *Statement furnished by Major T. LAMB, Deputy Commissioner, Durrung,—dated 1st February 1870.*

Locality. The District of Durrung extends over 3,055 square miles. The soil is loam and red marl, and the subsoil sandy.

Different breeds. The different breeds of cattle in the district are Assamese cows and buffaloes, and a few buffaloes imported from Bengal.

	1859.		Present value.
Average value now and 10 years ago.	Cows ... Rs. 2-8 to 4-0	...	Rs. 10 to 12
	Bullocks ... „ 4-0 to 5-0	...	„ 15 to 20
	Bulls ... „ 2-0 to 2-8	...	„ 8 to 10

Uses for which cattle are employed. Cattle are employed from March to November for ploughing. Both bullocks and cows are used in the plough. A few bullocks are employed for draught in and about Tezpore; none for burden. Cattle so employed are housed at night and generally without food, taken out to plough on an empty stomach from daybreak till noon, and then grazed till about 6 p. m. In and near Tezpore cattle are kept for dairy purposes.

Mode of housing. Cattle are closely packed in thatched sheds in the villages without fodder; many of the sheds have thin reed or split bamboo walls, and many have no walls at all. The floors are of earth slightly raised and swept daily.

Mode of feeding and watering. Cattle are grazed from 6 to 10 hours during the day, during which time they find water for themselves. Owing to drought, forage is scarce after the rainy season until the rice crops are garnered; the cattle are then grazed on the stubble.

Stock how kept up. The Kacharees stack rice straw for fodder. The varieties of grass eaten by cattle are known as *ollo*, *burunga*, *doobaree*, and *dull*. Water is obtained from tanks and bheels (or jheels) and watercourses. The general condition of cattle is lean and weakly. The stock of cattle in the district is kept up by breeding. No special bulls are kept.

Importation is not general. A few buffaloes are imported from Bengal during the months of January to March *via* Kamroop, along both banks of Berhampooter to Poshorooghat, and Munguldye and Booreegooma.

The average price paid is as follows:—

Female Bengalee buffaloes	...	Rs. 30 to 35
Male ditto	...	„ 15 to 20

Mode in which cattle are bought and sold. There are no regular markets. It is frequently necessary to go two or three days' journey to purchase a yoke of bullocks.

There is no export of cattle from the district nor any trade in hides.

Mortality. The ordinary mortality varies considerably. From what I have learnt, in some portions of the district the percentage of mortality is as much as 20, and in others as low as 6 to 10.

History of plagues. The first plague which occurred was in 1825; no account procurable. Second in 1850, when Bengalee buffaloes are said to have been first imported in Falgoon (February). Third in 1861. Fourth in 1867. Fifth in 1868.

Symptoms are referred to in this office letter No. 1175 of the 29th December 1869.

Season. The seasons in which plagues prevail are from January to March, when the cattle are in the best condition. The plague prevails from one to two months in each place. From what I have learnt from Mouzahdars and others, the disease is supposed to be infectious.

Contagiousness. Mr. Williamson of Behalee informs me that he administered a tolah of opium dissolved in half a quart of rum with good results, and Mr. Lyell supports this opinion.

Treatment. The transport of cattle from mouzahs where the disease was known to exist was prohibited.

MUNGLEDYE. *Statement supplied by J. J. S. DRIBERG, Esq., Extra Assistant Commissioner of Mungledye, Durrung,—(dated 20th January 1870).*

Locality. I am Extra Assistant Commissioner in charge of Mungledye Sub-division. In parts of District Durrung the soil consists of hard light-colored clay; in other parts a large quantity of sand is found with the clay.

The soil in the Dooars is a rich dark-colored loam over a bed of stones. The sub-division, with little exception, is level, and is intersected by numerous streams flowing from the Bhootan Hills.

I have no statistics from which I could give the number of cattle in the sub-division.

DURRUNG.

The only breed in the sub-division is the Assam breed. The following are the average J. J. S. Driberg, Esq. prices of cattle now and ten years ago:— Breeds and value.

	Now.	Ten years ago.
Cows ...	Rs. 9 to 12	Rs. 3 to 5
Bullocks ...	„ 16 to 25	„ 6 to 8
Bulls ...	„ 10 to 15	„ 4 to 5

Cattle are used for agricultural purposes. In the Dooars both bullocks and cows are used, but in District Durrung, where the mass of the population are Hindoos, the former cattle are only used for ploughing. From the middle of December to the middle of January scarcely any land is cultivated, so that cattle are not then used; but at all other times they are in use. Cattle are not used for draught or burden.

No particular care is taken of cattle while employed in ploughing. They are put to work for about five hours a day and after that let loose to graze.

The cattle are housed at night in thatched sheds, with bamboo or reed sides; the floor is raised and the sheds are daily cleaned. In some cases there is merely a roof without any enclosure. Housing.

Cattle are always sent out in the fields to graze, they are never fed on grain; and as there is plenty of water in the immediate vicinity of almost every grazing ground, the cattle supply themselves with water. Feeding and water.

There is generally a little scarcity of forage from about the 15th September to the 15th November. Owing to the cessation of the rains, the feeding grounds become parched and barren; by the 15th November a portion of the paddy has been cut and the cattle are put to graze on the pittars.

Cattle are fed at all seasons of the year on grasses known as *ollo*, *dubru*, *bosurgha* and *dol*. After the paddy has been cut they feed on the stubble; cattle are scarcely ever stall-fed; water is obtained from the numerous hill streams which flow through the sub-division.

Cattle are in best condition from the beginning of January, as from that time to May and June they are allowed to stray about and feed at large.

No special bulls are kept for breeding purposes. There is scarcely any importation of cattle from other districts; there may be a few cases, but it is not general. Breeding.

There is no regular sale of cattle. When a ryot is in want of a bullock, he either hires one for a few days, or, if he is able, purchases one from his own or a neighbouring village. There are no hats or markets. Buying and selling.

There is no exportation of cattle nor hide trade.

Ordinarily, the mortality amongst the cattle is very small. When the disease was prevalent in the sub-division, a large number of cattle died, but it is almost impossible to give at the present time an accurate statement of the number of deaths. Mortality.

In 1860 or 1861 there was, I understand, a plague, when a large number of cattle died. Again in 1867 the disease appeared in this sub-division. History.

With regard to the nature, symptoms, &c., of this outbreak, I beg to refer to my letter No. 229, dated 13th September 1867. (*vide* Selections, Bengal Government, p. 169.)

In the letter just referred to, I stated that about 18 per cent. of the cattle that were attacked with foot and mouth disease died. This I think is not far from correct, but I have no statistics from which I can reply to this question of the Commissioners. Statistics.

From what I can recollect of the plague in 1867, cattle of all ages and both sexes alike suffered.

The disease is generally supposed to be contagious, but I have no data in support of this opinion. Contagiousness.

No remedy was adopted in the disease which appeared in 1867.

Treatment.

As soon as an animal is attacked, it is separated from the rest of the herd, and under recent orders all carcasses are buried, but no other sanitary measures are adopted. Sanitary measures.

Hides, horns and hoofs are never separated from the carcasses. Buffaloes and deer were attacked, and died in large numbers, especially the former.

In August last I ordered the separation of diseased cattle and the burial of carcasses four feet below the surface of the ground; the disease is said to have been thus confined to the places where it broke out, and the number of deaths reduced, until the disease disappeared.

Hides, horns, and hoofs were buried with the carcasses since August last; previously they were allowed to remain exposed and vitiate the whole atmosphere near the villages.

The disease is said to have carried off wild animals with cloven hoofs.

DURRUNG.
C. P. Bruce, Esq.

Evidence of C. P. BRUCE, Esq., Tea Planter, Mungledye, late Extra Assistant Commissioner at Mungledye, in the District of Durrung, Assam,—taken 12th January 1870.

Locality.	I have resided at Mungledye for 10 years. The country is mostly flat, slightly inclined towards the Bhootan hills; it is subject to inundation in the rains; it has a clayey soil, and in some places sandy. The district is intersected by rivers coming from the Bhootan hills. The half of the area is cultivated and the other half jungle. I cannot give any approximation of the number of cattle in the district, or the number to the square mile. The cattle are all of the small Assam breed. The Tea Planters import a few Bengalee bullocks, and a few Bhootan cows may be met with. Buffaloes are common. A bullock costs from Rs. 16 to 20 a cow from 10 to 12. About 10 to 12 years ago the price of a bullock was Rs. 8 or 10 and a cow Rs. 5 or 6. The cattle are principally used for agriculture, and the Tea Planters use a few cattle for draught. Cultivation commences in March; the crops are reaped in May and December. Cattle are only used in the plough; they have to work in mud sometimes above their knees. The plough used is a small single-handed wooden one. The cattle are kept in sheds at night; they are worked for about five hours and then turned out to graze; they are not used for draught or burden, except by Planters. Cows are largely used for dairy purposes and are housed at night, milked in the forenoon, and then turned out to graze. The proportions used for each purpose (<i>viz.</i> , dairy and agriculture) varies; generally it is about half. The Kacharees use cows for ploughing, but Assamese very seldom. The sheds used for housing cattle are made of bamboo, with mat walls and grass roofs; in some cases raised on <i>machans</i> (raised platforms of bamboo); in most, not so. The earth forming the floor is raised to a slight extent. These sheds adjoin the dwelling houses. Cattle are allowed to feed and water themselves. No fodder or hay, nor even rice straw is given, except by the wealthier classes. The kinds of grass eaten by cattle are known as <i>doopree</i> , <i>pojah</i> , <i>ooloo</i> , which are wholesome. The cattle are turned out to graze in the rice fields after the crop has been removed. They get water mostly in rivers and sometimes in tanks.
Breed.	
Price.	
Uses of cattle.	
Housing.	
Sheds.	
Feeding.	
Herding.	Cattle are always herded by day and housed at night. When the low lands are inundated, the cattle are collected, herded, and driven to the highest land in the district. They are not sent to other districts. Their condition is generally poor; they are thinner during the cultivating season, and in very dry seasons they are particularly poor. Breeding is not at all attended to, and no special bulls are kept. Buffaloes are imported by the main road from Bengal, they come generally in January and February; and sheep also are imported at the same season. Buffalo cows cost some Rs. 30 a piece. Cattle are bought and sold by private bargain; there are no markets or fairs, and buffaloes are bought from dealers as they come. There is no export of cattle or hides from Durrung, and there is no local hide trade. The Assamese do not wear shoes. I first heard of cattle disease prevailing three years ago; since then there has always been more or less about. Disease may have occurred to a slight extent previously, but it was not brought to my notice. The disease was epizootic, and consisted in an affection of the bowels. I observed in 1867 that it spread gradually northward and eastward, and it could be traced from village to village in those directions. The plague prevails from January to June and subsides during the rains. I only know of one variety; but there is another slight disease consisting of a soreness of the mouth and feet curable in the early stage, and the Assamese have a medicine for it. I had three dairy cows attacked. I lost them all. My draught bullocks escaped, but they were kept separate on the tea plantation. One of the cows was a Bhootan one. The breed, age, sex, and condition made no difference as regards liability to disease. The symptoms which I observed were loss of appetite and rumination, skin hot, hair rough; did not observe any eruption; I noticed a swelling of the tongue and throat, and that there was a difficulty in breathing, but no cough; purging came on the second day; the secretion of milk was at first diminished, then entirely suppressed. The animal generally died in two days. I have no doubt that the disease is contagious, and highly so. My opinion is founded on my own experience. The disease proceeded from village to village. My dairy cattle caught it from being in contact with a diseased Assamese cow. I did not separate the cattle, thinking that the better care they received would save them from infection. New bullocks which were kept in the tea garden, 5 or 6 miles distant from my house, were not allowed to graze beyond the garden, and they did not take the disease: this is generally the case. Assamese give no medicine to the sick cattle. No sanitary measures are adopted. Carcasses are thrown out on the fields or into the river; they are not buried. The stench from the carcasses was dreadful during the prevalence of plague, and healthy cattle grazed in the vicinity. The hides, horns, and hoofs were not removed. I have heard of deer, wild buffaloes, and tigers being scarcer now than formerly: this may be owing to disease; the natives say so. In 1867 cholera prevailed simultaneously with cattle plague. Cholera also occurred a year or two before cattle disease appeared. There is no plague prevailing in Durrung at present. When plague is prevailing, I think a heavy fall of rain seems to put a stop to it. The Tea Planters bring up their Bengalee bullocks by steamer. I have never heard of a Bengalee bullock either suffering from or introducing disease.
Condition.	
Breeding.	
Importation.	
Markets.	
Export.	
History.	
Season.	
Foot and mouth disease.	
Liability.	
Symptoms.	
Contagiousness.	
Separation.	
Disposal of carcasses.	
Other animals.	
Cholera.	
Rain.	

Evidence of J. D. CAMPBELL, Esq., Tea Planter, Mungledye, Durrung, Assam,—taken 12th January 1870.

DURRUNG.
J. D. Campbell, Esq.

Locality.	I am a Tea Planter and reside at Mungledye, in the Durrung District. The sub-division of Mungledye is about 40 miles by 30. The soil is generally sandy and alluvial. The rivers running through the sub-division are the Berhampooter, the Mungledye, and several other small streams. In the station of Mungledye there are about 1,500 or 2,000 head of cattle. The station is about a mile square. The cattle are very small and of the country breed. The present price of a good cow is Rs. 12 and of a bullock from Rs. 18 to 20. Ten years ago they could have been bought for half the price. Buffaloes are used for the plough. The land is ploughed in the months of May, June, July, August and September, for rice, sugarcane, mustard, muttye, kalai, &c., &c. Cattle are not generally used for draught or burden. When at plough the cattle work from sunrise to 10 A. M., ploughing about 2 beegahs of land; they graze during the rest of the day and are shedded at night. Every family keeps from two or three milch cows; the average amount of milk given by each cow is half a seer. The sheds are <i>kutchas</i> . The cattle graze and water at will, no grain is given them. When land is under cultivation, that is from May to January, the pasturage is limited and the cattle become very poor and weak. The kinds of grass eaten by cattle are known as <i>dhoop</i> , <i>ooloo</i> and <i>daranga</i> , the two latter being very coarse and generally used for thatching. The cattle are also very glad to get at marsh grass when the pasturage is scanty. At night the cattle are shedded, but not fed; they drink water at pools and ditches; very often the water is more or less foul. Cattle are herded on common lands, all the cattle from adjoining villages grazing together; this is done during the cultivating season only. After the harvest cattle are allowed to graze all over the country; they are then not attended to by cowherds, and are frequently not seen by their owners for days or weeks together, and some are occasionally killed by tigers; they are never taken to other districts for pasture. The cattle of the district always look a poor lot: in the cold weather they are in fair condition; but in the hot weather they are very weak from sheer want of food. The stock is kept up by local breeding; one bull is kept for about 20 cows. The bull is always loose with the cows. The buffaloes are treated like the cows, and very often a wild buffalo bull serves the cow. Cattle are not imported into this district. They are bought and sold by private bargain; there are no markets or fairs. There is no exportation of stock, except from the neighbouring Districts of Tezpoore and Kamroop. There is no trade in hides. The ordinary mortality among cattle is about 5 per cent., that from plague at least 50 per cent. I have been in the Tezpoore and Durrung Districts since 1864. In the monsoon of 1864 foot and mouth disease made its appearance. Few cattle died from it, but the lameness resulting from the disease interferes with the cultivation. In 1867 and 1868 the murrain <i>mowa</i> (cholera) carried off half the cattle in the district. I think it made its appearance in April; it was at its height in May and June. It gradually rose and gradually subsided; it died out about November 1868. The two murrains prevalent in Durrung are foot and mouth disease and <i>mowa</i> . I am of opinion that both diseases were imported and spread by infection. Murrains prevail generally about the commencement of the rains. I don't think scarcity of food and water the cause of the murrain. I think that both murrains last from July to November. I think 60 per cent. of stock were attacked, 10 per cent. recovered, 50 per cent. died; 40 per cent. escaped attack. In the case of a cow and calf being attacked, the latter succumbs to the disease first. Murrain attacks cattle of all ages and both sexes, regardless of condition. I believe that both diseases are contagious, because in cases when disease has broken out among milch cows grazed, housed, and in every respect well cared for—being the dairy cows of the Planter's house—such cows all became affected and died. No sanitary measures were adopted. The carcasses were thrown into the river or out into the open fields. The hides, horns, and hoofs of cattle are never made use of. I have not seen any other animals affected; but the natives declare that wild buffaloes, tigers, leopards, deer, and all wild animals were found dead at the time the plague was raging. I have seen fowls too suffer from a kind of <i>mowa</i> . There is no murrain prevailing at the present time in Mungledye. Murrain assumes a more severe form during the dry hot weather. I have heard that a heavy fall of rain causes a decrease of <i>mowa</i> .
Breed.	
Price.	
Uses.	
Housing.	
Feeding.	
Condition.	
Breeding.	
Markets.	
Hides.	
Mortality.	
History.	
Diseases.	
Season.	
Statistics.	
Contagiousness.	
Carcasses.	
Other animals.	
Rain.	

From MAJOR THOMAS LAMB, Deputy Commissioner of Zillah Durrung, to the President of the Commission deputed to inquire into the subject of Cattle Disease,—(No. 1222, dated Tezpoore, the 8th January 1870).

In continuation of this office letter No. 1175 of the 29th ultimo, I have the honor to inform you that the cattle disease in Mouzah Orang therein referred to has disappeared since despatch of the letter above alluded to. The disease no longer exists in this district.

TEZPORE.
G. Grant, Esq.

From G. GRANT, Esq., Extra Assistant Commissioner, in charge Zillah Durrung, to the President of the Commission deputed to inquire into the subject of Cattle Disease,—(No. 1175, dated Tezapore, the 29th December 1869).

With reference to your letter No. 100 of the 6th instant, received with the Government of Bengal and the Commissioner of Assam's Nos. 2777 and 312 of the 11th and 21st idem, respectively, I have the honor to state that the cattle disease has lately abated in this district, but in Mouzah Orang it has not yet disappeared; and submit the information therein called for.

Statistics.

1. Durrung District, Orang Mouzah.
2. Name of disease, *mawar*.
3. Outbreak of disease in June 1869.
4. Three hundred and five cattle attacked, or 15 per cent. of stock.
5. Two hundred and two died, or 10 per cent. of stock and 66 of attacked.
6. Ninety-nine recovered.
7. Four still ill.
8. About two thousand cattle belonging to the Mouzah.
9. The disease is infectious.
10. Originated from the sick cattle brought into the district for sale.
11. The hair stands on end; small pimples appear on the body.

Infectiousness.

Origin.

Symptoms.

There are no eruptions on the body or feet; eyes and mouth watering; body hot; cough and labored breathing are little; there were no shivering fits.

There was swelling of the throat; scarcity of urine during the attack.

12. Average duration of attack about one day.

Treatment.

13. No remedial measures have been used in separating diseased cattle from the sound ones.

DISTRICT OF KAMROOP.

KAMROOP.
Colonel H. Hopkinson.

From COLONEL HENRY HOPKINSON, Commissioner of Assam, to the Secretary to the Government of Bengal,—(No. 252, dated Shillong, the 5th September 1868).

I have the honor to forward herewith copy of a letter from the Deputy Commissioner of Kamroop to my address, enclosing a report by Dr. Purves, Civil Surgeon of Gowhatty, on the cattle murrain which has been prevalent for some time back in the District of Kamroop, and I trust His Honor the Lieutenant Governor will consider Dr. Purves' report worthy of favorable acknowledgment.

From the Deputy Commissioner of Kamroop, to the Personal Assistant to the Commissioner of Assam,—(No. 94, dated Gowhatty, the 2nd September 1868).

With reference to your memo. No. 381, dated 8th ultimo, I have now the pleasure to send you herewith a report in original, only just received from Dr. Purves, the Civil Surgeon of Gowhatty, and which was promised in my letter No. 53, dated 8th July last, regarding the cattle murrain in this district.

H. R. Purves, Esq.

From HENRY R. PURVES, Esq., Civil Assistant Surgeon, to the Deputy Commissioner of Kamroop,—(No. 73, dated Gowhatty, the 30th August 1868).

I have the honor, in answer to your letter No. 184 of the 8th ultimo, to report on the cattle epidemic which has prevailed in this district, and even up to date has not entirely disappeared, as isolated cases are still continuing to occur.

In drawing up the report, I have received much assistance from the native doctors under my superintendence and the owners of cattle in the neighbourhood, who have furnished me with what information they could collect from personal experience on the subject. Several diseases have prevailed during the year,—such as *gootee*, *chupkah*, *bhoklah*, &c., but the affection requiring chief notice, and which has committed much ravages, is known amongst the Assamese by the names *mour*, *lerale mour*, *lahory*, *moorkee*, &c., which signify a disease resembling a combination of cholera and dysentery. *Mour* appears to me to be very similar to, if not identical with, the *puschima* of Bengal. This disease prevailed with great severity throughout April, May and June, and it is difficult to estimate the number of cattle that must have perished; not only cattle, but also sheep, goats, pigs, &c., have been its victims, and even wild animals seem not to have escaped its influence, as buffaloes, tigers, deer, &c., have been found dead evidently from a similar disease. The chief symptoms of this disease *mour* are the following:—At the commencement, the animal appears languid, stands apart from its neighbours, the skin dry, coat stares, ears droop, refusal of food. Although a little may be eaten the first day, there is an intense desire for liquids; about the second day a

Time and season.

Other animals.

Promontory.

KAMROOP.

clear viscid discharge takes place from the nose, eyes, and mouth; the abdomen gets distended, and diarrhoea sets in; refusal of all food, no rumination, the only apparent desire being for water; great difficulty of breathing ensues; the discharges from the different parts change their character and soon become offensive; the stools get very liquid and frequent, containing blood, mucus, &c.; the animal from extreme weakness is obliged to lie down: these symptoms go on increasing in severity, death generally occurring between the 2nd and 5th days, and in some instances in a much shorter period. The desire for liquids is a most prominent feature in the symptoms from the commencement; so long as their strength permits, they make every effort to reach water, and if successful, the large quantity they drink causes the disease to run its course to a fatal issue much sooner. The banks of rivers and edges of tanks and wheels are common places to find animals either dead or dying.

The following are the chief *post-mortem* appearances presented in the cases I examined:—*Post-mortem appearances.* signs of severe purging before death; abdomen greatly distended; foetid discharges from nose and mouth, with inflammation of the mucous membranes; and in some cases ulceration: inflammation of the conjunctiva. On opening the body, I found general inflammation of the cellular tissue, as also of the lining membrane of the larynx and trachea extending to the bronchial tubes; enlargement and inflammation of the cervical glands; lungs, as a rule, not much affected; effusions into pericardium; right side of heart filled with clotted blood. Liver and kidneys injected; gall bladder greatly distended; the different stomachs much distended with wind, and containing a little food and numbers of parasites; the latter are, however, said to be of common occurrence in healthy animals; general inflammation throughout the intestinal tract, with commencement of ulceration in some parts; but I saw no cases of severe ulceration of the intestines. Bladder contained a small quantity of high-colored urine. The disease is very fatal, and the general opinion is that from 75 to 80 per cent. of the animals attacked die. That it is highly infectious, there can be no doubt. When the disease appears, the natives consider that the only chance of saving their herds is at once to completely cut off all communication between the diseased and healthy animals. Goats placed in sheds with affected cattle contract and die of the disease.

A Tea Planter residing some fifteen miles from Gowhatty, who has taken a great deal of trouble in furnishing me with what information he could collect, reports that near his garden there is a hill, in the neighbourhood of which large herds of cattle graze. On one side of the hill the above disease raged with great violence, whilst on the other not a case was known to occur.

The nature of the land and cultivation on both sides of the hill is very similar, and the only reason he could assign for the cattle on one side being exempt was, that they had no communication with those which were suffering from the disease on the other.

It has been noticed in some cases of recovery that the animals are blind, or nearly so, and in some instance total disorganization of the structures of the eye has taken place. In some of the above diseases is generally of little avail. Although some animals which I treated did recover, they were so few that no satisfactory conclusions could be drawn as to the value of any particular method of treatment. It is difficult to assign any particular cause for the production of such a disease, but I am inclined to think that the active principle at work may be very similar to the poison of malaria. The affection appears during the rains and hot season, to a certain extent annually; but generally several years intervene between each visitation in an epidemic form. The rainfall in this district has been much less than usual during the present year, and this may probably have had something to do with the increased virulence of the disease.

Gootee or small-pox has also prevailed during the year, but to a much less extent than the disease just noticed. In small-pox death generally takes place before the eruption has time to develop itself. If the animal has strength to survive until the eruption appears, the natives look upon the case as comparatively safe.

Chupkah or *khurah* and *bhoklah* cases have occurred, but to a very small extent.

In *chupkah* an eruption occurs, chiefly affecting the feet, mouth, &c.; ulcers form, and if not carefully looked after, maggots are developed in the sores. Fever and other constitutional symptoms are present.

Bhoklah is an inflammation of the throat and trachea, causing great difficulty in swallowing.

Now that my attention has been drawn to the disease prevalent amongst cattle in this district, I will, in the event of other epidemics occurring, collect all the information I possibly can on the subject.

Dr. Purves, on the occasion of the visit of the Cattle Plague Commission to Gowhatty, furnished the following information, in addition to that contained in the report above printed:—

The cattle of this district are of the Assamese breed, small red-and-white animals. There are also a few Bengalee cattle—their number is on the increase—and a few Hansi cows, kept by Europeans for milking purposes. Male and female animals exist in pretty equal proportion in the district.

Gowhatty.	Cattle are housed in sheds constructed of bamboo matting and thatched, not raised or kept in the owner's house : these are used more as a protection against wild animals than for any other reason.
Housing.	
Feeding.	Cattle are allowed to feed and water themselves; some people give them cut straw.
Watering.	Water is got from any available source.
Herd.	Cattle are herded by day; cowherds (boys) are employed. They are not driven to any distance for pasture; their condition is, as a rule, very poor; no care is taken in breeding.
Breeding.	
Importation.	Importation is very small, a few Bengalee and Up-country cows and buffaloes are brought occasionally.
Markets.	There are no markets, cattle are bought and sold by private bargain.
Exportation.	There is no exportation either of cattle or hides.
History.	The general idea is that plagues come about every fifth year, and last from the beginning of one hot weather to the commencement of next cold weather. The last murrain seemed to travel from the south northward along the river.
Liability.	Breed, age, sex, and condition seemed to make no difference with regard to liability.
Separation.	The natives believe that early separation of healthy cattle is the only way of preventing their being attacked.
Disposal of carcasses.	Carcasses were left where the animals died.
Cholera.	Cholera prevailed severely in 1869, cattle disease having passed over the district in 1868. This was also ascertained to be true with regard to the District of Nowgong.

Syed Sekawut Hossein. *Examination of SYED SEKAWUT HOSSEIN, Pensioner, late Meer Moonshee in the Agent's Office,—taken on the 15th February 1870 at Gowhatty.*

My birthplace is in the North-West, but since the year 1832 I have resided in Assam, since 1834 my head-quarters being in Gowhatty; but I have always been on circuit with the Agent and have been all over Assam and Cooch Behar.

I have always ever since being in the country taken an interest in cattle, and have always had a large herd of them, having now from 60 to 70 head of cattle; but I have no buffaloes.

Murrain in 1848-49.	I was at Gowhatty in the year 1848-49, and at that time had a herd of about 80 head of cattle; they were attacked with small-pox, and out of my whole herd I only saved three. Pus- tules came out on the body of some of them, discharges ran from the nose and mouth, and in some cases blood and pus was mixed with their stools; they died in two or three days. Fat and lean animals died alike, though those in good condition perhaps were able to fight longer against the disease than others. I do not know where the disease came from first, but my neighbour who had some cows had the disease amongst his first, and mine caught it from his; I had never heard of the disease before. Shortly after it had appeared in my village, I went out on circuit with the Agent in the direction of Gawalparah, and as we went we found the same disease raging there; but whether it came from them to us, or from us to them, I cannot say. One thing I remember is, that on our way down the river we noticed that wild buffaloes and tigers were killed by the disease. There is another disease prevalent among cattle, called <i>mour</i> or cholera; it, as far as I know, first made its appearance in 1848 or 1849. I never heard of it before, but since that time it generally makes its appearance every 3rd or 4th year, making its way from village to village. As far as I can remember, the disease in 1848 came from down the stream, "bati," and gradually worked up the river. Some of my cattle at the time were down at Chugund, a village about 12 koss down the stream, where the disease broke out; then they were sent up to me here, and about 20 days after their arrival my cattle took it. I am of opinion that the disease is contagious and infectious. The price of cattle has greatly increased since I have been in this country, so also has the price of all other things. The disease among cattle may have a little to do with the price of them increasing; but I am of opinion that the chief reason is that money is much cheaper than it was. Up to the year 1848 buffaloes used to be brought from Purneah to Gawalparah, but no further; since that year they have brought them into Assam itself; perhaps they may have introduced the disease. The reason the people in Assam buy the Bengal buffaloes is, that the Bengal animal, though less in size, gives more milk than the Assam one. I have never heard of any of the imported animals being diseased when they came into the country. Most of the imported ones die within 6 or 8 months after their arrival; but if they get over the year, they are considered to be all right, and their price rises accordingly,—that is, the price of them at first is about Rs. 30, but if they survive the year they are worth Rs. 60. There are some <i>Chamars</i> here, but they do not export the hides; they work in leather, but for the most part get their leather from Calcutta. There is a small trade in the hides of wild buffaloes carried on by <i>beparees</i> but I do not know that they deal in the hides of tame ones. They send perhaps about 100 hides and horns in the course of 6 months; they get the hides from the <i>shikarees</i> .
Symptoms.	
Origin.	
Wild animals.	
Mour.	
Progress of disease.	
Contagiousness.	
Price.	
Buffaloes.	
Hides.	

Foot and mouth disease prevails more or less every year, but not many cattle die of that; it is easily cured.

Gowhatty.
Foot and mouth disease.

Examination of GUNGA NATH, Moonsiff, a Subordinate Magistrate at Gowhatty,—(taken on Gunga Nauth, the 15th February 1870, at Gowhatty).

My birthplace is in the Seebaugor District. When I was 8 years old I came to live in the Tezporé District. I am now 46 years old. At the age of 12 I obtained employment under Government, and remained in the Tezporé District till 10 years ago, when I came to this one.

There are several diseases which I know of among cattle, but the chief ones are the foot and mouth disease, *khooree fatee*, cholera, *mour*, and 3rd, *matah* or *gootee*, small-pox. When I was in the Tezporé District 22 years ago, whilst my father was alive, in the year 1848, I remember that a plague broke out among cattle; at that time my father had a herd of 80 cows, out of which 45 died; he also had 35 buffaloes, out of which 33 died. My father was at the time Sudder Ameen at Tezporé, but he was also a great doctor, and was consulted by the Rajah and all the people in the district. He tried all sorts of remedies, but found none of any use. It was not only the cattle belonging to us that suffered, but all the cattle in the neighbourhood suffered in a like proportion. The disease was that which I have referred to above, under the name of *mour* or cholera. We considered the disease highly contagious and infectious. At the time we were of opinion that the disease came from lower down the stream, "bati," but I cannot say how it travelled up; we heard of it lower down and it gradually came up to us; it did not first make its appearance with us. I remember that at the time my father said that before the English raj commenced he had seen a similar plague among cattle having taken place. My father at the time of telling me this was about 50, and said that he was a young man about 28 or 30 at the time of the former plague. At the time of the Assamese raj there was no communication between this country and the Bengal country; the only cattle that ever came into the country were a few that were sent to the Assam Rajah by the Rajahs of Cooch Behar and Gawalparah as presents, in the shape of buffaloes. The curious thing in this disease is, that it often takes one village, and then passing over another, takes one on the other side of it; but at the same time it often happens that the village which in the first year escaped the attack gets it the second, whilst the two attacked in the previous year escape the second attack. We have not had an attack anything nearly as bad as the present one since the year 1848, but the country has never been entirely free from it; since that year it has always been making its appearance to a slight degree in one part of the country or the other. The disease does not always show itself in the same malignant type; sometimes it is mild, whilst at other times it is most virulent; for example, sometimes only half of them attacked die, whilst at others it is quite the exception, when one of those attacked escape. I think the disease is equally fatal to both cows and buffaloes, and cannot say that condition has anything to do with it, with the exception that an animal in good condition is likely to be able to fight longer against the disease than a lean animal; the same with regard to age. When the English first took the country, the price of a cow was from Rs. 2 to 3, now from Rs. 16 to 20. I do not attribute this to the disease among cattle; if it were so, that would not account for everything else having got dear in a like proportion. The reason of it is this, that at the time of the Assam Government the Rajahs were always in want of money, and there was very little in the country; since the English have taken the country, the money has been pouring in from Calcutta to such an extent, that everything has got dear with the exception of money, which now is the only thing that is cheap.

DISTRICTS OF SEEBSAUGOR AND LUCKIMPORE.

From LIEUTENANT COLONEL WILLIAM AGNEW, *Officiating Commissioner of Assam, to the Secretary to the Government of Bengal, General Department,—(No. 154, dated Gowhatty, the 18th May 1869).*

I have the honor to forward, for the information of Government, the accompanying copies

* Luckimpore, No. 59c, dated 13th May 1869.

† Seebaugor, No. 270, dated 13th May 69.

of communications* and enclosures† from the Deputy Commissioners of Seebaugor and Luckimpore, reporting that cattle murrain has broken out and is causing very serious ravages in the Golaghat and North Luckimpore Sub-divisions. The disease, I regret to say, has committed great havoc amongst the cattle in the District of Nowgong also, and on the 7th ultimo I ordered the District Superintendent of Police to visit the parts of the district where it was said to be most prevalent and report the result of his observations; but he fell ill and no report has been received from him yet. Last year the disease was epidemic in Kamroop and the Khasi Hills, and it seems gradually to have spread to Central and Upper Assam. I shall keep Government fully informed of the progress of the disease.

Course.

LUCKIMPORE. From JOHN CAMPBELL, Esq., Extra Assistant Commissioner, North Luckimpore, to the John Campbell, Esq., Deputy Commissioner, Luckimpore,—(No. 23, dated North Luckimpore, the 10th May 1869).

Season. I have the honor to inform you that since my leaving the station on the 18th of last month for camp, a murrain has been destroying the cattle in great numbers near Luckimpore. The murrain has been very prevalent in the sub-division this cold weather, commencing at the eastern extremity, near Dhokooa Khannah, and then (leaving the part adjacent to Luckimpore almost untouched) appearing at the extreme west, near the Dikrong, about the 20th of March, a day or two after I had left that locality. It has now re-appeared with fresh violence near Luckimpore.

2. I have prohibited the removal of (apparently) healthy cattle from one village to another, on the appearance of the disease in the first, which seems to have been the practice here. I some time ago circulated a Bengalee translation of Dr. Kenneth McLeod's pamphlet on the treatment of cattle disease to the Mouzadars, whom I directed to explain it to the villagers. They are, however, a very inferior class of people, and I should not be surprised if they have done nothing in the matter, to which conclusion I am the more led by the fact that I have been generally left to find out the existence of a cattle disease as best I might by the Mouzadars.

3. So great has been the mortality, that I regret to have to report that I anticipate a deficiency in the amount of the summer crop. I shall keep myself informed as to the correctness of this conclusion and report such information as I may receive.

Capt. J. Gregory. Memo. by CAPTAIN JOHN GREGORY, Deputy Commissioner, Luckimpore,—(No. 59c, dated the 13th May 1869).

Encloses copy of a report from the Extra Assistant Commissioner, Luckimpore, and with reference thereto adds that while travelling from Golaghat to Nigri Ting, he noticed a number of dead cattle by the road side, and on inquiry was informed that an epidemic, supposed to have been introduced by the importation of Bengalee buffaloes, was raging amongst horned beasts.

SEEBSAUGOR. From CAPTAIN A. E. CAMPBELL, Deputy Commissioner, Sebsaugor, to the Personal Assistant Capt. A. E. Campbell, to the Commissioner of Assam,—(No. 270, dated Sebsaugor, the 13th May 1869).

I have the honor to forward you a report from the Assistant Commissioner, Golaghat, regarding a disease that has broken out among the cattle in that sub-division.

2. I have called on Lieutenant Blathwayt for further explanation and referred him to Dr. Kenneth McLeod's report on the cattle plague in Lower Bengal, 15 copies of which were sent him for distribution on the 29th April last. I have also ordered the Mouzahdars to report at once whether the disease is spreading to this portion of the district, as no such intimation has yet reached me.

GOLAGHAT. From LIEUTENANT L. BLATHWAYT, Assistant Commissioner, Golaghat, to the Deputy Commissioner of Sebsaugor,—(No. 92, dated Golaghat, the 11th May 1869).

Mortality. I regret to have to report that cattle disease has broken out in several mouzahs of this sub-division, and that within the last eight or ten days several hundred head, including both cows and buffaloes, have died.

I should have reported the matter sooner, had I been fully aware how serious the outbreak was; but the Mouzahdars towards Nigri Ting made no report, and the first intimation I received that there was anything in excess of the ordinary mortality was by seeing the carcasses of the cattle when going through the district. I have called on the Mouzahdars for a full report, which however I have not as yet received, with the exception of one from the Mouzahdar of Kachareehaut, who states that fifteen buffaloes and fifty cows and bullocks have died in the last few days.

The disease has just made its appearance in the station of Golaghat, where a few cattle have died.

The disease appears to attack the weak and the strong quite indiscriminately; it commences with a running of water from the eyes and a refusal of food, then diarrhoea and sometimes dysentery sets in, and in from three to ten days the animal dies.

I shall feel obliged if you can give me any information as to the supposed best method of treatment.

I believe that when the disease first appeared in Assam, directions as to its treatment were issued to the Police; but I can find no record in this office.

As soon as I obtain information from the Mouzahdars, I will submit a fuller report upon the subject.

From Lieutenant Colonel W. AGNEW, Officiating Commissioner of Assam, to the Secretary to the Government of Bengal, Judicial Department,—(No. 195, dated Govhatty, the 18th June 1869).

ASSAM. Lieutenant. Colonel W. Agnew.

In reply to your letter No. 585, dated 28th ultimo, desiring me to report the symptoms and characteristics of the cattle murrain which has broken out in various parts of this division, I have the honor to state as follows.

2. The disease appears to be identical with that which raged in the same season last year in the District of Kamroop, and the symptoms of which are well and elaborately described by Dr. Purves in a report to the Commissioner of Assam, published in the Supplement to the *Calcutta Gazette* of the 14th October last, to which I beg to refer you. I add, however, for further information, the descriptions given by some other officers who have had opportunities of examining infected animals.

3. Lieutenant Blathwayt, Assistant Commissioner of Golaghat, states,—“The disease Golaghat. appears to attack the weak and the strong quite indiscriminately; it commences with a running of water from the eyes and a refusal of food, then diarrhoea and sometimes dysentery sets in, and in from three to ten days the animal dies.” It appears to be a virulent form of Duration. gootee.

4. Mr. Coombs, District Superintendent of Police, Sebsaugor, writes,—“The natives Sebsaugor. call it (the disease) cholera, but more apparently from its appearing simultaneously with that Epidemic and epi- disease in the district than from any symptoms of the disease as it occurs in man. It appa- zootic. rently first shows itself in a swelling of the throat accompanied by copious discharge from the eyes. This is followed by violent purging for two or three hours, and the animals being Duration. unable to eat or swallow die in two or three days. In some cases the purging comes on first, but the symptoms are otherwise the same. It appears to me worthy of notice that this sickness is nearly identical with that noticed by a Mr. H. James Rainey in a letter dated 18th April to the Agricultural and Horticultural Society of India, and read in the monthly meeting of that body on the 21st April 1869. It is there called *panchunee*, and is said to be raging with great violence in Lower Bengal.”

5. The same officer in a subsequent letter states,—“The attack is sometimes sudden, but is generally preceded for two days by cough, discharge of water from the eyes, drooping of the ears, or swelling of the throat. The skin emits a bad smell and the hair stands up, and flies also settle largely upon the face and breed worms. These flies are not of the common Inspection. sort; the tongue in some cases is swollen and covered with sores, but in others not. The appetite in some gone, but others appear unable to eat from the sores on the tongue. The disease is contagious, and only 16 to 20 per cent. of those attacked recover. The first sign of recovery is a diminution in the number of flies which annoy the animal. Mortality.

6. Dr. R. O'Connor, Civil Surgeon of Nowgong, thus describes the disease (he is com- Nowgong- menting on the bad effects of permitting the carcasses of deceased cattle to remain without burial),—“The animals are seized in the first instance with enteric fever, on which they fly to the water holes and tanks or bheels, and drink largely of the water impregnated with effete animal matter, and in a few days a typhoid form of the disease comes on, ending in passive Thirst. hæmorrhage from the nose and passing by anus of dark-colored blood, after which the animal speedily dies.

7. Lieutenant Phillips, Assistant Commissioner of Nowgong, describes the disease as a form of *mour* reported on by Dr. Purves, as quoted above; but adds that the intense Nowgong. longing for water noticed by Dr. Purves did not come under his observation at Nowgong.

8. With reference to the 2nd paragraph of your letter, I beg leave to say that the necessary orders were issued prior to the receipt of your letter.

9. In compliance with the instructions conveyed in your 3rd paragraph, I propose furnishing fortnightly reports of the progress of the disease for the Lieutenant Governor's information. The latest intelligence I have on the subject from the different districts is given below.

Kamroop, 29th May.—The Deputy Commissioner says,—“Cattle disease has appeared in Kamroop. some of the mouzahs of the district, but not to any great extent. I have, however, called for further information.” The Assistant Commissioner of Burpettah Sub-division states,—Burpettah. “Although some mortality among cattle has taken place, nothing approaching the mildest form of a murrain has as yet made its appearance.”

Durrung, 27th May.—The Deputy Commissioner writes,—“From reports received from Durrung. the several Mouzahdars, it appears that 26,740 cattle (buffaloes and cows) died in the district during the last five months up to this time, out of which 15,285 died in the Chadooai and Mortality. Nowdooar Mehals and the Orang Mouzah of Chardooi, where cattle murrain has been particularly prevalent. The disease is now abating in Chadooai Mehal.”

Nowgong.—Agreeably to orders given by me on the 7th of April, the District Superin- Nowgong. tendent of Police was deputed to visit the affected part of the district, to inquire fully into the whole question and report upon it.

SEBSAUGOR.

Sebsaugor, 4th June.—In this district the disease appears to be chiefly confined to the Sub-division of Golaghat, where it has committed great havoc; I regret to say it is now reported as spreading to the mouzahs in the vicinity of Jorehaut, and will no doubt continue to proceed eastward. I append copies of letters (the last received) from the Assistant Commissioner* in charge of Golaghat and the Deputy Commissioner† of Sebsaugor.

* No. 109, dated 30th May 1869, and enclosures.
† No. 246, dated 14th June 1869, and enclosures.

Luckimpore.

Luckimpore.—Nothing has been heard from this district lately on the subject; but I have reason to believe the disease has not yet appeared on the south bank of the river.

SEBSAUGOR.

From CAPTAIN A. E. CAMPBELL, Deputy Commissioner, Sebsaugor, to the Personal Assistant to the Commissioner of Assam,—(No. 246, dated Sebsaugor, the 4th June 1869).

I have the honor, with reference to your No. 700, dated 19th ultimo, to forward copy of a report received from the Assistant Commissioner, Golaghat, on the cattle disease in that portion of the district, together with statement showing the number of deaths reported.

Although the disease is apparently so bad in and around Golaghat, I am happy to say it has not as yet made its appearance here. I annex a statement of deaths reported in mouzahs near Jorehaut.

With reference to the Assistant Commissioner's report, I have directed him to depute one of the Amlah to the mouzahs where the disease is worse, to obtain accurate information regarding the loss supposed to be likely to ensue to the ryots.

GOLAGHAT.

Lieut. Blathwayt.

From LIEUTENANT L. BLATHWAYT, Assistant Commissioner of Golaghat, to the Deputy Commissioner of Sebsaugor,—(No. 109, dated Golaghat, 30th May 1869).

In continuation of my letter No. 101, dated 22nd May, I have the honor to report that the cattle disease in this sub-division is still spreading, as you will perceive from the annexed tabular statement, as compared with the one I submitted on the 22nd.

Loss. Uncultivated land.

2. I have very serious apprehensions that the ryots in Mouzahs Dergaon, Messamora, Rajababar, Namdyang, and Nahoronee will leave a considerable portion of their land uncultivated this year, owing to the want of animals to plough it.

3. It is not an easy matter to decide whether, as regards any particular portion of the sub-division, the disease has increased or diminished, for, suppose in a certain mouzah there are a thousand cattle, and during the first month five hundred die, and during the second month three hundred die, the disease which at first sight would appear to have ceased would in reality have become much worse. To form an opinion with any certainty, it would be necessary to know the number of cattle in the place previous to the outbreak of the disease.

There is one point, however, which looks hopeful, viz., that in the places where it has last appeared, the mortality is slight compared with that which took place in mouzahs where the disease first showed itself.

4. In my last letter on the subject, I mentioned that I was about to commence treating a few sick animals according to Dr. McLeod's method, but I am sorry to add that hitherto I have been unable to carry out this idea in the way I wished. I set apart a building as a kind of hospital, purchased some of the more simple medicines, engaged two men to assist me, and then met with a steady passive opposition on the part of the Assamese, not one of whom would send me their sick cows for treatment, and consequently the only cases I could get were two bullocks belonging to the Department Public Works, both of which appear to be quite recovered after a slight attack, and one or two stray cows in the last stages of the disease, on whom no medicines could be expected to act as a cure. In the case of the former, I should hardly have believed that they were diseased at all, were it not that they were in the same stall with an animal since dead, eating the same grass and drinking out of the same pans. Only one other case of recovery has come under my personal observation (though I have heard of several), viz., a bullock belonging to a native which had been fed on grain; and although at one time to all appearance in a dying state, is now quite well again. From these three cases I am inclined to believe that the previous style of food and condition of the animal have a good deal to do with its chance of recovery if attacked.

Opposition.

5. Three or four instances of goats dying of the disease have been reported to me, but I am not at all certain of its identity with that which attacks cows and buffaloes, the symptoms, so far as I have yet learnt, being different. Hitherto I have heard of no instances of any other animals, either wild or domestic, being attacked.

Goats.

Uncultivated land.

6. As an instance showing the virulence of the disease, I may mention the case of a Clerk in my office. He possessed some bullocks, cows and calves, twenty in all, and ten days ago the disease appeared among them. After two days one died, and on the third day a

GOLAGHAT.

second died. Yesterday five died, and this morning two more are dead and five others sick. This man owns seven *poorahs* of land, and has now only one bullock left, and consequently his land must remain uncultivated this year, unless he is able to purchase fresh bullocks, which is not very probable; and I fear that hundreds of others may find themselves no better off than he is.

From H. A. COOMBS, Esq., District Superintendent of Police, to the Deputy Commissioner, Sebsaugor,—dated 22nd June 1869.

SEBSAUGOR.

H. A. Coombs Esq.

In compliance with his memo. No. 192, dated 25th May 1869, has the honor to inform that the Inspector of Golaghat reports that the cattle disease in that jurisdiction has slightly decreased.

2. The Officer in charge of Jorehaut Station reports that the disease has reached his jurisdiction and is rapidly on the increase.

3. There are no cases as yet in Sebsaugor or Burtolah Sub-division.

Tabular Statement, No. 2, showing the mortality from cattle disease in Sub-division Golaghat.

NAME OF MOUZH.	Date on which disease first appeared.	Total mortality—	Of cows.	Of buffaloes.	Up to what date reported.	Whether disease has increased or diminished.	REMARKS.
Borgobain Chapporee ...	March...	359	320	39	May, 22nd	About the same.	
Dergoon Missamora Raja-behar ...	1st April...	3,000	Not stated.	Not stated.	" 25th	Increased.	
Namdayong ...	28th " ...	760	626	134	" 24th	About the same.	
Goorjoogonia ...	1st May...	400	300	100	" 15th	Not known.	No report received since 15th.
Nabaronee ...	4th " ...	1,300	Not stated.	Not stated.	" 25th	"	
Kakodouza ...	8th " ...	184	163	21	" 21st	"	No report since 21st.
Kachareehaut ...	9th " ...	74	56	18	" 16th	"	Do. do. 16th.
Tirool ...	13th " ...	15	15	"	" 15th	"	Do. do. 15th.
Nikboree Chapporee ...	14th " ...	2	"	2	" 16th	Increased.	Do. do. 16th.
Dekecal ...	15th " ...	2	"	"	" 17th	"	Do. do. 17th.
Morungeepar ...	15th " ...	233	177	56	" 28th	"	
Dockbinhengra ...	16th " ...	400	Not stated.	Not stated.	" 28th	"	
Golaghat ...	16th " ...	41	33	8	" 27th	Not broken out at the time of compiling last report.	
Gamoogoree ...	18th " ...	55	40	15	" "	Ditto	ditto.
Ghilladharee ...	Since 20th...	10	4	6	" "	Ditto	ditto.
Koosogaon ...	" " ...	4	4	"	" "	Ditto	ditto.
Monequa ...	" " ...	6	5	1	" 28th	Ditto	ditto.
Atgaon ...	" " ...	3	2	1	" "	Ditto	ditto.
Bhomgaon ...	" " ...	33	16	17	" "	Ditto	ditto.
Betteonee ...	" " ...	2	1	1	" "	Ditto	ditto.

L. BLATHWAYT, Lieut.,

Assistant Commissioner.

The 30th May 1869.

Tabular Statements, No. 2, showing the mortality from cattle disease in the District of Sebsaugor, not in the Sub-division of Golaghat.

NAME OF MOUZH.	Date on which disease first appeared.	Total mortality—	Of Cows.	Of Buffaloes.	Up to what date reported.	Whether disease has increased or diminished.	REMARKS.
Bebejeah ...	...	Not stated	Not stated	Not stated	23rd May 1869	About the same.	
Pooronee Mutty ...	...	150	"	150	31st ditto ...	Ditto.	
Soongi Hoondie ...	...	8	3	5	24th ditto ...	Increased.	
Goroemoor ...	...	Not stated	Not stated	Not stated	27th ditto ...	About the same.	
Sarai Babee ...	...	3	"	3	25th ditto ...	Not stated.	
Kasogorah ...	...	200	Not stated	Not stated	23rd ditto ...	Increased.	
Khungiah ...	...	40	Do.	Do.	24th ditto ...	Ditto.	
Rungday ...	...	28	16	12	31st ditto ...	About the same.	

ZILLA SEBSAUGOR;

DEPUTY COMMISSIONER'S OFFICE;

The 4th June 1869.

A. E. CAMPBELL, Capt.,

Deputy Commissioner.

SEEBSAUGOR.

DISTRICT OF SEEBSAUGOR.

Capt. A. E. Campbell. *From Captain A. E. CAMPBELL, Deputy Commissioner, Seebaugor, to the President of the Commission directed to inquire into Cattle Disease,—(No. 4, dated Seebaugor, the 3rd January 1870).*

In accordance with instructions contained in letter No. 2777, dated 11th December, from the Junior Secretary to the Government of Bengal, to the Commissioner of Assam, I have the honor to forward answers to the questions contained in your letter No. 100, dated 6th ultimo, as far as I am able.

2. The number of cattle attacked, those which have recovered, and those that are still ill, it is impossible to determine. The returns only show those that have died.

3. The disease has now been raging in the district since the end of March last, and although it appears to have decreased in virulence, there are still a large number of victims.

The disease is at present mostly in the mouzahs around Seebaugor itself.

Answers to questions in Form No. 4.

1.—District of Seebaugor, Upper Assam. 2.—The disease is called murrain. 3.—Appeared 30th March 1869. 4 and 5.—112,415 cattle died. 6, 7, 8, and 9.—The disease is infectious. 10.—It is supposed to have originated from the importation of some buffaloes. 11.—Symptoms: coat staring, no eruption, eyes and mouth water, body hot, laboured breathing and cough, shivering fits, swelling of the throat, faecal evacuations watery. 12.—Duration of attack, from 3 to 5 days. 13.—Treatment: notices have been issued throughout the district to separate the diseased animals from those not infected, also for the immediate burial of the carcasses, and for cattle not to be allowed to roam, or to be taken from one mouzah to another. In the station an hospital has been erected to which sick cattle are taken.

LUCKIMPORE.

DISTRICT OF LUCKIMPORE.

John Campbell, Esq. *From JOHN CAMPBELL, Esq., Extra Assistant Commissioner, Luckimpore, to the Deputy Commissioner, Debrooghur,—(No. 80, dated Luckimpore, the 4th September 1869).*

Date of outbreak. I have the honor to submit the report called for in your letter No. 207 M of the 4th June, and your memo. No. 400 of the 2nd instant, on the cattle disease which has since April last been causing such havoc in this sub-division.

Contagiousness. 2. The symptoms of the disease have been personally noted by me, and I have also consulted intelligent natives on the subject. The result of my inquiry is, that I believe the disease to be highly contagious, and that its great spread is owing to the ignorance and apathy shown by the natives in allowing their cattle to wander about, without taking any precautions against contact with diseased animals. This was particularly the case at first; but even after warnings from the Police and Mouzadars, it took the people a long time to recognize the fact that it was for their interest to keep their animals separate as far as possible.

Symptoms. 3. The first sign of disease apparent is a mucous discharge from the nostrils and eyes. This is accompanied by a short hacking cough. The ears, moreover, are lowered and remain in an unnatural position.

4. The diseased animal usually continues feeding and moving about for two or three days. Many animals, however, do not live so long, some being carried off the first day; but I allude only to the majority of cases where the animal lives from seven to nine days after the appearance of the discharge alluded to.

5. A peculiar symptom is a great longing to drink cold water; a longing which, if indulged, often proves speedily fatal.

6. The gums swell and become sore, so that from the third day the animal gradually discontinues grazing. About the fourth or fifth day it ceases taking any nourishment. The stomach becomes distended and the animal generally becomes a victim to severe dysentery. It can no longer stand, and shortly after dies.

Treatment. 7. I have only heard of one or two cures, and do not think there were many more. One so-called method of cure was to keep the diseased animals close shut up in a small house with fires inside. They had dry grass supplied them and were allowed to drink warm rice-water or plain water. This I have on good authority, but of course even two or three such cures are not conclusive as to the proper treatment of the disease, and not being based on any known data as to the nature of the disease, it must be regarded as purely accidental.

Other animals. 8. That the disease is highly contagious, there can be no doubt. It has affected not only cattle, but on the one hand, pigs and dogs, and on the other hand, tigers, deer, wild buffaloes and other wild animals.

9. The disease made its first appearance near the Dikrang, in the Narainpore and Bangfang Mouzahs, about the beginning of April last. About the beginning of March, a batch of Bengalee buffaloes passed through, and one died close to my camp on the bank of the Dikrang; some days after its death I came into camp and remained there till about the 22nd March, up to which time there was no sign of disease of any kind. LUCKIMPORE.

10. The Bengalee buffaloes were transferred from Bangfang Mouzah to the Majoli; from the Majoli the disease returned to the north bank.

11. It appeared here first at Khakatiago, a village in Betteri Mouzah, about the 15th May. From thence it spread through the Telahi Mouzah, and crossing the Rungameddy, began to spread in Nowboysha Mouzah. It had settled itself in both Mouzahs before the end of May. Course of disease.

12. Through Telahi Mouzah, leaving Comlabariah Mouzah untouched on the left, it spread into the Goraza and Luckimpore Mouzahs in the beginning of June. No cattle died in Comlabariah Mouzah till the beginning of July.

13. Thence it spread in June into the Chootiakari and Kodom Mouzahs, again leaving the Nowkari Mouzah exempt till the beginning of July.

14. The parts of the sub-division untouched by the disease are—

Exempted localities.

1st.—Mouzah Lalook Dolonee.

2nd.—The Bhoroloowa Khund of Mouzah Nowboysha.

3rd.—Gagoldoobi and Pothalipain Khund of Kodom Mouzah.

4th.—Mouzahs Dhowknoakakhan, Bor Doloni and Gohaingao.

The last escaped by having the Subansiri and 10 miles of jungle between them and the infected spots.

15. Mouzah Lalook Dolonee is between Bangfang and Nowboysha, and might be supposed very likely to be attacked. Communication is, however, very deficient, which accounts for its exemption, as also for that of Pothalipain and Gagoldoobi. Cause of exemption.

16. The exemption of Bhoroloowah I can only attribute to the precaution taken by the natives under the advice of a very influential and popular Manager of a tea garden, Mr. Stewart, of Doolahat Factory.

17. I have expressed my opinion that the disease is contagious, but I have been informed of one case in which the disease appeared under circumstances which quite precluded its being attributed to any ordinary form of contagion. The case was that of a Nuri village on the Subansiri, with which the only means of communication was by boat. The disease broke out suddenly, and was attributed to the presence of a stranger who had gone through the village on his way from Luckimpore to Burdolone. If it was so communicated, the circumstance only shows more clearly the dangerous character and highly-contagious nature of the disease, since it can be communicated from beast to beast through man. This is apparently the only way in which it can be accounted for, except on the theory of spontaneity. Isolated outbreak.

18. I have the honor to file herewith a list of Mouzahs with the numbers of dead and living cattle, as supplied by the Mouzahdars, up to the 20th August.

19. I have delayed sending in this report, as I did not suppose it was required before the complete cessation of deaths by the disease. A few cattle are still dying in two or three Mouzahs.

NAME OF MOUZH.	Number of dead cows.	Number of living cows.	Number of dead buffaloes.	Number of living buffaloes.	REMARKS.
Narainpore ...	2,746	978	359	48	Includes 709 cows &c., and 117 buffaloes in Bhowloowa untouched.
Bangfang ...	631	287	41	192	
Nowboysha ...	521	2,150	588	257	
Kumbaboria ...	668	472	67	5	Includes live cattle in Pothalipain and Gagoldoobi Khunds untouched by disease.
Gorahoga ...	1,750	627	229	11	
Nowkari ...	1,544	871	97	97	
Chootiyakari ...	531	422	236	30	
Luckimpore ...	560	352	90	13	
Kodom ...	1,109	1,461	518	83	
Telahi ...	1,575	1,069	145	23	
Betteri ...	525	255	52	6	
TOTAL ...	11,162	8,799	2,427	765	

LUCKIMPORE. From JOHN CAMPBELL, Esq., Extra Assistant Commissioner, Luckimpore, to the President, John Campbell, Esq. • Cattle Plague Commission, Calcutta,—(No. 22, dated Luckimpore, the 22nd March 1870).

With reference to your No. 152 of 15th ultimo, I have the honor to inform you that you are under a misapprehension as to the first locality attacked by the cattle plague, caused, I am sorry to say, partly by the vagueness of my letter of the 18th May last. The disease which appeared in Dhowkhoa Khana in the cold weather of 1868-69 was not of the nature of the plague which broke out in April 1869, but was the ordinary *sobokar* (as it is called here) or *khoorah*, which almost of necessity (apparently, the recurrences being so regular) breaks out every cold weather throughout the province.

2. The plague first broke out in Narainpore Mouzah, on the western boundary of the district, in April last. I have the honor to forward a copy of my report on it, dated the 14th September last, wherein you will find a full account of the spread of the disease.

3. The cattle plague undoubtedly occurred from the first source mentioned in your letter, viz., "introduction from another district." It appeared in Mouzah Kolabari (of the Durrung District) prior to its appearance on this side of the boundary in Narainpore Mouzah. It was probably caused there also by the passing through of the fatal batch of buffaloes.

4. I regret to state I have no records from which I could give any information as to former outbreaks. From conversation I gather that this disease has never before appeared here within the memory of the oldest inhabitant.

5. The *sobokar benear* or *khoorah* was pretty general throughout the sub-division in the cold weather. It arises from local causes—rank vegetation and weakness of the animals.

6. It will be noticed that the Dhowkhoa Khana Mouzah was not touched by the cattle plague, the information received by you (other than that supplied by my letter) was therefore incorrect.

John Campbell, Esq. Information supplied by JOHN CAMPBELL, Esq., Extra Assistant Commissioner,—(dated Luckimpore, the 26th March 1870).

Locality.

The Sub-division of North Luckimpore comprises:—

	Acre.
Infected portion, about ...	550,000
Uninfected portion, about ...	220,000
TOTAL ...	770,000

The soil is alluvial and thin; there are numerous small streams; the country is low, the greater portion under dense grass and tree jungle; it is to a great extent under water in the rains, all the streams overflowing.

Number of cattle.

The number of cattle in the sub-division is as follows:—

	Cattle.	Buffaloes.	Total.	No. to sq. mile.
Infected tract ...	19,971	3,192	23,163	27
Uninfected tract ...	85,000	2,000	10,500	30.5
TOTAL ...	8,500	5,192	33,663	28

There are no varieties of breeds worth mention.

Value.

The value of cattle is as follows:—

	Bull.	Cow.	Bullock.	Male.	Female.
Value—now ...	Rs. 9	7	16	40	100
„ before plague ...	5	5	9	20	70
„ ten years ago ...	4	3	5	12	30

Uses of cattle.

The uses for which cattle are employed are:—

1.—Agriculture.

Cattle.—A few cows are used by the Mussulmans; these are generally barren cows; bullocks, generally speaking, only used.

Buffaloes.—Both bulls and cows used.

2.—Dairy.

Cows and cow buffaloes are used.

Cattle are not properly treated; cattle-sheds when used are mere open sheds, hardly preserving the animals from exposure by night, while by day they remain out-of-doors in all weathers. They are never cleaned or rubbed down after a soaking. The animals are certainly not too

hardly worked (except during the rains, which is unfortunately the very time they should be exempted, in consequence of the want of proper pasture). The variation in the temperature must be felt, as no arrangements are made for protection against cold.

Buffaloes are not stalled or kept in sheds; they pass the night in filthy puddles, wherever they may be, without any covering.

The usual season for working cattle is the rains, that is for the *sali* crop. The natives are beginning to cultivate more *ahous*, for which of course they use their cattle; but the number employed in the latter cultivation is considerably less than in the former.

The proportion used for agricultural and dairy purposes is not accurately ascertainable. Female buffaloes are generally used for the dairy.

Cattle are housed in an open shed of bamboos and thatch, the animals being tied to the posts inside.

Buffaloes are tied to stakes during the night near the owner's house, or, if they are at a distant pasture, near the herdsman's house. Their resting places are very filthy (ordure being allowed to accumulate), and after rain become perfect quagmires.

Cattle are simply turned out to graze and water themselves every morning. Even at the height of the late plague, very few people took the trouble to carry out that most ordinary precaution against contagion, of feeding and watering the animals themselves. In the rains there is some difficulty about grazing, as the greater portion of the country is either inundated or under rice, or both. No attempts are made, however, to obviate the semi-starvation which is invariably the result. In the cold weather the *dolonees* (large grass plains, low-lying) and the *pittars* (rice-fields) offer ample pasture.

Buffaloes in the rains are taken to high lands or *chupporees* in or near the larger rivers, being fed nearer their owners on the *dolonees* in the cold weather.

In some places it is very difficult in the cold weather to get water, the sandy soil not permitting the sinking of wells, and the tanks and streams drying up.

Both cattle and buffaloes are herded at all seasons by day, the animals of a whole village, or even of two or three villages, being turned out together to graze. At night each householder has his cattle housed or tied up near his own dwelling. But buffaloes on the *chupporee* in the rains are herded night and day.

Cattle are generally herded and grazed in the vicinity of their owner's dwelling. Buffaloes are removed to a distance in the rains to the high lands and *chupporees*, but in no case, I think, beyond the limits of the district: it is not necessary to do so.

At the end of the cold weather cattle are in good condition and strong, but through the scarcity of grazing ground in the rains, from June to October, and their being severely worked and exposed to many hardships at this period, before the beginning of the cold weather, the great majority present a most miserable appearance.

The stock is kept up by breeding. The bulls used are very young, much too young for the purpose, the custom being to castrate them at a time when they should only be beginning breeding. The consequences are obvious. The bulls are in no way selected for the purpose.

There is ordinarily no importation of either cattle or buffaloes. The batch of buffaloes imported with such grave results last March was an exception. There has been no importation for years. About 20 of this batch were sold in the sub-division at prices varying from Rs. 16 to 30. They were all females, and I understand all succumbed to the plague. This method is unfortunately only another way of spreading disease, as appeared in several cases last year.

There is no particular season for dealings in cattle, though they are generally carried out in the cold weather. There are no fairs. A man wishing to purchase cattle goes about looking for animals to his taste.

There is no exportation worth mention.

There are no *Chamars* or dealers in hides. Hides have no price, since there is neither exportation nor local demand. The animals are never skinned.

There are no statistics of ordinary mortality, even of that caused by the regular cold weather "foot and mouth" disease, or *sobokar* as it is locally termed.

There are no records from which any information as regards the history of plagues can be obtained, and the slight information derivable from natives is valueless. Whatever the plague, however, that appeared last year may be, it is generally alleged that no disease of that description has appeared in the sub-division within the knowledge or memory of any person now living. I put some credit in this, as several intelligent persons who have had opportunities of observing and remarking any unusual disease concur in making this statement.

LUCKIMPORE. John Campbell, Esq. <i>Sobokar or khoodah.</i>	The most ordinary form of disease is what is called here <i>sobokar</i> , which is, I imagine, precisely the same as the disease called <i>khoodah</i> in Bengal, the symptoms being similar. Ulcers form in the feet and mouth; lameness is the result, with inability to eat or ruminate. Many animals are saved.
Causes.	The causes predisposing to this disease are probably,—1st, the wretched condition of the animals at the end of the rains; and 2nd, climatic influences tending to weaken their condition. It is attributed—and no doubt correctly—to the rank vegetation on which the animals almost perforce graze just after the settling down of the floods at the end of the rains, and later on to the want of pure water, necessitating resort to most filthy puddles.
Season.	It probably is attained both spontaneously and by contagion, the discharges of the suffering animals being highly contagious. This disease, <i>sobokar</i> , occurs in the cold weather from October to February.
Statistics.	Both drought and scarcity of food affect the disease, the latter especially. I have noted this before. I know of no other form of disease. The <i>sobokar</i> lasts more or less virulently from the beginning of October to the end of February. In the cold season of 1868-69 the disease was most virulent in the parts afterwards left untouched by the cattle plague. In the parts affected by the cattle plague, the <i>sobokar</i> had been very mild, assuming almost a sporadic form.
Attacked.	The following remarks apply to the cattle plague lately prevalent, not to any other forms of disease, of the mortality caused by which there are indeed no statistics:—
Recoveries.	(a). 41 per cent. throughout the sub-division were attacked. (b). There are no statistics of recoveries. It was difficult enough to get in the little information required correctly.
Deaths.	(c). Deaths were probably about 98 per cent. I hardly think more than 2 per cent. of those attacked recovered.
Not attacked.	(d). 59 per cent. throughout the sub-division escaped.
Liability of different breeds, &c., to disease.	Age and sex do not seem to have affected the liability to disease in any way. As regards condition, I am unable to offer an opinion. No inquiries on the point were made at the time, and it is now impossible to obtain reliable information.
Symptoms.	There were usually three stages of the disease, lasting from six to nine days altogether. Many animals of course did not live so long as six, and many lived longer than nine days.
	1st stage.—Symptoms (2 or 3 days).
	1.—Dulness or restlessness. 2.—Slight appetite, deficient rumination. 3.—Skin hot and rough. 4.—Ears drooped. 5.—Slight cough. 6.—Slight discharge from eyes and nostrils.
	2nd stage.—Symptoms (2 or 3 days).
	1.—Skin very hot; fever. 2.—Hair erected. 3.—Breathing hard and severe cough. 4.—Increased discharge from eyes, mouth, and nostrils. 5.—Tongue and throat swelled. 6.—Great thirst. 7.—Refusal of food; suspended rumination. 8.—Distention of stomach and loose stools. 9.—Suspended milk.
	3rd stage.—Symptoms (2 or 3 days).
	(1).—Skin gradually cooling; finally cold. (2).—Ulcers (sometimes). (3).—Increase of looseness of stools; watery, yellow and fetid, with blood sometimes. (4).—Cow no longer attempts to stand up.
	No post-mortem examination was made by me.
Infectiousness.	The gradual and systematic spread of the cattle plague last year, and the exemption of several parts of the sub-division, show that it did not arise from local causes. Every advance of the plague was traced to the influence of contagion. No experiments were, I regret to say, tried.
Treatment.	There was no medical treatment employed by Government officials. Cures are talked of, but as they were not based on any knowledge of the disease, they may be, such as they were, regarded as purely accidental, or rather, perhaps, Nature was the doctor. Isolation was attempted, orders being issued to prohibit the transfer of cattle from infected and healthy localities. In several instances these orders were most deliberately, though uselessly, disobeyed by selfish people. Several men were punished, but it appeared that the orders were illegal, and these men were released on appeal.

Separation of the sick and healthy was not attempted, except by a few persons, on persuasion.	LUCKIMPORE. John Campbell, Esq.
Orders (apparently illegal) were issued for the burial of all carcasses, but were of course neglected, one small stream being rendered unbearable by the number of carcasses thrown into it (close to the station), in spite of all the efforts of the Police to ensure burial.	
There being no sale of hides, horns, or hoofs, they are buried with the carcasses, or thrown away with them. Domestic and wild animals of all kinds were affected by the cattle plague; even fowls and ducks were stated to have died of it, though no cases of this nature came under my notice.	Infection of other animals.
No cases occurred, to my knowledge, of men being affected by the disease.	Infection of man.
A singular case occurred in a Nuri village situated on the Subansiri, where it is perfectly isolated. No cattle were brought into it or any other animal, yet the plague broke out among the few cattle there. It was attributed first to a stranger in the village, and then to the contact of the oars of some of the villagers with carcasses of diseased cattle in a small river some distance off. I cannot believe in the outbreak being unassisted by contagion; but whichever of the explanations offered is taken, it seems incredible that it did so take place.	
There was no epidemic prevailing during the period the cattle plague was raging. There had been none for two years before, and there has been none since.	
There were no meteorological observations made, but as the effect (if any) produced by Weather. changes of weather was not noticed, it is probable there was not much variety.	
Information supplied by S. CAMPBELL, Esq., Tea Planter, Burpettah, North Luckimpore,— dated 26th January 1870.	S. Campbell, Esq.
The following information applies to the sub-divisional station of North Luckimpore, the area of which is about 1,500 square miles, and is bounded on the east by the Dholi river and Rancee bheel, west Duffla Hills, south Narainpore Mouzah, and on the north by the Ragghor, a large embankment constructed by the Assam Kings to separate their territories from the hill tribes.	Locality. Geography and nature of soil.
The soil is sandy, argillo-arenaceous and argillo-ferruginous.	
2. The number of cattle before appearance of the plague was about 3,000.	Number of cattle in the locality.
There were about 187 to the square mile. This calculation is based upon the impression that not more than $\frac{1}{4}$ th of the area of the sub-division is under cultivation.	
3. There is only one description of cattle known in the country from time beyond recollection by any of the oldest inhabitants; they resemble in appearance the cattle in Lower Bengal; in particular localities where pasture is more luxuriant the cattle are for the most part superior in size and condition. Plough oxen previous to the plague sold from Rs. 30 to 40 per pair, and milch cows sold at anything from Rs. 7 to 10; calves were seldom purchased or sold separately, but were generally valued at Rs. 3 to 4 when sold with a cow. I should say the average value per head to be about from Rs. 10 to 12 per head. Now, I should fancy, cattle cannot be purchased, and if they can be, most exorbitant prices will prevail. I know of no sales since the disease appeared. Ten years ago cattle could be procured at from Rs. 5 to 7 per head, on an average.	Different breeds of cattle and average value.
4. Cattle are used for ploughing. The ploughs used by the natives consist chiefly of wood of a very primitive manufacture, being simply a crooked piece of wood, with for the most part a bamboo ploughshare; they are used from about 6 A. M. to 10 A. M.; bullocks are universally used on ploughs. Cows which are barren are only used for agricultural purposes by an infinitesimal part of the population, bearing the denomination of <i>moreas</i> . Cattle are not used for draught or burden.	Uses for which cattle are employed
Oxen are very frequently driven in plough with excoriated necks; minute flies generally settle on the sore, and the animal is kept in a perfect state of torment, which renders it unable to graze with comfort under such an infliction. A bullock gets attenuated and is utterly incapacitated to perform his work efficiently.	
Milch cows are kept for the supply of milk and breeding, also buffaloes. About 50 per cent. of the total stock are used for each of these purposes.	
5. In some parts of the country subject to inundation, raised platforms are used, but, as a rule, ordinary huts are occupied.	Mode of housing.
Cattle-sheds have thatched roofs, without any walls; but in places which are infested with tigers, wooden poles are used as walls to protect cattle from those animals.	
[NOTE.—The cattle plague began at the end of March in this sub-division, and lasted to the end of September.]	

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S. Campbell, Esq.
Mode of feeding and
watering.

6. The cattle are generally tended in herds on large *pathars* or plains, where they graze from an early hour in the morning till sunset; they are then shut up without any other feeding. The *pathars* generally have stagnant pools, and sometimes little *jauns* or rivulets, in their vicinity, and the cattle are watered at them as often as three to four times a day.

The varieties of grass eaten by cattle are known as *doobree*, *dholl*, *aralee*, &c. Fodder is only partially used during the rains in localities more than ordinarily subject to submersion, consisting of paddy straw.

Cattle find water in tanks, bheels, rivulets or *jauns*, and rivers large and small.

Whether herded by
day or night.

7. Cattle are herded during the day and shut up at night, but after the gathering in of the harvest, they are allowed to remain unattended night and day for about six weeks to three months, the time varying in different localities. Cattle are not herded and driven to other districts for pasture.

General condition.

8. The general condition of cattle, as already stated, depends entirely upon the part of the country; in some parts grass is more plentiful, and in others not so.

Stock how kept up.

9. The stock is kept up by in-and-in-breeding among the cattle of the sub-division. No special bulls are kept. There is no importation of cattle.

Mode in which cattle
are bought and sold.

10. Dealing in cattle is chiefly managed by money payments, but sometimes exchanges are made; it is considered unlawful by the majority of the population to plough with young oxen which have been bred at home, hence the practice of exchanging. There are no markets in the locality, nor is there any export of cattle or trade in hides.

Mortality.

11. The ordinary mortality is about 15 per cent. The mortality from plague as shown by results is a little over 50 per cent. throughout the sub-division.

History of plagues.

12. In 1852 there occurred a disease which carried off many head of cattle. I have no record of the probable number; the symptoms, however, did not resemble the late plague. In the former, the animals used to be seized with violent thirst, and used to imbibe large quantities of liquids, resulting in death after three or four days. The epidemic did not rage so severely here in 1852 as it did on the south bank of the Berhampooter, particularly near the Magoolie Islands and near Golaghat. I am unable to say whether the plague which occurred in 1852 extended generally all over the sub-division; as far as I can recollect, I think the disease also broke out at Debrooghur, the Sudder Station.

Character of plagues;
source, cause, mode
of spread, &c.

13. In the sub-division, the present plague first appeared to travel along the extremes of the same; from the southern part it appeared to rage fiercely in May and June, and lasted about five months.

The usual symptoms were,—an animal used to refuse its food, *i. e.*, to graze, for two or three days, at the lapse of which period diarrhoea usually appeared, and death resulted usually from 24 to 48 hours subsequently; in some instances death did not occur till about 70 hours after; but instances of this nature were rare, and I cannot say I observed more than two or three. The cause of spreading I can only ascribe to contagion.

Statistics of cattle
plagues.

14. About 1,200 head of cattle, including buffaloes, died during the late plague, and from natural causes about 4,000.

The proportion per cent. of attacked was 50. The proportion per cent. of recoveries about 4 per cent. on an average. The proportion per cent. of deaths was 96 per cent. of those attacked, I should calculate.

Kind of cattle most
liable to attack
with regard to
breed, age, sex, and
condition.

15. All cattle are alike liable to attack; well conditioned cattle usually succumbed earlier than attenuated ones. About 40 Rungpore bullocks imported by a Tea Company escaped the disease; they are the only imported cattle here. Cattle in good condition were more prone to catch the infection than lean ones; they rarely survived the attack.

Symptoms.

Swelling of tongue
and throat.

16. The symptoms observed were:—extreme lassitude; death by diarrhoea, causing extreme exhaustion; no shivering; no appetite for days previous to attack, nor rumination; skin temperature and hair were about as usual; no eruption; the tongue and throat were partially swollen, but this was not externally visible; no difficulty in breathing or cough were perceptible; mucus was usually voided from the bowels, but occasionally discharges of blood and mucus were combined; the secretion of milk was suppressed; the milk was poisonous to calves, death usually resulting.

17. I am of opinion that the cause of the present plague raging as it has done, is principally owing to the want of proper attention to sanitary arrangements. The practice of allowing carcasses to lie rotting on the ground has no doubt promoted the virulence of the attack, and has perhaps been productive of the infection assuming different phases; but, as I have already indicated above, there was only one form here, and I cannot therefore say with any

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degree of certainty much under the latter head. There can, however, be no doubt whatsoever that proper sanitary arrangements were never observed, and, with the exception perhaps of a few villages in the direct vicinity of the sub-divisional station, the dead cattle were never buried.

18. No sanitary measures whatsoever were adopted in the villages at any distance from the station; no disinfection or separation of sick and healthy was attempted.

Burial of carcasses was not practised, except a few cases round the station; in the villages they were simply thrown away, and were allowed to rot. I noticed that two jackals died from partaking of a carcass.

19. I saw several deer dead in the jungle; the pigs in the *meree* villages were attacked; in some villages they were all carried off by the disease. The symptoms in swine were nearly the same as in cattle. Prevalence of disease among other animals during cattle plague.

20. I may mention a peculiar circumstance connected with the plague: it made its appearance on the south bank of the Subansiri river and carried off from a *meree* village all the buffaloes and other cattle there, but, strange to say, did not cross the river directly opposite to a village called Pothaltipalin, while up to the time I left, North Luckimpore had not been visited by the scourge.

From CAPTAIN JOHN GREGORY, Deputy Commissioner of Luckimpore, to the President of the Cattle Disease Commission,—(No. 877, dated Debrooghur, the 15th January 1870).

DEBROOGHUR.
Capt. John Gregory.

In accordance with instructions received from the Bengal Government through the Commissioner of Assam, I have the honor to furnish such information required by your letter No. 100 of the 6th ultimo, to the address of the Secretary to the Government of Bengal, as is procurable by me.

2. The name of this District is Luckimpore; for administrative purposes it is sub-divided into two sub-divisions, the Sudder and North Luckimpore, the former on the south, the latter on the north bank of the Berhampooter; through the former, the Booree Dehing, and the latter, the Subansiri—both comparatively large rivers—run latitudinally. For revenue purposes the district is sub-divided into 96 Mouzahs. In the Sudder Sub-division the disease has appeared in the following Mouzahs of Debrooghur:—

Mankutta.	Loroah.
Labooka.	Khowung.
Borpathar.	Lazai.
Jameerah.	Koowargas.
Lahwol.	Gohine Gao.
Madarkhat.	Dyneerjan.
Teta Demaroo.	Kodomonee.

Affected localities.

In the North Luckimpore Sub-division—

Gorahaga.	Nowkarry.
Narainpore.	Sooteah Karry.
Luckimpore.	Tellahi.
Kodom.	Nowboysha.

3. The disease first broke out in the Narainpore and Bangfang Mouzahs, near the Dikrang river, in the North Luckimpore Sub-division, early in April, amongst a batch of Bengalee imported buffaloes, and spread to the country buffaloes of Kherkatte Gao about the 15th of May. Date and place of outbreak.

4. The number of deaths amongst cattle from the disease up to this day in the whole district is 10,233. Mortality.

5. It was only on the 27th October last that an account of seizures and recoveries was opened; prior to that date fatal cases only were recorded, and there is no record of the total number of cattle which existed in the district prior to the outbreak of the plague. The number of seizures, recoveries, and deaths from the 29th October 1869 up to date are as under:—

Seizures ...	...	...	...	4,896
Recoveries ...	...	...	...	450 or 9.3 per cent.
Deaths ...	...	...	...	4,408 or 90.3 per cent.
Still ill ...	...	...	...	31

Statistics.

6. There is no doubt but that the disease is infectious in the highest degree; as a proof of this, I may mention that in one instance it broke out in an isolated village on the Subansiri, the only means of communication with which is by boat, so that no strange cattle could have been introduced: it and its outbreak were traced by the villagers to the visit of a traveller from Luckimpore, where the disease was raging at the time, who must have carried the infection in his clothes. In another instance the horn of a dead buffalo, taken into a village on the Noa Dehing, carried the contagion. Infectiousness.

DEBROOGURH. 7. There is no doubt but that the disease was introduced into the district by a batch of Capt. John Gregory. Bengalee imported buffaloes.

Symptoms. 8. The following are the symptoms:—

The coat appears rough; there are no eruptions on the feet or body; eyes and nostrils water; the ears are cold and lowered in an unnatural position; there is short hacking cough; there is a difficulty in breathing, with great longing to drink cold water,—a longing which, if indulged in, often proves fatal; the stomach is distended, and the animal generally becomes a victim to severe dysentery; the urine is high-colored and the bowels are in the first stage constipated; when diarrhoea sets in, the evacuations are highly offensive, and on dysentery coming on, are of a thin watery character, mixed with blood and mucus; the gums swell and become sore, so that the animal gradually ceases grazing.

9. Some animals are carried off the first day, but in the majority of cases they live from seven to nine days.

Sanitary measures. 10. On the 19th of June, when the highly-infectious and fatal character of the disease **Prevention of cattle movements.** became apparent from the reports from North Luckimpore, I issued orders to the police to post guards to prevent the passage of cattle at the following Ghats:—

Berhampooter River.
Lalooka Ghat.
Subansiri River.
Allimarra Ghat and Gogarmook Ghat.
Dehing River.
Bor Borooah Ghat.
Tipling Ghat.

Sal prohibited. 11. On the 26th of June, the disease having broken out in the military cantonments, I issued a proclamation warning people against purchasing cattle from the sepoys, and directing the burial of all dead cattle.

Burial. On the 28th of June I issued another proclamation directing that all owners of cattle should report the outbreak of the disease and fatal cases to the nearest Police Station.

Reports. 12. On the 14th and of 15th July further proclamations were issued declaring the affected mouzahs in quarantine, and I drew a cordon of Police round them to prevent the egress of cattle, and issued a circular to European residents asking their co-operation in maintaining the quarantine; and on the 1st of July another proclamation was issued forbidding carcasses being thrown into the river Debroo above the Meklah Mook. From the 26th of June, when the disease first began to rage with virulence, the most strenuous efforts were made to dispose of the carcasses: the aid of the military was invoked, the carcasses were collected and dragged by elephants to the ghats, there shipped in boats, and carried to, and thrown into, the Berhampooter, then swollen by the rains. Resort, however, was not had to this expedient until the mortality became so great and rapid as to make it impossible to bury the carcasses.

Quarantine; cordon. 13. In accordance with the instructions of Government, prescribing the trial of treatment of the disease with carbolic acid, Dr. White, the Civil Surgeon, who prior to this had treated affected cattle with varying success with a preparation of ipecacuanha, made during the month of September the experiments described in the two reports annexed.

Carcasses. 14. On the 18th of November, Mr. Farrell, Veterinary Surgeon, arrived, and the result of his treatment, and the preventive measures suggested by him and carried out under the instructions of this office, are detailed in his report annexed.

Treatment. 15. I regret to say that the disease is still raging, and that the number of deaths averages 70 per diem.

Present disease. 16. I may add that on learning that Mr. Farrell's Salootries had met with opposition from the ryots, who objected to the treatment of their cattle, I addressed a note to the great Gossains, with most of whom I have a personal acquaintance, asking them to use their influence with their disciples to induce them to co-operate in the remedial and preventive measures initiated by Government.

LUCKIMPORE. Examination of CAPTAIN JOHN GREGORY, Deputy Commissioner of Luckimpore,—(taken on the 9th February 1870).

Capt. John Gregory. Question.—How long have you been in Assam?

Answer.—Since October 1862; a little more than 7 years.

Question.—In what capacities?

Answer.—In civil employ.

LUCKIMPORE.

Question.—In what districts?

Answer.—In Sebsaugor, Nowgong, Naga Hills, and Luckimpore.

Question.—Is not cattle disease prevalent in this district now?

Present Disease.

Answer.—Yes, the natives call it *maora*; English, cholera.

Question.—During your residence in Assam have you ever had any experience of cattle History. disease of a similar nature to the one now prevailing?

Answer.—There was murrain among cattle when I was in Nowgong in October or November 1866, but I cannot say of what nature it was.

Question.—Was it as distinctive as this in its results?

Answer.—I cannot give a positive answer, but it did not extend over such a large extent of country as the present outbreak has.

Question.—Can you give any approximate idea as to what was the number of cattle in Number of cattle. this district before the present plague commenced?

Answer.—No; I can form no idea.

Question.—Can you state with regard to the number of deaths which have occurred? Mortality.

Answer.—Up to the 15th January 1870 it was 10,233, by the reports submitted by the Mouzahdars, which I do not consider altogether reliable.

Question.—Are you of opinion that this mortality will seriously interfere with the Agriculture. agricultural interests of the district?

Answer.—No, I do not think so at present, as there are still large tracts of the district which have not been affected which are overstocked with cattle, and from which the infected places will be able to obtain fresh supplies.

Question.—Do you think that the price of cattle will rise to any great extent in conse- Price. quence of this murrain?

Answer.—Yes, I think that it will make a difference of at least 25 per cent. in their price.

Question.—When and where did the disease first show itself in this district?

Origin.

Answer.—I was not here myself, but from what I have ascertained, it first showed itself at the end of March or beginning of April 1869 in the sub-division of North Luckimpore.

Question.—Have you any knowledge as to how it was first introduced there?

Answer.—Mr. Campbell, the officer in charge of the above-named sub-division, informed Buffaloes. me that it was introduced by a batch of imported Bengalee buffaloes, and this agrees with my own opinion derived from inquiries made in the District of Sebsaugor, where I first came across the disease on my way to join my present appointment.

Question.—On your first joining, you say that the disease had commenced; did you find Sanitary measures. that any means had been taken to stay the spread of it?

Answer.—No, I did not; but at that time little notice was taken of the disease, as people did not seem to learn of what a virulent type it was.

Question.—How soon afterwards were any measures taken?

Answer.—Very soon after, but I cannot say exactly when without referring to my notes; at the time I speak of, the disease had not spread to the south bank of the Berhampooter in this district, so I placed Police guards at the Berhampooter, Subansiri, and Deehing Ghats, to prevent the crossing of cattle.

Question.—Did these precautions prevent the spread of the disease?

Effect of measures.

Answer.—Yes, I think they did; but the disease was introduced to the south bank of the Berhampooter in this district by some cattle brought from lower down the south bank of the river, i. e., from the Sebsaugor District, by a sepoy of the 42nd Assam Light Infantry.

Question.—Do you consider the disease infectious?

Infectiousness.

Answer.—Yes, highly so.

Question.—Have any remedial preventive measures been attempted by the natives them- Treatment. selves?

Answer.—Remedial measures have, but with no effect; the natives have not attempted any preventive measures for themselves; I have, and I think with tolerable success.

Question.—In the event of another outbreak, what course do you think should be adopted? Preventive measures.

Answer.—I am of opinion that the legislature must interfere, as the local authorities have at present no authority to enforce the carrying out of the arrangements which they may consider it necessary to make. I have given my ideas on this in a letter to the Commissioner, a copy of which I will forward to the Committee.

DISTRICTS OF LUCKIMPORE AND SEEBSAUGOR.

DEBROOGURH.
H. Farrell, Esq.

From H. FARRELL, Esq., V. S., to the Deputy Commissioner, Luckimpore,—dated Debroogurh, the 10th January 1870.

Preventive and curative measures.

I have the honor to submit the following as the means adopted for the prevention and cure of the cattle disease in the District of Luckimpore. I arrived here on the 18th November 1869, and the day following commenced my investigations. I learnt that the disease was raging in Madarkhat and around Lahowl. I sent two Salootries with medicines to Dr. White, who kindly undertook to direct them to the afflicted villages. I proceeded there myself in company with Dr. White, Civil Surgeon, and saw some cows; we were fortunate in getting the carcass of a buffalo that had died of the disease. On making a *post-mortem* examination, we were both confirmed in the opinion that the disease was the same as the rinderpest or murrain of Europe.

The two Salootries sent treated in all some forty cases, of which nineteen recovered, and the rest died. The ryots, however, refused latterly to take medicines of any kind or attend to preventive measures, and even threatened violence when my Salootries went near the villages: I therefore recalled them at once.

Guards.

A guard was at the Sessa bridge to prevent all cattle entering or leaving Debroogurh.

Buffaloes.

Some few days after I learnt that some buffaloes that had been brought into the station of Debroogurh for sale from Seebaugor, where the cattle disease was raging, had communicated it to the cattle by one of the number being purchased and taken over by a ryot in a village some two miles inland, on the north bank of the Debroo river. I wrote to Lieutenant Maitland, asking him to warn all cattle owners of it, and if possible to prevent the cattle crossing over to the north bank. I also asked him to have a guard placed at the Dehing Ghat, to stop all cattle crossing. At the same time I wrote to the Station Staff Officer to carry out the same measures respecting the cattle in cantonments crossing the river, &c.

Treatment.

The treatment and preventive measures recommended in the circular, a copy of which I enclose, have been carried out by myself and by Salootries. I have also administered in several cases hyposulphite of soda in two ounce doses, repeated every three hours, instead of the carbolic acid, and I am happy to say with some success. I regret, however, to state that I have been compelled to give up all attempts at further treatment, &c., owing to the difficulties I have to contend against on the part of the ryots; besides being ignorant and apathetic, they are so prejudiced, evidently worked up by their Gossains, that they stubbornly resist everything that is done for their own good and welfare.

Opposition.

I have received every assistance from the officials, both Civil and Military, and the Police, during my investigations in the district, and for which my thanks are due.

I propose remaining in Debroogurh to meet the Cattle Plague Commission, who, I am given to understand, are about to visit Assam, and will shortly arrive by the Steamer *Colgong*.

P. S.—I left on the 3rd December for the Seebaugor District; during my absence one Salootrie was left under the orders of Dr. White, Civil Surgeon, with medicines to attend to all sick. He distributed large quantities of medicines to the ryots of Jameera Pergunnah; these ryots being of a different caste to the Muttucks of Madarkhat, showed readiness to take medicines and carry out preventive measures; they succeeded in curing a large number.

Evidence of H. FARRELL, Esq., V. S., recorded at Debrooghur, 21st January 1870.

Localities.

Question.—How long have you been engaged in investigating cattle murrain in Lower Bengal?

Answer.—I have been engaged in inquiring into the cattle disease in Lower Bengal since August 1868. From August 1868 to January 1869 I was employed in the District of the 24-Pergunnahs, including the sub-division of Diamond Harbour, acting under the orders of the Lieutenant Governor; from May to October 1869 I was employed in Jessore and the Sunderbuns on the same work; and from December 1869 up to date I have been employed in Assam.

Physicalgeography.

Question.—State generally the character of the country in which you have found cattle plague prevailing.

Answer.—In Bengal, *i. e.*, in the 24-Pergunnahs, Jessore, and the Sunderbuns, in low lands subject to annual inundations more or less; in Assam, for the most part in low lands and in villages on the borders of the *pittars* or large tracts of rice land, the disease was almost invariably most severe; in one instance, in the vicinity of Sonari near the Naga Hills, I met with the disease in the undulating lands at the foot of the hills, about 18 or 20 miles from the hills themselves.

Question.—Have you any idea of the number of cattle in the different districts mentioned by you; and if so, their number per square mile?

ASSAM.
H. Farrell, Esq.

Answer.—No, I have no idea, and have been unable to get any statistics; though I have made every inquiry from the District Officers, they have been unable to render me any assistance on the point. At a rough guess, from what I have seen for myself in Assam, I should think that we might say there were six or seven head of cattle to each house, whilst in the districts of Bengal to which I have been, I should not put the average at more than two to each house, if so much.

Question.—Will you kindly state the different breeds of cattle you have met with during your investigation?

Answer.—In Bengal and the Sunderbuns, *i. e.*, Lower Bengal, the breed is all one, *i. e.*, a small breed ranging from 11 to 13 hands; though in Jessore, near the indigo factories, you meet with a larger breed, which I should think had been originally imported. There are also a few buffaloes in that part, but very small animals.

In Assam the breed of cattle is even smaller and more miserable-looking than in Bengal; on the other hand, the buffaloes are finer than any I have seen in any other part of India; this I attribute to the fact of their being crossed with the wild buffaloes. I have also met in Assam with some of the larger Up-country breed of cattle, the property of Tea Planters; but these are all imported.

Question.—What is the average price per head of the different breeds you have described now and 10 years ago?

Answer.—In the 24-Pergunnahs a plough bullock is worth from Rs. 25 to 35, and a cow about the same price; these same cattle I was given to understand would have been half as cheap again some years ago before the disease made its appearance in those parts. The same prices range about Jessore, but in the Sunderbuns they are a little higher. It is hard to say what the difference in the prices will be in Assam, as before the disease showed itself, all the lands had been prepared, and the bullocks have not since been required, hence no purchases have been made; but I am given to understand that all those in a position to sell are holding back and asking increased prices, at least double those previously paid. I have not heard that the price of buffaloes has changed; they have always been expensive; being worth from Rs. 60 to 100.

Question.—For what purposes are the cattle employed in different districts?

Uses of cattle.

Answer.—In Bengal the bullocks are used for both agriculture and carts; in Assam only for agriculture. The cows in both places are only used for dairy purposes. In Assam, about the tea factories, the bullocks are used in carts, and carts only.

Question.—Please give particulars as to employment of cattle for agricultural purposes.

Agriculture; ploughing.

Answer.—Cattle are yoked in ploughs and harrows. Whilst ploughing they are generally up to their knees and hocks in slush and mud. During the agricultural time they are worked all day with only a short rest, and usually feed on whatever they can pick up in the middle of the day: this is in Lower Bengal. I cannot give any information with regard to Assam, I was not here at the time. The ryots do not look after their bullocks in the way of cleaning them, nor do they feed them during the time they are at work. The ploughing time lasts for about four months, from May to August; during that time the cattle are no doubt very much overworked, so that their condition becomes very bad, and I have no doubt that their constitutions are permanently injured by it. I have never seen cows used for agricultural purposes, though I have heard that they are so used in the Sunderbuns; but this I attribute to the scarcity of bullocks.

Question.—Please give particulars as to the employment of cattle for draught purposes.

Draught.

Answer.—In Lower Bengal the bullocks are yoked to a small bamboo cart capable of taking from six to eight maunds. I have known them travel a distance of 30 miles in the 24 hours, but the average is from 20 to 25 miles, at a rate of about 2 miles an hour. They are chiefly used for taking the rice straw into market, being fed for the most part twice in the 24 hours on either straw alone or straw and *kulee*; this traffic is carried on during the slack season, *i. e.*, when the bullocks are not wanted for ploughing, though of course some are used exclusively for carts; but these are comparatively very few. There is a continual traffic going on into Calcutta from all the surrounding districts where roads are to be found.

In Assam bullocks are only used in carts by Planters and Europeans, and these are all of an imported and larger breed than those common in Assam. The buffaloes are used for pulling logs of timber; they are yoked singly, and I have also in a few places seen them used in carts.

Question.—Please give particulars as to the employment of cattle for dairy purposes.

Dairy.

Answer.—In Bengal the cows are milked generally once a day at about 10 or 11 A. M., after which they are turned out to graze and brought in at night with the other cattle, though in some places they are not even brought in. In Assam the custom is very much the same, though there they are not housed even so much as in Bengal, only being brought in for the most part during that part of the year when the crops are on the ground; during the rest of the year they are not housed at all.

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H. Farrell, Esq.
Proportion of male
and female.

Question.—What is the proportion of cattle used for each purpose?

Answer.—In Bengal, I should say that there were from 15 to 20 bullocks to each cow. In Assam, I should think there was an equal number of bullocks and cows, or perhaps cows preponderate.

Ryots in the Mofussil in Bengal put more value on a bullock than they do on a cow, and so keep the bullocks, whilst they part with their cows to *gowallas*, who send them up to Calcutta, where they are used for dairy purposes. I say this, as it is the only way in which I can account for the number of bullocks being so much in excess of that of cows. Another reason is that a ryot very seldom breeds his own cattle, but purchases bullocks, as he requires them, from the herds which are imported.

Housing.

Question.—Are the cattle housed or not; and if so, please give a description of the sheds used?

Answer.—In some parts of Bengal (*e. g.*, 24-Pergunnahs) cattle (*i. e.*, bullocks and cows) are housed all together and indiscriminately. In other parts of Lower Bengal they are not housed at all. In Assam, in the cultivating season, cattle are collected and either herded in the open or in sheds. In both Assam and Lower Bengal the sheds are constructed of bamboo, thatched, sometimes walled, and sometimes not; this herding takes place during the rains. The huts or yards in which the cattle are kept are not raised; I have seen cattle up to their hocks in slush in their own manure in those places. They are not cleaned out, as a rule. These sheds will accommodate 20, 25, or 30 head. They are almost invariably overcrowded.

Feeding.

Question.—How are the cattle fed and watered during the different seasons of the year?

Answer.—In Lower Bengal cattle are, during part of the year, when the crops are not on the ground, allowed to graze at will both by day and night, as a rule. In the cultivating season they are grazed on the uncultured portions of land in charge of a herdsman; they are never stall-fed at any season. In Assam the system is the same, though after cutting the crops they are better off than in Bengal, as in this province only the ears of the rice are cut, and cattle are allowed to eat the rice straw which is left on the fields. Bullocks belonging to Europeans are stall-fed. The limited area on which cattle can graze during the cultivating season, together with the amount of work required of them, unite as causes of their low condition at this time.

Watering.

Cattle are not watered systematically. In Bengal *boossie* (rice husk) is a marketable commodity and is stored for market. In Assam it is not marketable, and is given to cattle, and even stored in houses for that purpose and given indiscriminately to bullocks and cows.

Fodder.

Question.—Can you give the names of the different kinds of grass upon which the cattle feed in the different districts visited by you?

Answer.—In Bengal cattle feed principally on the *doob* grass, which grows on the ridges between rice fields, and which also grows luxuriantly amongst the rice stubble; in the Soonderbuns they also feed on the young shoots of *ooloo* grass, a coarse species used for thatching. In Assam cattle feed on a coarser variety of *doob* grass; there is also a still coarser reed grass from 6 to 14 feet high, on the leaves of which cattle feed. After the subsidence of the inundation, when all other pasture is dried up, cattle feed on a coarse rank grass which grows in pools where water has lodged. Here also a kind of plant called *korkutchu* grows, which in times of scarcity of other food cattle eat. Cattle are never stall-fed, except by *gowallas* and well-to-do ryots. In these latter cases they get mustard, oil-cake, chopped straw, boiled rice, *boossie*, and chopped plantain stems and other boiled vegetables. As to water, they obtain it from tanks, rivers, stagnant pools, fields in the rains, and khalls.

Water.

Herding.

Question.—Are cattle ever herded for the purpose of taking them to other districts for pasture; if so, whither, what distance, and at what season?

Answer.—Not, that I am aware of, in the districts in which I have had experience.

Condition.

Question.—What is the general condition of the cattle in the districts visited by you?

Answer.—Both in Bengal and Assam I have found cattle, as a rule, in as bad a condition as they could be; if possible, the Assam cattle worse than the Bengal. Cattle belonging to Europeans and rich Natives are of course in better condition. I attribute the general low condition of cattle to their being badly fed, overworked, and uncared for, as also to neglect of a proper system of feeding.

Importation.

Question.—How is the stock kept up in the several places visited by you?

Answer.—In Bengal and the Sunderbuns, mainly by importation of cattle from other districts. In Assam mainly by breeding.

Breeding.

Question.—Be good enough to give details as to the breeding of cattle in those places where the stock is kept up by breeding.

Answer.—There is no system of breeding. No special bulls are kept or imported, or even selected for breeding purposes. Bulls are allowed to associate indiscriminately with a herd of cows both in Bengal and Assam. In Bengal you generally see 2 or 3 bulls to a herd of cows (20 to 30), while in Assam there is almost an equal number of bulls and cows,

owing to the system which prevails in Assam of not gelding bulls till they are two or three years old, or until they are wanted for sale. The demand for bullocks not being great, there is a large number of bulls, even old bulls. The increase of cattle by breeding in Assam has been in excess of the local demand. There is no exportation from Assam.

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Question.—Be good enough to give details with regard to importation.

Cattle trade.

Answer.—In the Sunderbuns and those parts of Lower Bengal where the demand is greater than the local supply, cattle are imported from other districts, namely, Midnapore, Orissa, Chota Nagpore, and Sonthal Pergunnahs. Large numbers of cattle are imported from the Upper Provinces for draught and dairy purposes. In Assam buffaloes are imported from Lower Bengal and a few bullocks of the larger and better kind by Planters. In Bengal, they are imported in the months of April, May, June and July by road, by means of dealers, and sold at *bâts* held sometimes weekly. In some places, at certain seasons, there are large cattle fairs (*e. g.*, Ooluberia, Dum-Dum, &c.) In Assam buffaloes are brought from Lower Bengal by the Trunk Road before and after the rains (January to March). The Planters' bullocks are generally brought by steamer.

Question.—Please describe the mode in which local dealings in cattle are conducted.

Markets.

Answer.—By local markets and private sales, both, in Bengal; but in Assam I have not heard of any cattle markets; all interchange of cattle is made by private sale.

Question.—Please inform the Commission whether there is any trade in hides in any of the districts visited by you; and if so, how conducted.

Hide trade.

Answer.—In Lower Bengal there is no doubt that a great trade in hides is carried on. The way in which it is carried on is this: a Chamar takes from a Zemindar the *tika* of all or certain of the villages belonging to his Zemindaree, for which he pays a certain rental which entitles him to the hides of all the cattle which may die in those villages. That same Chamar has dealings with some factories in Calcutta or elsewhere where the hides are collected for sale or export, and in case of necessity he receives advances from the owners of those factories through a broker, who travels through the districts for the purpose of effecting contracts and making advances. During the last 5 years the demand for hides has considerably increased, the consequence of which has been that more people have entered into the trade; and the competition being greater, the price of hides has greatly increased. Five or six years ago a score of hides could be bought for Rs. 10; now Rs. 30. I would here mention that between the Chamars and the brokers there is a regular bond drawn up to the effect that so much money has been advanced on the condition that a certain number of hides of different values (according to what class the hides supplied came under) are supplied. There is no mention of any payment, except in kind, and the consequence of this is, in my opinion, that, especially in healthy seasons, a great deal of poisoning goes on; though I also think that the prevalence of the disease does not entirely do away with the temptation for the use of poison, as the price of the hide of an animal killed by poison is much higher than that of an animal which has had a long and lingering death. I referred to different classes under which hides were sold: they are these,—first, slaughtered—*hullatee*; second, died from natural causes, amongst which those poisoned are included—*murdah*; third, those which have died from long and lingering diseases by which their hides have been injured, and which are called *dagee*. There is but a very small difference in the price of the hides of the two first classes, whilst the price of the *dagee* hide is comparatively very small.

Varieties of hides.

I have myself seen one of the contracts entered into in the hands of Bycuntoo Chamar of Purumpore, in Jessore; my report of the 14th September 1869, to the Magistrate of Jessore, contains all particulars. I believe this report has not as yet been published. The hides have to be supplied within a certain time, so that if they cannot be got by fair means, there is no doubt that the Chamars have but little hesitation in resorting to foul. The number of dealers in hides in these parts, I am of opinion, has increased to an enormous extent, and where five years ago there were two traders, there are now six. The right to collect the hides of a village are considered as binding as the right to collect the rents of these villages, and can be, and are, sued for in Courts. The hides are all collected for the Calcutta markets, to which place they are exported by all means, *i. e.*, rail, road, and river. In Bengal there are also markets held weekly for the express sale of hides and leather, and I have noticed that in the vicinity of these markets the cattle disease has been worst—Rajah Hatti, Kulpee, Magoorah. In Assam there are no Chamars, and there is no sale for hides or any leather trade. My report referred to above will also give all the information regarding the poisoning of cattle.

Contracts.

Question.—Can you give the ordinary mortality among cattle in the districts you have visited, or the mortality by plague?

Mortality.

Answer.—No, I cannot, as no register is kept of the ordinary mortality; and with regard to deaths from plague, I could only report of those villages which were visited by me.

Question.—What is your opinion as to the nature, source, cause, and mode of spread of the Murrains cattle murrains you have had experience of in Bengal and Assam?

Answer.—In my opinion, the disease is a low, malignant sort of fever, of a typhoid type, in some particulars resembling the small-pox in a human being, highly infectious and contagious,

Hide markets.

Nature of disease. and in every respect resembling the disease known as rinderpest in Europe and the Steppes of Russia. As to the source of the disease, I am of opinion that it is indigenous to the country, being retained in the low, swampy lands of Bengal and Assam, and only awaiting favorable conditions of season and climate in which to show itself. When once thus developed, it spreads of itself by contagion and infection. There is nothing to show that the disease has been introduced into the country, though it may be and is introduced from one district to another. I cannot give the immediate cause of the disease. The disease is spread by every possible means, such as herding together, absence of segregation of healthy and diseased cattle, neglect of burial, cattle and hide trade, cowherds and owners of cattle passing from one land to another, &c., &c.

I have never seen a case of rinderpest as known in Europe; my knowledge of that disease is from what I have read in reports and books. I explain the smaller mortality in this country compared with England by the circumstance, that here the disease is indigenous as in Russia, where the mortality is also less, whereas in England the disease was imported. I have found that healthy cattle imported into an infected from a sound district always exhibit severe symptoms, and die off in greater numbers and more rapidly. I found this statement on personal experience in the 24-Pergunnahs. I have also observed that a plague-imported into a sound district is more severe than it has been in the affected places.

Season. *Question.*—What are the seasons in which plagues are found to prevail in Bengal and Assam, and are not drought or scarcity of water and food causes?

Answer.—I find that plagues generally break out just before the rains (from April to June), when there is scarcity of food, and the cattle have to eat the rank grass that has grown in pools, and after the rains, when the inundation has subsided, and there is much decay of vegetable matter. Foot and mouth disease generally occurs during the rains, and I attribute it to the cattle standing in dirty, muddy, and filthy sheds. The cattle murrains that I have met with in the three districts that I have visited have been *gootee* (known under different names, such as *puschima*, *dukina*, *burra rog*, *seella*, &c.) and a few cases of foot and mouth disease (*khoorah*).

Question.—What has been the general duration of murrains which have come under your notice?

Answer.—The Diamond Harbour epizootic raged, I believe, from April 1868 to January 1869. I say *believe*, because I did not go there till August. The Jessore and Sunderbuns plague from May to October 1869, and the Assam plague from April 1869 to the present time.

Statistics. *Question.*—Can you give the number per cent. of cattle attacked in a district where *gootee* has prevailed, also the number per cent. of recoveries of those attacked, and number per cent. of deaths; lastly, number per cent. not attacked?

Answer.—I cannot give any approximation for a whole district, but I should say in a herd of 500 cattle, 300 (60 per cent.) would be attacked; of these 300, about 75 (25 per cent.) would recover and 75 per cent. die. This is taking a general average, for I have found invariably that the mortality is greater at the commencement of an outbreak than towards the termination, whether the disease breaks out spontaneously or is imported.

Liability to attack. *Question.*—What kinds of cattle are most liable to disease with regard to breed, age, sex, and condition?

Answer.—I found pregnant cows more liable to attack by the disease, and have noticed that they always abort. As regards breed, age, and condition, I find that these circumstances make no difference. I have observed, however, that buffaloes attacked with *gootee* seldom or never recover, even when treated.

Symptoms. *Question.*—Will you be so good as to describe the symptoms of the murrain *gootee* as observed by you?

Answer.—I have given all the information I possess on that subject in my published reports, to which I beg to refer the Commission.

Post-mortem appearances. *Question.*—Please describe the *post-mortem* appearances of cattle that died from *gootee*.

Answer.—Same answer.

Question.—Have you observed in any of the *post-mortem* examinations perforation of the fourth stomach or bowels?

Answer.—I have observed in three cases (a buffalo and two cows) perforation of the fourth stomach from ulceration, which in those cases extended into the small intestines.

Question.—In what condition have you found Peyer's patches and the solitary glands of the small intestines?

Answer.—I have invariably observed Peyer's patches enlarged and ulcerated at the margin, in common with the surrounding mucous membrane. I have sometimes noticed an issue of purulent fluid on pressure. I have sometimes found the solitary glands of the small intestines enlarged and surrounded by a ring of congestion, but not invariably. These appearances were best marked in three *post-mortems* of buffaloes (one wild and two tame) which I made in Assam.

Plates I and II appended to Dr. Murchison's report to the English Cattle Plague Commission remind me of what I have seen.

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Question.—What is your opinion of the contagiousness of the different varieties of cattle murrain you have met with, and be good enough to state your reasons for holding the opinion, at the same time giving any detailed proofs of contagiousness?

Answer.—My opinion is that *gootee* is decidedly highly contagious among cattle and buffaloes; I also consider foot and mouth disease contagious. In support of these opinions, I would state the following circumstances derived from my own experience:—

1st.—I have watched the spread of *gootee*, and found that it spread from village to village and along a certain tract of country.

2nd.—I have observed instances of importation of the disease by cattle having been brought from an affected district. The best instance of this is the case of a sepoy of the 42nd Assam Light Infantry, who brought some cows (2 cows and 2 calves) from Golaghat to Debrooghur in the month of May 1869; at that period there was no cattle disease in Debrooghur, while it was raging severely at Golaghat. He was 8 days on the journey; he arrived at Debrooghur on the 16th May, the cattle looking healthy; these were taken to the lines of the regiment. About a week or 10 days after this, one of the cows in question took ill and died within three or four days of the attack. A cow belonging to a sepoy, which lodged in an adjoining shed, took ill and died of the disease. A third cow died, and immediately afterwards the disease became general, until about the 28th of June the disease prevailed in a most virulent form among the whole herd of sepoys' cattle; about this time the disease became general in the civil station. When I arrived here (18th November) there was no disease in Debrooghur or the immediate vicinity of the station, though there were some cases in the district about the end of November. Before my departure for Suddya, a man came to me and informed me that a buffalo he had just purchased (the day before) at Debrooghur had taken ill in his village, which was about two miles off on the opposite bank of the Debroo river. I went to the spot and found the animal to be suffering from the plague: I then learnt that the animal had come from Seesaugor, it having come to Debrooghur together with 6 others brought for sale. At the time these buffaloes left Seesaugor the disease was raging at that place. It had been 3 days on the road, and had been sold the day after its arrival. Five days after I had seen this sick one, 4 out of the other 6 took ill in Debrooghur itself, and the remaining 2 having been sold, I could not trace them. The 5 which I saw died of the disease. I made *post-mortem* examinations of 2 out of the 5, and those are the appearances which I have referred to above.

3rd.—I have also known of a case in the 24-Pergunnahs in which the disease was communicated from one place to another by a man. The facts are these:—the man lived in a village near Kulpee in the Sultanpore Thannah jurisdiction; the disease was raging at the time in his village, and he had lost his two bullocks of it; he went to the village of Korunjully, a distance of about 3 or 4 miles from his village, where there had not been and was not any disease. This was in the latter end of August 1868. He went to the village with the view of purchasing a bullock, and for this purpose looked at one and handled it all over, but for some reason or another eventually did not purchase it; 3 days afterwards that very bullock was taken ill of the plague and the disease spread through the whole village. I saw the dead body of the first bullock, and can therefore say that it died of the plague.

4th.—Whilst in the 24-Pergunnahs I purchased 3 healthy animals, 1 heifer and 2 bullocks, for the purpose of experimentalizing on them. I placed the heifer and one of the bullocks in two sheds, at a distance from one another; I inoculated the bullock with the saliva of a diseased animal, mixed with the matter obtained from a pustule in the mouth of the same diseased animal. I introduced the saliva and pus mixed together into the inner part of the left ear by means of a lancet; 81 hours after inoculation the animal began to look dull and refused his food. I looked at the ear, but could not find any change or inflammation. The following morning I saw him again between 9 and 10, and observed that the ear was slightly inflamed; the animal was gradually showing greater signs of distress, which went on increasing till the third day, when pustules were observed in the mouth, and then running from eyes, nose, and mouth, and diarrhoea set in, which plainly showed that *gootee* was developed. The animal died the next day before dysentery had set in. On the *post-mortem* examination of this animal, I found all the appearances of *gootee*. With regard to the heifer which I had inoculated with some of the faecal matter of a diseased animal in the dysenteric stage, and which I introduced into the point of the tail, it showed no signs of having taken the disease till eight days after it had been inoculated, and the disease did not fully develop itself till four or five days more. It ran through all the different stages of the disease, and eventually recovered, being still alive; though last November, more than twelve months after the first inoculation, I again inoculated it with the matter obtained from a pustule on the tongue of a diseased animal. I inoculated the animal in Calcutta, having obtained the matter some months before in Jessore, and which I kept between two plates of glass. I inoculated it on this occasion in the ear, but up to date she has not shown any signs of having again taken the disease.

Inoculation.

The third bullock I inoculated also in the ear with water, in which a piece of skin taken from the inside of the thigh of a diseased animal, and on which there were three pustules, had been soaked for twelve hours; there was an ounce of water in the glass. About the fourth day the animal looked dull and refused its food for about a day, after which it recovered and showed no further signs of sickness. I afterwards sold the bullock and lost sight of it.

Treatment.

Question.—Have you treated many cattle affected with the *gootee*; if so, with success or not?

Answer.—I have treated a great number of cases, I should think upwards of 10,000, in Bengal and Assam. My treatment has been as noted in my official reports to Government; but I would wish to add that in Assam I have tried carbolic acid in conjunction with quinine, 10 drops of Culvert's No. 5 to 20 grains of quinine, doubling the dose in the case of buffaloes. My experiments under this treatment have been partially successful. I tried it in 20 cases, and I find that out of them 9 recovered and 11 died; they were all real cases of *gootee*, and were taken in the first stages. I also tried hyposulphite of soda in 20 other cases; out of them only 7 recovered. I gave two ounces of the medicine every three hours during the day, and found that the animal on an average died or recovered in from three to five days. I also tried after administering physic (in about 13 cases) giving carbolic acid the first day, and from the second day onwards a tincture of the betel leaf—*pawn*,—1 lb. of leaf steeped in 2 quarts of spirits of wine, let stand for 14 days. I gave 1 oz. doses every 3 hours; of the 13 cases, 5 recovered, 6 died, and 2 are convalescent. From my experience of the medicinal treatment of *gootee*, I have arrived at the opinion that it is of comparatively little value in combating the disease *gootee*. I have tried sedatives (bhang and opium), stimulants (spirit, turpentine, ammonia), aperients (salts, castor oil, linseed, &c.), astringents (catechu, alum, &c.), disinfectants (carbolic acid, Condy's fluid, and hyposulphite of soda), tonics (quinine, chiretta, and gentian), antispasmodics and carminatives, (asafoetida, ginger, &c.), and am unable positively to affirm that the disease is materially influenced by any of these agents. I don't know of any specific for *gootee*. I tried *karee neemuck* without success, both as a purgative and prophylactic. I can say the same of *counter-irritation*.

Sanitary measures.

Question.—What would you recommend in the event of any future outbreak of *gootee*?

Answer.—I would rely mainly on sanitary and preventive measures, and secondarily on medical treatment.

Question.—Have you any experience of the sanitary treatment of *gootee*; and if so, what measures have been employed, and with what result?

Answer.—I have had experience of the sanitary treatment of the epizootics which I have witnessed. The first thing I have insisted upon is the separation of sick and sound, isolation of infected villages, and removal of healthy cattle. I have then insisted upon the utmost cleanliness of both sheds and animals, sulphur fumigation, and disinfection by chloride of lime and carbolic acid, burial of carcasses with hides scored, and burning of litter, manure, &c. I have been thus able to check the spread of the disease and limit it to the affected village. I have done this in all the places I have been at, and when my instructions have been carefully carried out, the result was always satisfactory. I experienced great difficulty in getting these instructions carried out, owing to the apathy and prejudices of the inhabitants, especially in Assam; and unless the Legislature interferes, I have no hopes of the inhabitants of Bengal spontaneously adopting any sanitary or preventive measures.

Other animals.

Question.—Have you had any experience of animals other than cattle being affected by *gootee*?

Answer.—I have found and dissected the carcass of a wild buffalo, and proved that it had died of *gootee*. This was near the road side on the Doderali, as I was travelling from Nafuk to Sebsaugor on the 28th of December 1869. Disease prevailed in the vicinity among tame animals. I have also seen a tame deer belonging to a native between Sebsaugor and Nazeerah affected with the disease. It died, and I examined it; I found the same appearance as I am familiar with in *gootee*. I have heard, but not seen, that wild boars, tigers, pigs, and jackals have been affected and died of *gootee*. I have seen it in a tame pig in Sutrajeetpore. The animal had diarrhoea and a cutaneous eruption.

Infection of man.

Question.—Have you known of a case of a human being being affected with *gootee* by contagion?

Answer.—One of my Salootries in Jessore in making a *post-mortem* examination accidentally cut his finger. He fevered a few days afterwards, I can't say how many, and his hand and arm swelled and pimples appeared upon them; he lingered on for about a month and eventually recovered. Ulcers formed on the arm; they were small and about quarter of an inch in diameter.

Epidemics and epizootics.

Question.—Has any epidemic prevailed amongst human beings during the time of the epizootics being prevalent?

Answer.—No epidemics have prevailed during the prevalence of the epizootics of which I have had experience.

Question.—Have you observed that changes of weather, such as heavy rainfalls or extreme heat, have influenced the course of the disease?

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H. Farrell, Esq.
Rain.

Answer.—I have observed that a heavy rainfall checks the disease, but if not sustained, the disease breaks out again. In extreme heat I have found that the disease assumes a milder type, and is more amenable to treatment.

Question.—Have you known of any case in which an animal having survived one attack of *gootee* has ever been again attacked with the same disease?

Second attack.

Answer.—I have known many cases of animals which have had *gootee* suffer from it again when exposed to fresh infection. My impression is that such cases are milder than the first attack. I refer particularly to the village of Binudpore in Jessore. The disease appeared here at the commencement of the outbreak (May) and returned in August. Three animals which had suffered on the first occasion got it on the second occasion and recovered; 24 which also had had the disease did not become affected by the second attack. Animals which had escaped the first time were attacked the second time.

Question.—Will you favor the Commission with any other remarks you may wish to offer?

Carbolic acid.

Answer.—I wish to mention that Mr. Fisher, Manager of the Assam Co.'s Gardens at Nazeerah, near Sebsaugor, treated his garden bullocks (up-country) with carbolic acid 10 drops, and asafoetida solution one ounce, according to my circular issued by Government. Of 21 cases treated on this plan, he only lost one. I saw several of these cattle.

I would also state that up-country bullocks belonging to Planters recover better from the disease than indigenous cattle. I attribute this to their better condition and care.

I would name as persons likely to give information,—Rev. Mr. Higgs, Mr. H. Hannay, Mr. Comber, Mr. Wagentreiber, and Mr. R. Eames.

Extract from a letter from J. LYELL, Esq., Tea Planter of Bisnath, to the Deputy Commissioner of Durrung,—dated 19th November 1869.

DURRUNG.
J. Lyell, Esq.

During last rains the disease was very bad, and some of our imported cattle were attacked, when I adopted the following treatment:—I had the beast tied up in a house by itself and supplied with grass, on which a little water was sprinkled, but allowed no water to be given to drink until symptoms of amendment made their appearance, when I gave a little lukewarm water. As soon as the beast was tied up I gave it half a bottle of brandy or rum, in which half a tolah of opium was dissolved, and if after a few hours no improvement was perceptible, repeated the dose, but gave only about half of the first quantity. Under this treatment every one of the imported cattle that were attacked, perhaps a dozen in all, recovered, but one, and it unfortunately got loose and drank water, when it fell down and died in a short time. An Assamese buffalo recovered under the same treatment.

Treatment.

When the disease attacked my own herd of milch cows, I pursued the same course, but with much less success, the cattle being of the native Assam breed. Of those attacked, about half recovered only; but I am inclined to attribute the cause of so much mortality to a number (nearly all) of those that died being cows heavy in calf. Most of them calved prematurely and then died; but for their having been in this condition, I believe I should have saved a much larger number.

I have been informed by the natives that buffaloes imported from Bengal did not suffer from the disease, and certainly it fell lightly on our imported buffaloes, the above being the only death out of some 120 head I have. Why the disease should have been confined almost entirely to native cattle and buffaloes, is a question worthy of inquiry.

Bengal cattle.

From H. FARRELL, Esq., Veterinary Surgeon, on special duty, to the Deputy Commissioner, Khassia and Jyntyah Hills,—dated Shillong, the 21st February 1870.

SHILLONG.
H. Farrell, Esq.

I have the honor to submit for the information of the Commissioner of Assam a report on the nature of the disease that has appeared among the cattle in the station and vicinity of Shillong.

I arrived in the station on the forenoon of the 19th instant and commenced immediately to make my enquiries. The disease is the ordinary foot and mouth disease of a very mild type. It appeared some fifteen days ago first among some cattle belonging to a Punjabi settler called Heera Sing. As all the cattle are herded together for grazing, and the sick cattle are allowed to mix with the others, the disease was soon communicated and spread all over the station and in a few villages in the immediate neighbourhood.

I have been unable to find out how the disease was first communicated to Heera Sing's cattle, but I have no doubt in my own mind that it must have been imported from below, as it suddenly appeared, ran its course, and gradually died out.

SHILLONG.
H. Farrell, Esq.

I have seen twenty-three cases—all convalescents—recovering from the attack, and in all the effect of the disease was very slight,—a few pustules on the tongue, palate and gums, excoriation between the clefts of the hoofs; in others it was noticed round the coronary ridges. In some cases the mouth alone was affected, and the feet escaped. I ascertained that about two-thirds of the cattle in the station and villages were attacked with the disease and recovered with the exception of three,—two cows and a calf; the number of cattle in the station and villages round amounting to some three thousand odd.

I could learn of no fresh cases, and as none had appeared for a week, I can only conclude that the disease has died out and entirely disappeared.

ASSAM.
H. Farrell, Esq.

From H. FARRELL, Esq., *Veterinary Surgeon, on special duty, to the Secretary to the Government of Bengal, Judicial Department,—dated Calcutta, the 2nd April 1870.*

I now do myself the honor to report as briefly as possible the result of my proceedings in Assam in connection with the cattle disease which raged in that province during the past and commencement of the present year. The communication quoted in the margin conveyed the instructions of His Honor the Lieutenant Governor for the investigation, &c. It was evident from the various letters received from the Commissioner of Assam, that the outbreak was causing great mortality amongst the animals and much anxiety to the community, especially to the Government officials and tea planters.

Route.

2. Assam is not reached with facility or safety except by the route of the river Berhampooter, and by the steamers which move up and down that stream bi-monthly. I made my arrangements to start from Kooshtea by the Steamer *Nepaul* on 15th October, but owing to some disarrangement of her machinery, and the intervention of the Doorga Poojah holidays, she did not start until the close of the month. In the interim, I had procured a passage by the Steamer *Progress*, which, contrary to my expectations, did not start from Kooshtea before the 30th October. I took with me a good stock of medicines, and was accompanied by five good Salootrees.

Serajgunge, &c.

3. It was the 8th November, *i. e.*, nine days, before the steamer reached Gowhatty. During that period there were stoppages at Serajgunge, Kallygunge and Gowlparah, where I made every inquiry regarding the distemper, and found that it did not then exist at any of these places; but that it had appeared in the early part of the year to some extent, and was well known as an occasional visitant for numbers of years previously.

Gowhatty.

4. As before stated, the steamer reached Gowhatty on the 8th November, when I reported my arrival to the Commissioner, and was informed by that officer's Personal Assistant that I had better proceed to Debrooghur, Luckimpore District, where the disease was more prevalent than in any other part of the province. At Gowhatty I found that the most stringent sanitary and preventive measures had been taken by the civil authorities, under instructions from His Honor the Lieutenant Governor. Dr. Purves, the Civil Surgeon of the place, had reported on the outbreak, and had afforded very valuable advice to the authorities.

5. My chief duties were therefore, as directed by the Lieutenant Governor, to obtain as intimate a knowledge as possible of the nature and symptoms of the disease by close personal inquiry and observation. Before leaving Gowhatty I placed at the orders of the Deputy Commissioner two Salootrees with a quantity of medicine, in case any necessity should arise for their services in the district. I was fortunately enabled to proceed to Debrooghur in the Steamer *Progress*, in which I had arrived at Gowhatty. On the way the steamer stopped a short time at each of the following places:—Mungledye, Tezpore, Koliabar, Bishnath, Kokeelah Mookh and Dekho Mookh; but the stay was so short that I could not obtain any information except at Tezpore, where, I was informed, the distemper was then raging in the district, and that preventive measures had been adopted under the orders of the civil authorities as far as possible.

Debrooghur.

6. My arrival at Debrooghur on 18th November was duly reported to the Deputy Commissioner, and I commenced the required investigation. I found that the military had also been very active in their measures for preventing the spread of the rinderpest, and for cleanliness and the separation of diseased from sound animals, &c., &c., and I cannot do better than submit in original a memorandum* on the subject, received from the Station Staff Officer, Captain FitzG. Cologan, which gives full particulars of the proceedings in cantonments under the orders of Colonel Thomson, commanding.

* Dated Debrooghur, 20th November 1869.

Origin of disease.

7. The disease was first observed about the middle of May, a sepoy having brought a few cows into the station from Golaghat, an infected district, some seven or eight days' march from Debrooghur. About that time there were in possession of the inhabitants of cantonments, Europeans, sepoys, hospital establishments, &c., about 958 head of cattle, of which 614 head died by the middle of November. During my stay at the place I visited every quarter of the station and neighbourhood, giving such advice and assistance as was in my power. I witnessed the good effects of the admirable arrangements made by the civil and military authorities. Notwithstanding a great mortality ensued, not only in the station, as shown above, but in the

neighbouring villages, the inhabitants of which commenced driving their sick animals into the station to save themselves the trouble of burying and removing the carcasses. Elephants were much employed in this latter work at first, but the mortality continued so great for a month or more, that burying the animals had to be given up, and their removal to the centre of the river by rafts or canoes became necessary.

8. Some time in August, cattle that had been removed across the river were allowed to return to the station, the distemper having apparently disappeared. As an instance of how it is disseminated from village to village and district to district, and what little precaution or forethought is exercised by the owners of cattle, I will relate an occurrence that came under my personal observation in Debrooghur. A villager reported to me that one of his buffaloes was sick at a village three miles across the river; I visited the place, and discovered that the animal was suffering from rinderpest, and that there was no other animal in the place affected then, or for some time previously, from which I was induced to make inquiries regarding the particular buffalo, and found that the villager had recently purchased it from a herd of five brought from Sebsaugor. Although he knew the disease was in that district, he excused himself by stating that the animals were all apparently in a healthy condition; however, the animal died, and affected others in the villages and neighbourhood. On my return to the station from the village, I sought out the remaining four buffaloes of the herd, to see whether the man's story was truthful, and fortunately found that the animals were not affected, on which I took measures to have them well looked after and prevented from leaving their shed; yet within a week three died and one was abstracted.

9. In the course of my inquiries regarding Sebsaugor, where the murrain was very prevalent and mortal, I learnt that cattle owners were in the habit of clandestinely removing all the animals they could remove to Debrooghur for sale, and that cattle from Debrooghur were sent to the other side of the river to the churs to graze, on which I suggested to the civil and military authorities that animals should be prevented from crossing and from entering the station at all, unless their healthy condition was beyond question. By placing a police guard at the Dehing Ghat on the Borally, it would command the Sebsaugor and Debrooghur Districts. The suggestion was acted on. Police were likewise placed at the outlets of the station for a similar purpose.

10. The Deputy Commissioner, Captain Gregory, having gone to Suddya, I made arrangements to follow him and to visit the several tea planters on the way, in view to collect such information from them as I could obtain on the subject of my general inquiries.

11. At Lohal I met Mr. N. White, whose plantation is on the borders of the Madar-khat, a large tract of country inhabited by the Muttacks, a stubborn, prejudiced race, who resisted all attempts to be assisted or advised in the matter of the cattle. The disease was very bad at the place and neighbourhood, and had continued for a long time with much loss; and I left two Salootrees with medicine to render such assistance as would be accepted. Mr. White most kindly promised them every help while they remained.

11½. Chubnah is the residence and plantation of Mr. Deacon. There was no disease prevailing at the time of my visit, but that gentleman informed me that it had been very bad at the commencement of the year, attended by the loss of much cattle.

12. Doom-Dooma, Mr. Wanent's Plantation.—Here also there was no disease at the time of my visit, but it had appeared slightly at an earlier period of the year.

13. Suddya is an outpost occupied by two companies of the 42nd Assam Light Infantry with its followers. There was no disease at the period of my visit, but the outbreak is not unknown, having visited the place some years back. Here I had a long conversation with Captain Gregory, the Deputy Commissioner, who gave me valuable advice on my movements, together with the information he had collected regarding the disease and its ravages.

14. I returned to Debrooghur by boat down the Berhampooter, and on the way visited several Kampti villages which were free from disease at the time; but the inhabitants informed me that it had prevailed during the early part of the year, and carried off much cattle.

15. From Debrooghur I proceeded to Sebsaugor, and on my way visited the Raj Mai tea garden, where Mr. Inglis resides. I learn from that gentleman that the disease had just appeared in and around the plantation; I therefore inspected many infected cases, and gave such assistance and advice as appeared necessary for the treatment of the animals.

16. Sebsaugor.—I found that the Deputy Commissioner, Captain Campbell, was in the district; I accordingly addressed myself to his Assistant, Lieutenant LaTouche, who informed me that the rinderpest was very prevalent in the station, bazaar, and throughout the whole district; every measure possible to take had been taken for sanitary purposes and for preventing the spread of the distemper. A large, dry and airy shed was set apart for an hospital, and people were cordially invited to send their sick cattle to it, with intimation that careful arrangements had been made for the treatment of infected animals. I also tendered such advice and assistance as appeared necessary.

17. The Revd. A. Cloike, of the American Mission, took a lively and active interest in the rinderpest, of which he has some knowledge; his attention was of course principally given

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Opposition.

to the cattle of the Native Christians, and those in the Mission compound, where the distemper was raging very badly. It is before mentioned that the Muttacks of the Madarkhat resisted all attempts to give them assistance or advice in the management of their sick cattle, but I regret to record that the resistance has been general throughout the province, with very few exceptions. At first it was partial, but when it became known that a Government officer was deputed to examine into and treat the disease, the people positively refused to let myself or Salootrees render any assistance, however small, stating that if English medicines were used their deity would, as a punishment, destroy all the cattle.

18. Meetings were held to invoke their deity against English treatment, and, what is most singular and extraordinary, well-to-do and well-informed natives were foremost and prominent in their objections and in raising an outcry against interference. A Native Inspector of Police, who can speak English fluently, declared in open court, when questioned by Lieutenant LaTouche whether I would be permitted to attend his cattle, that he would not allow me to treat them or go near them for fear of the vengeance of their "deity;" and again, intelligent natives, attached to the American Mission for fourteen or sixteen years, went with folded hands to their pastor, and begged him to prevent English treatment being adopted, as they had attended the general meeting, and were, in common with their fellow-countrymen, dreadfully afraid of their deity's vengeance overtaking them if they accepted the slightest assistance from the doctor sahib. In this state of affairs I was quite unable to take any very active part in the case of sick animals; but I can declare that every help that could possibly be given was afforded by the civil authorities, including the Police; yet cure was a failure, and cleanliness and attention to the cattle not willingly observed.

Nazeerah.

19. From Sebsaugor I proceeded to *Nazeerah*, about eight miles distant, to meet the Deputy Commissioner. Nazeerah is the head-quarters of the Assam Tea Company, of which Mr. Fisher is the head superintendent. The disease was raging in and about the Company's plantations at the time of my visit, and it had been very bad for a good while previously, with much mortality. Owing, however, to the energy and activity of Mr. Fisher and his assistants, who, acting on the warning and advice given in my circular issued under the authority of His Honor the Lieutenant Governor, had sheds erected for the sick cattle, personally superintended their treatment, using largely carbolic acid and sulphur fumigation, had the cattle separated and distributed in the most healthy places, carried out sanitary arrangements which were most useful, and in fact exerted himself so earnestly and intelligently that a good many of the infected cases recovered in a wonderful manner, considering the fatality usually attending the distemper, the total destruction of the cattle in the several plantations was averted.

Sanitary measures.

Up-country cattle.

20. It was observable at this and other places that the large up-country bullocks seized with rinderpest usually recovered, their great strength and stamina enabling them to resist the attack successfully; thus proving that improvement in the breed of cattle, and in the quality of those imported, would be one of the best preventive measures. In this Mr. Fisher and other planters entirely coincide; indeed they go so far as to consider it the first step in prevention; but of this more anon. It is also singular that the buffaloes on this estate and elsewhere rarely recovered when attacked, and that many other animals fell victims—pigs, goats, sheep, deer, and wild buffaloes.

21. After a stay of three days at Nazeerah, during which time I consulted and advised with Mr. Fisher and other inhabitants, I started by the Doodurali to visit the gardens along that road, intending to move on to Tezporé. The gardens Dhole Bagan, Cherided and Singabar are within a few miles of each other, and belong to the Assam Tea Company; the disease had appeared slightly at each of the places, but it was kept down by the assistants under the vigorous arrangements of Mr. Fisher.

Obhoypore.

22. *Obhoypore*, the plantation of Mr. Adams, had entirely escaped from the distemper, although unusual precautions had not been taken to prevent its appearance, and very strange.

Sonaree.

23. At *Sonaree*, two miles further on, Mr. Wagentreiber, the manager of the plantation, had lost all his cows and bullocks, about thirty in number. He had purchased a herd of goats at Sebsaugor, among which the distemper first appeared, carrying all off; the cattle were next affected, and died off. Between this place and Obhoypore I was delayed by my elephant running away and not returning, and as it was impossible to proceed without an elephant, I was obliged to return to Nazeerah to procure another, which caused me to make arrangements for proceeding among the Seoneeli and visit Jorehat instead of Tezporé.

Tehok.

24. *Tehok*.—Here I met Mr. Mawson, the manager of the tea plantation, and learnt that the distemper was not raging at the time, but that it had appeared in a slight manner some time previously, and was well known as a visitor of former years.

Jorehat.

25. *Jorehat*.—Here I met Captain Blathwayt, Deputy Commissioner, from Golaghat, and learnt that the rinderpest had disappeared to a great extent in and around the place, and that there was not much use in my proceeding there. At Jorehat there was no disease at the period of my visit, but it had been very bad previously. A dozen or more planters had just assembled for their annual meeting, races, &c., &c., and I had a good opportunity of conversing with them. They were unanimously of opinion that the precautions taken by them in the matter of the rinderpest were in a great measure rendered nugatory by the action of

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the inhabitants who resided around them and in their neighbourhood. They are described as thoroughly apathetic and careless, and utterly indifferent in taking measures for the spread of the infection. On the contrary, their manner of purchasing animals, and sending them from one place to another, is a main cause of outbreaks and mortality.

26. From Jorehat I proceeded to *Cinnomara*, the head-quarters of the Jorehat Tea Company. Here I had many conversations on the prevailing topic with Mr. Hattman, the manager of the plantation, went round the place with him, and visited all the neighbouring villages, giving such advice as I perceived was necessary. The rinderpest had appeared in them all some time before, but there was no sign of it during my movements. Having heard that the Cattle Plague Commission appointed by the Supreme Government was about visiting the province, I considered it necessary to return to Debrooghur in case my services might be required by the Commission; and as I could be of little further use in the districts, I accordingly retraced my steps *via* Sebsaugor, and arrived at the place in the beginning of January.

27. In and around the cantonments and the neighbourhood of Debrooghur the rinderpest was still prevailing to some extent, and the inhabitants were more determined than ever in their resistance to any treatment or advice offered by myself or Salootrees; to which effect I wrote to the Deputy Commissioner, Captain Gregory, and applied to the Commissioner for orders in respect of my future movements. That officer's Personal Assistant instructed me to await the arrival of the Cattle Plague Commission, which I did, and appeared before them on the 25th and 26th January, and was closely examined in connection with the experience I had gained of the rinderpest in the Bengal and Assam Districts I had visited. Having replied to all the queries put to me to the best of my ability, which replies, &c., will doubtless appear in the records of the Commission, and being informed by Mr. Hallen, the President, that he had no orders for me, and did not require my services any further, I made arrangements for returning to Calcutta, but could not leave for many days, there being no steamer or other means of proceeding available.

28. On my return at Gowhatty I was directed by the Commissioner to remain at the Shillong place, as my services were likely to be again required by the Cattle Plague Commission to inquire into a distemper that was reported by the Deputy Commissioner, Khassia Hills, to have appeared at Shillong. The Commission came to Gowhatty in due course, and communicated with Colonel Agn. w., the Commissioner, on the subject. They agreed that it was very advisable I should proceed to the hills. The necessary official orders were accordingly given to me, and I started for Shillong on the 18th February, and was glad to find, on arrival at that place, that the outbreak was a very mild type of eczema epizootica, or the common foot and mouth disease of horned cattle. There being no further use for my services on the hills, I reported my proceedings to Major Stewart, Deputy Commissioner, and having received his permission, I returned to Gowhatty and proceeded to Calcutta on the first steamer available, the *Burmah*.

29. The nature of a country having so much to do with the breeding, rearing, and use of cattle, &c., &c., perhaps it will not be out of place to say something of Assam as it appeared to me from the river, and during my peregrinations inland the entire length of the place, and inland through many parts of it. The province is an immense valley, hundreds of miles in extent; the length many times greater than the breadth; nearly surrounded by mountains; some of them plainly observable, are among the loftiest in the world, and are covered with perpetual snow; clumps of hills rise in many parts from the level of the valley.

30. The rivers and streams are numerous; the natives reckon above seventy. Vegetation is marvellous, principally forest and jungle; the soil is exceedingly fertile; earthquakes are not uncommon; wild animals of every description abound, and the larger are very destructive to human and to animal life, and to the cultivation of the ryots; the population, mostly Hindoos, is not very numerous, but there are signs of a far greater population, and of wide cultivation in olden times, long before the Burmese conquered and nearly ruined the country. It appears, however, to be steadily regaining its former prosperity under the rule of the British Government, which commenced more than forty years ago.

31. Tea cultivation in the province has gained great prominence of late years, and doubtless the money and presence of an intelligent and energetic body of European gentlemen has given great help to the exertions of the Government of Bengal in furtherance of the welfare and prosperity of the province.

32. But notwithstanding the great and extraordinary fertility and vegetation of the country, domestic animals—cows, oxen, buffaloes, horses, &c., &c.—are not indigenous to Assam generally. The greater numbers for use are imported from Bengal and Orissa; some are brought from the North-Western Provinces by the planters, of which more hereafter, and most of the buffaloes are a cross between the wild and domestic animals; nor do the miserable looking animals, to be met with almost everywhere, tell in favor of the pasturage, breeding, feeding, or care of the cattle, so that the rapid spread of the rinderpest, when it once gains an entrance into a place or district, is not wonderful.

33. The pasturage, however, appears to agree with the buffaloes, which are of a far superior description to the other horned cattle. The former chiefly feed on reed grasses, *kugree* and *ikora*, growing in the plains and jungles everywhere throughout the valley.

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Symptoms.

43. I will commence my general observations by remarking that a detail of the nature, symptoms, and treatment of the epizootic would appear to be unnecessary, as I found the distemper to be rinderpest of similar character to that explained in my two reports on Bengal, and in the circulars widely distributed throughout the districts comprising the Government of Bengal, by orders of His Honor the Lieutenant Governor.

HISTORY.

History.

44. Rinderpest has been known in the Province of Assam for many years previously to the assumption of the Government by the British; the common names are *gootee*, *burrarog*, *perangah* and *moier*. The greatest outbreaks appear to occur at intervals of eight and ten years, spreading far and wide, and attended with great mortality. According to many old inhabitants, the country is never free of the disease altogether, for it is to be found more or less in many parts every year. I could find no Government records of these outbreaks, or of the general tradition that the Burmese brought the distemper into Assam in their many aggressive irruptions into the country; but I came across an old Gossain, who produced a book written in the Assamese character, and read from it that in the year 1818 the Burmese invaded the country with a large army, and that soon after their arrival in Assam, a *burrarog* broke out amongst the army cattle, and destroyed them all, spread into the country, and committed similar devastation.

1818.

Introduction from
Burmah.

45. I see no reason to disbelieve the Assamese record, except that the destruction was possibly not so general as stated. It might, therefore, be safely recorded that the rinderpest was introduced into Assam from Burmah. Once introduced, it is but natural to suppose that the virus found a favorable habitation in the low, undrained, marshy soil of Assam, to appear in virulence whenever climatic influence proved favorable to its growth and development. The germs are spread from place to place, now at one part of the country, then at another, from causes which I have endeavoured to explain in other parts of this report, as arising principally from the carelessness, apathy and ignorance of the inhabitants.

Bengal buffaloes.

46. Some think that the rinderpest is periodically introduced by the large herds of bullocks and buffaloes imported from Bengal into Assam, but I do not agree with this opinion, because I believe that the large importation of cattle from Bengal is of comparatively recent occurrence, being coeval with the advent of the tea cultivation, which brought into the province a large number of European gentlemen as settlers and planters, from whom the demand for cattle in any numbers first arose. It is not however unlikely but that the large droves of cattle brought in by the dealers pick up the disease in Lower Assam, from travelling long distances, being out of condition from fatigue and ill-feeding, predisposing them to the poisonous influence of the infection more readily, and carrying it with them through the districts.

Mortality.

MORTALITY.				
These figures are entirely from official records.				
Kamroop	...	...	...	7,234
Durrung	...	...	...	1,888
Nowgong	...	...	...	5,321
Sebsaugor	...	...	...	1,54,531
Luckimpore	...	...	...	8,685
Total	...	...	...	1,77,659

Cautions.

47. These figures look marvellous, but must be received with caution on account of the known exaggeration of the ryots and farmers; half or even one quarter of the figures would be nearer the mark. Judging from experience, and looking at the report from the station of Debrooghur, which no doubt records the number of animals actually in possession of each individual at the commencement of the outbreak, and each individual's loss at its close, the manner of recording the number of deaths is not trustworthy; the mouzahdars and police between them report all the casualties, and they are obliged to depend almost entirely on the villagers, who do not scruple to tell untruths when it suits either their interest or purpose. To make any sort of a reliable report, the mouzahdars and police should visit every cattle owner, and have some verification of casualties when the numbers are suspicious; but considering that there are from sixty to seventy, or even more villages in every mouzah, it would take a considerable time to make such visits; but from what I could see and learn, they were not made, but were confined to general enquiries here and there among the villages in some cases, and no enquiries whatever in others—mere imaginary statements.

Exaggerated
accounts.

48. In illustration I will mention that, on one occasion at Debrooghur, the police reported that the mortality was alarming in the Jumeera Patar, some six miles from the station, the deaths being at the rate of ninety per diem. The report came to me officially, when I at once proceeded to the Patar, and inspected every village named in the report, but, to my astonishment, there was no distemper prevailing. On my reporting the circumstance to the Deputy Commissioner, it appeared so strange to that officer that he visited the villages in my company and that of the police functionary who made the report. To

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our great surprise the man did not even know the villages, nor had he any knowledge of the distemper; and, as I had stated, there was no sickness, no carcasses, or signs of burial; there were a few skeletons, but so bleached by exposure that it was impossible to decide how long they had been on the ground where they lay.

49. It appears that the over-zealous policeman had collected the names of a certain number of villages, filled in fancy numbers opposite each, and submitted the document as a reliable report. Such a circumstance as this just narrated causes suspicion to attach to almost every report. Reports cannot very well be verified, unless by a public annual record of every animal in possession of the inhabitants of each village, similar to that taken in the cantonments at Debrooghur. I attempted to take such a census at one or two places to prove the mortality, but I failed entirely. In another instance a mouzahdar from Golaghat reported that in his mouzah a crow, a snake, and an eagle had died of the disease; this man is either a wit or a cynic.

50. It is satisfactory to know that the great loss of cattle reported is almost counter-balanced by the abundant rice crop of the year, more fruitful than known for many years. It was most fortunate that the ploughing was nearly over, and the seed in the ground, before the worst of the outbreak occurred.

51. The cattle in the valley appeared to me to be very numerous at all places and periods of my visits. From enquiry regarding certain families of Assamese and herds of cattle, I calculated that for every adult in the country there were fifteen head of cattle at least before the outbreak; yet the loss, to my observation, had not very much diminished the numbers. They appeared to be kept more for show than use. A very small number is engaged in ploughing, none in draught, except by Europeans, chiefly the planters, who generally suffered severely from the rinderpest; indeed, it was only their energy and intelligence that saved the remnants. The cows are not used for dairy purposes by the Assamese, yet the herds are numerous. The larger the herd, of more consequence is the owner; the cattle are never housed, but are allowed to wander wherever they like, and to pick up what food they can, until the sowing season, when they are collected and kept in the neighbourhood of villages until the harvest is over, when they are again allowed to wander. They are also allowed to breed and propagate indiscriminately. Many owners do not know the number of their herds or of their losses; they do not export cattle. When in want of money, one or more bulls are taken from the herd, castrated, and sold for whatever is offered for them. The hides are not used nor exported.

52. The hill tribes, Nagas, Abors, and others, eat the flesh of the ox, but will on no account drink the milk of the cow, as they consider it an excretion of the animal; they however kill it for sacrificial purposes.

PREVENTION AND CURE.

53. Sanitary and remedial measures are, if possible, more required in Assam than in Lower Bengal. It has been shown that the former may be enforced at least partially, but for the latter the inhabitants are not yet prepared, although many of them well understand the success of the planters in the treatment of their cattle, which are chiefly of the superior breed brought from the North-Western Provinces. The cattle of the country are a miserably weak, degenerate race of animals, brought to their present miserable condition by indiscriminate breeding in and in, and by the utter want of care on the part of the owners. The bulls are too numerous, and being principally young animals, the breed suffers. Accordingly, they are never castrated until two or three years old, and then only as a matter of necessity, to sell them for money when much wanted; nor are bulls ever killed for food or sacrificial purposes.

54. It will then be observed that one of the most important measures for eradicating disease would be improvement in the breed of the Assam cattle. For this purpose I would suggest a tax on all bulls above six months old, and in excess of the number required for each herd of cattle, which is about one in ten; and the importation of a superior breed of bulls from Upper India by the Government, for distribution throughout the country, in charge of officials and of the planters, who, I am certain, would willingly afford their cordial assistance. The services of the animals might be given gratis for at least three years, by which time I am convinced that so much good would arise that even the eyes of the Assamese would be opened to the advantage of having superior animals for the market and for use, and they would become importers themselves, and take more interest in the case of their cattle than they do at present.

55. No great expense would attend the purchase and removal to Assam of the animals; they could be picked up and carefully selected at small cost at the proper fairs and breeding districts of Upper and Central India; the planters and owners of large herds would feed the bulls in return for their services.

56. Sanitary and remedial measures could be enforced by law, but perhaps it would be preferable to gradually introduce them by persuasion, and example when outbreaks occur. The establishment of temporary hospitals at central parts, for the reception of infected animals, would probably in time be attended with great advantage, when the natives become

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more accustomed to receive assistance. Salootree can treat cattle very well, agreeably to the instructions contained in the circulars on the subject, when taught and supplied with the proper remedies, and when duly controlled.

Quarantine, &c.

57. Future outbreaks might be looked after by having a separate body of men selected from the police in the first instance, appointed for quarantine, segregation, sanitary, and similar duties, with necessary powers for action. The police allotted for ordinary duties have too much to do to be able to give material assistance, or to be ready to afford help or advice when epizootics suddenly appear; moreover, they have not the necessary training, and are ignorant of the steps to be taken on such occasions.

Special agency.

58. Perhaps it would be possible to collect such a body in Calcutta, in addition to the Salootrees that may be maintained, not exceeding fifty in number, to be under proper control, for the purpose of being trained and kept ready for despatch to infected districts to carry out quarantine and sanitary arrangements, and with means at their command to give medicine, &c., whenever necessary. This might be done with very little additional cost, by choosing one or two men from each police district: they could probably be spared without inconvenience or without replacing them. The suggestion appears feasible to me, but if not so to the authorities, it may be the means of prompting a better arrangement that would answer the purpose required.

59. Finally, I have much pleasure in noticing the very cordial and valuable assistance received by me from all the civil and military officers stationed throughout the country, and from the planters of every tea plantation visited in my tour. Personally, I had a good many difficulties to contend with from repeated attacks of (malaria) fever, which first assailed me in 1868 in the Diamond Harbour District, and which is not yet eradicated from my system; and from the perplexity and unusual expense attending the maintenance of one elephant and three ponies for baggage and conveyance from one part of the country to another. Travelling through many parts of the province, from almost impassable roads, is anything but pleasant, and at some places shelter is of the vilest description, so that I found it impossible to keep up the complete diary contemplated when I set out on the journey; consequently this report fails in many particulars which I would have brought forward under more favorable circumstances; but I have endeavoured to set forth truthfully what came under my personal observation.

DEBROOGHUR.

Memorandum of measures taken during the prevalence of the cattle epidemic in Debrooghur Cantonments for the preservation of the health of the troops in Garrison,—dated Debrooghur, the 20th November 1869.

Importation of disease.

In the beginning of May, Private Roop Narain Singh, 8th Company, Her Majesty's 42nd Regiment Assam Light Infantry, obtained a few days' leave to proceed to Golaghat to bring up some cows which had been given him by the father of a young woman whom he had taken into his keeping. He rejoined head-quarters, Debrooghur, about the 16th May 1869,

* This after a march of eight days. and brought five cows with him, all apparently healthy.* At the latter end of May one of the cows began to sicken, and this coming to the knowledge of the Havildar Major, he told the man to take his cows across the river and isolate them. The animal had a running from the eyes, and a little from the nostrils, ears sunk, and slight diarrhoea. It died within three or four days of its attack. About the same time a cow, belonging to Private Gopie Misir, also of the 8th Company, 42nd Regiment Assam Light Infantry, was taken ill and died. About the beginning of June—the exact date not being ascertainable owing to the death of the owner of the cow—a third cow died, and a number of cattle began to show symptoms of sickness, but no deaths took place till the 28th June 1869, when the disease assumed a virulent form, the deaths in the

	Cows died.
16th June	3
18th "	3
19th "	1
21st "	2
22nd "	3
23rd "	3
25th "	1
26th "	4
27th "	3
Total	22

interim being as per margin. On the 25th June the Superintendent of Police stated that he had heard the disease was in cantonments, and requested permission to ascertain the number of deaths that had taken place. On the morning of the 27th he brought to Colonel Thomson's notice that 19 cows had died the previous day. This was an error in the chowdhry's report to the police, for 19 deaths during the month, 19, the previous day's mortality, had been recorded. Dr. White coming to the Commanding Officer's house at the same time, Colonel Thomson asked him to examine the cattle in conjunction with the Station Staff Officer and the Superintendent of Police, and let him know what steps he would advise being taken. The three officers then proceeded to the regiment at bazaar and inspected the cattle passing from the cattle lines to the chur across the river to graze. Some 10 or 12 cows were declared by Dr. White to be suffering from pleuro-pneumonia, and at his recommendation they were at once isolated. On the 28th June, when the Station Staff Officer was going round cantonments, he found in the cattle lines a large number of sick cattle, all suffering with similar symptoms: foaming at the mouth, depression, and violent purging. By noon a number had died, some 10 or 12, and it became apparent that the disease was about to assume a virulent form. The matter was reported to the Officer Commanding, who ordered the Staff Officer to proceed at

once and see Dr. White, and ask his advice thereon. Dr. White recommended the immediate removal of all cattle from cantonments, and the isolation of the sick cattle. The Staff Officer was also sent to consult the Deputy Commissioner and Superintendent of Police, with a view to mutual co-operation in carrying out sanitary measures. The accompanying extract of station orders issued by Colonel Thomson will show the measures adopted in cantonments, and which were enforced most strictly. Three or four cases did occur of infringement of the regulations drawn up, and the owners in all cases met with severe punishment.

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Measures adopted.

The number of cattle that died on the 28th June amounted to 26 head, and 30 died on the 29th.

On the morning of the 30th June all cattle in cantonments, under a strong guard of one Havildar, two Naiks, and 18 Privates of the 42nd Regiment Assam Light Infantry, were collected and moved out of cantonments, a European Officer being specially detailed to see them taken away, and the measures directed in regimental orders of the 29th June duly carried out. The intention was to get the cattle on to a high chur of the Berhampooter, near the Mohona Mookh, but owing to the river having suddenly risen very high, the cattle could only be got on to a chur by the Mekla, and there they remained till the disease died out.

At first the cattle in cantonments were buried in pits, dug by the conservancy and regimental establishments; the carcasses were covered with lime and a layer of charcoal previous to the earth being thrown in to fill up the pits. But this, being in the height of the rains, and whilst the river was at his highest flood, had to be given up, water being found within three or four feet of the surface, and stopping all digging operations. Many blind wells also served for the purpose of burying the cattle in, all carcasses being well covered with layers of lime and charcoal before being finally covered over with earth. The regimental elephants were employed to go about cantonments and its vicinity, and drag away the carcasses of cattle that had died, the moment information of the death was given. The regimental sweepers were used for the purpose of tying the cattle to the ropes suspended from the bodies of the elephants for dragging purposes.

When it was found impossible to any longer bury the cattle, *mars*, i.e., two canoes joined together with a bamboo platform, were employed to receive the cattle collected at the bazaar ghat, between the military cantonments and the civil lines, drop down to the junction of the Mekla with the Berhampooter at the Mohona Mookh, and throw all the carcasses into the river. At this time, beginning of July, the average number of deaths amounted to about 70 head per diem, including the civil station, so that removal* to the Mohona was the only measure available, it being quite impossible to dig pits either deep or quick enough to bury cattle. Every portion of cantonments was visited several times a day by the Station Staff Officer, and every measure taken to preserve health in cantonments. Colonel Thomson's orders were imperative, to spare no pains or expense to preserve proper sanitation, and this was done, and every farthing in hand of the cantonment fund was expended in this way. Men had to be paid for working over hours, lime and charcoal to be bought at a time when it was most expensive, bamboos, &c., to be provided for the *mars*. This had the effect of saving the cantonment from cholera, whilst in the district and the civil station, I am told, it was quite epidemic. In cantonments two or three sporadic cases occurred, but nothing in the shape of an epidemic took place. Numbers of cows died in cantonments, which were not the property of any resident, they having been driven in by the owners and left to die there, to save themselves from having to adopt measures to remove the carcasses, which of course, being instantly removed, prevented any contamination of the atmosphere.

In conclusion, I would observe that almost every cow attacked by the disease died. To my knowledge two only escaped, one in my own compound, belonging to Captain Nowell, and treated by Dr. White, and another in the lines. The animals, when in a state of convalescence, had their bodies covered with spots like cow-pox, and when rid of this, they got worms in the ears and posterior, immediately under the tail. Except the cow treated by Dr. White, I know of no other attempt to cure being made, every animal dying within 12 or 14 hours of its being attacked. Those I saw ill, all appeared to suffer greatly from thirst, to allay which they dragged themselves to pools of water, and even to the river side. The cattle were allowed to return to cantonments on the 8th August 1869, though for the previous ten days no animal had died.

Extract of Station Orders issued by LIEUTENANT-COLONEL M. THOMSON, Commanding 42nd Regiment Assam Light Infantry.—(No. 101, dated Debrooghur, the 28th June 1869.)

Lieutenant-Colonel M. Thomson.

Consequent on an epidemic having broken out among the cattle, both in cantonments and in the civil lines, the Officer Commanding, in conjunction with the civil authorities, has been pleased to order the adoption of the following sanitary measures:—

1st.—All cattle, on being attacked by this disease, must at once be sent across the river to the Berhampooter chur, beyond the Mekla river. A *mar* will be placed there to help cattle across.

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Station Orders.

Any sick cattle found in cantonments will be confiscated, and the owners fined under the provisions of Act XXII of 1864.

2nd.—On the occasion of any cattle dying in cantonments, instant intimation to be given to the Station Staff Officer or to the Bazaar Chowdry, when measures will at once be adopted for the disposal of the carcasses.

3rd.—The Officer Commanding 42nd Regiment Assam Light Infantry will daily place at the disposal of the Station Staff Officer one elephant and all the regimental classies and sweepers for the purpose of carrying the carcasses of deceased cattle out of the station and having them buried.

4th.—Owners of cattle voluntarily allowing their cattle to die in cantonments, or in the civil station, and adopting no measures to ensure the speedy disposal of the carcasses, will be prosecuted under Section 268 of the Indian Penal Code.

5th.—In the course of a day or two a *mar*, bearing the quarantine flag (yellow), will, under the orders of the Police Officer of the District, patrol the river, receive over all carcasses, and carry them to the Berhampooter, where they will be thrown into the river.

6th.—The co-operation of the residents of cantonments is invited in carrying out these measures. Any one seeing dead cattle about cantonments is invited to make the same known to the Station Staff Officer or Bazaar Chowdry, in order that steps be at once taken for the removal of the carcasses.

Extract of Regimental Orders issued by LIEUTENANT-COLONEL M. THOMSON, Commanding 42nd Regiment Assam Light Infantry,—(No. 307, dated Debrooghur, the 29th June 1869.)

The whole of the cows belonging to the men in the regiment will be sent at early dawn to-morrow to the Mohona Mookh, under charge of a guard consisting of one Havildar, one Naik, one Lance Naik, and 18 Privates, and no cattle belonging to the regiment will on any pretext whatever be allowed to enter cantonments until the present cattle epidemic has ceased. The guard going down to the Mohona Mookh must be prepared to hut itself there.

The Officer Commanding is pleased to direct Lieutenant F. H. Alexander to go down to-morrow to the Mohona Mookh, and see that the guard huts itself properly, and that all diseased cattle are kept separate from those in health, and on his return Lieutenant Alexander will duly report that this has been done.

[For Abstract Return of stock and losses, see Appendix No. 3.]

J. B. White, Esq. *From J. B. WHITE, Esq., F. R. C. S., Assistant Surgeon, in Medical charge of Troops and Civil Station, Debrooghur, to the Deputy Commissioner, Debrooghur,—(No. 70, dated Debrooghur, the 2nd October 1869.)*

Carbolic acid. With reference to your demi-official of the 2nd ultimo, forwarding printed papers from Government regarding the treatment of cattle disease by carbolic acid, I have the honor to report that I have used it in ten cases of the epizootic within the last month. Of the number so treated four recovered and six died.

Result of trial. I am not, however, inclined to attach much importance to this trial. During the past six weeks the disease has not only abated in the numbers attacked, but also very much in virulence of type; many cattle have recovered lately without any treatment whatever; whereas during the early period of the outbreak none recovered without treatment, and few under the most favorable circumstances; moreover the plague which has recently visited this district is undoubtedly the true rinderpest, and in Europe in the treatment of this disease carbolic acid has been largely used, and with the best opportunities for watching its effects: the results, as I learn from the scientific journals, are not such as to justify its being regarded in any measure as a specific.

Memorandum by J. B. WHITE, Esq., F. R. C. S., Assistant Surgeon, 42nd Regiment Assam Light Infantry, and Civil Establishments, to the Deputy Commissioner of Luckhimpore,—(No. 2, dated Debrooghur, the 11th January 1870.)

In continuation of my letter No. 70 of the 2nd October last, I have the honor to report that since that date I have used carbolic acid in the treatment of the cattle plague (rinderpest) now raging in this district in 37 cases; of this number 28 died and 11 recovered. As the disease has not been for the past few months within easy reach of the station, I was unable to watch the effects of the remedy myself, and have to trust to the reports of a rather ignorant dispenser and the owners of the cattle.

So far as I can gather from their statements, the acid has a marked effect in diminishing the fetor of the discharges and breath, which is such a marked symptom of the diseases.

I would have continued further experiments with the remedy, but the arrival of Veterinary Surgeon Farrell at this station on the 18th November I conceived relieved me from this duty.

I have only to reiterate what I stated in my former letter, that I do not believe that it will prove a specific, nor indeed more than an antiputrid adjunct to other remedies.

Evidence of J. B. WHITE, Esq., F. R. C. S., Assistant Surgeon, 42nd Regiment, Assam Light Infantry, recorded 11th February 1870.

I have resided at Debrooghur during the past 12 years. The surrounding country is an alluvial or delta formation up to the foot of the hills. I should say that there are from 4 to 5 head of cattle to each house. The different breeds of cattle in the district are, 1st, native; 2nd, a few imported cattle; 3rd, buffaloes, the stock of which is mainly kept up by wild bulls. This accounts for buffaloes not having deteriorated in quality, which the cattle have. Bullocks and cows are worth now from 10 to 12 rupees per head. Ten years ago the price was probably 40 per cent. less. Male buffaloes are at present worth 32 rupees and females 80 rupees. Ten years ago these were worth half that amount. Cattle are employed for agricultural purposes from June to August, and again in the cold weather from September to December. Both bullocks and cows are used for agricultural purposes. There are very few carts in the district, but they are greatly on the increase in the neighbourhood of stations. Bullocks are not used for pack purposes; buffaloes are used for ploughing. Cattle are let loose to find their own food, and as a rule are not housed. There are about, on an average, two rich cows to each house in the district generally, but in the neighbourhood of large stations dairies are kept up containing from 40 to 200 cows. One-third of the cattle are used for dairy purposes, one-third for agriculture, and one-third constitutes a kind of investment, representing so much property; a man's social position being, as it were, determined by the number of cattle which he keeps. The mode of housing cattle varies; it chiefly consists of sheds which are as good as the owner's house; but the greater part of the agricultural cattle are not shedded at all. They are let loose on the large *pittars* (rice fields) when the crop has been removed, and remain there during the non-agricultural season. A cow-shed is generally raised a little, and has a thatched roof and walls made of bamboo matting; the cattle are, as a rule, allowed to feed themselves; sometimes rice chaff in small quantities is given to them. They are driven to water at neighbouring streams or jheels. The grasses on which cattle feed are called by the natives *doop*, *ooloo*, and others; but during the cold weather they feed upon the rice straw, which is left in root on the fields, and during this season they improve in condition.

I have never known of cattle being herded and driven to a distance of more than 10 miles for grazing purposes.

Cattle are herded both by day and night in the non-working season in the large *Herding pittars*, where they are congregated from the villages for miles round; also buffaloes, which are driven there for grazing, and also for the purpose of having them covered by the wild bulls. I know of no other herding except near the large stations, where they are obliged to be herded so as to prevent trespass.

Question.—Is grazing ground in the vicinity of a village or station, or in the instance of Common pasture, a large *pittar*, considered common?

Answer.—Yes, it is; for example the Kamiani *pittar* in the vicinity of Hurbath, on which 10,000 cattle might be seen at one time.

Cattle have greatly degenerated with regard to breed, and are badly nourished with regard to condition.

The stock is kept up—

1st.—By breeding; no special bulls are kept; the cattle are allowed to go about indiscriminately, the consequence of which is that when a cow comes on bulling, she is generally followed about by 10 or 12 young half-grown bulls, owing to the custom which prevails of not gelding the male animals till they are two or three years old. There is hardly such a thing as a full-grown vigorous bull, hence the deterioration in the stock.

2nd.—Importation is very small indeed, in fact need not be noticed. Some buffaloes are imported from Bengal; these are generally female buffaloes.

There are no hats or markets for cattle. Sales are generally made by private transactions.

There is no export of cattle from the district.

A small trade in hides has sprung up here within the last three or four years, within which time two or three Dacca merchants have taken it up and give the Chamars from Re. 0-8 to Re. 1-8 a hide. I do not know whether the Chamars take advances or not, but I fancy they do. These Chamars are, for the most part, time-expired coolies of the different factories.

DEBROOGHUR.
Effect of carbolic acid.

ASSAM.
J. B. White, Esq.

Locality.

Breeds.

Price.

Uses of cattle.

Housing.

Sheds.

Feeding.

Condition.

Herding.

Common pasture.

Condition.

Breeding.

Importation.

Markets.

Hide trade.

ASSAM.
J. B. White, Esq.
Mortality.
History.

The mortality ordinarily, owing to the little care that is taken of cattle, I should think, has been 10 to 12 per cent. per annum. It has been about 40 per cent. in those mouzahs visited by the disease.

The first recorded attack of murrain is the one of 1853, which has been fully reported on by Drs. Maclean and Long. The next was a partial outbreak in 1861 of a disease identical with the present one, but not so virulent in type. There have been other circumscribed outbreaks of disease in different localities in Upper Assam, but I cannot tell the nature of them. I should think that they were nearly of yearly occurrence.

Question.—Do you think that these local outbreaks, of which you speak as occurring between 1861 and 1869, were of the same nature as the present one?

Nature of disease.

Answer.—Yes, I think that they were; the disease is a contagious epizootic. The source and cause are unknown; the mode of spread is contagion.

Question.—Does the disease appear simultaneously over a large tract of country, or does it spread from village to village?

Answer.—You can generally trace its course.

Origin of disease.

Question.—You say that the disease has been almost of annual occurrence since 1861. Under these circumstances, do you look for it as indigenous to the province or to have been annually imported?

Answer.—I think it was originally imported, but for the last 17 years I look upon it as endemic or indigenous.

Question.—Then do you consider the originally imported germ or cause of the disease, whatever that may be, to be from time to time revived, or that the disease sprang up *de novo*?

Answer.—I think that the germ originally imported is from time to time revived from conditions of climate and soil.

Question.—Then you do not believe that this province has the power of producing this disease in the same way as the Russian steppes have of producing rinderpest?

Answer.—I do not think so. In confirmation of this opinion, I would mention that during my residence the disease has never been known in Suddya, which is an isolated spot.

Season.

Plagues generally first appear in May to August, the same months in which cholera prevails among men; but after the first outbreak they are unaffected by any change in the seasons.

Foot and mouth disease.

In the cold weather we have the foot and mouth disease yearly, which disease lasts four or five weeks.

Statistics.

As regards statistics, I can only speak of the present plague.

The proportion attacked was about 60 per cent. of those under my own observation, *i. e.*, in the military cantonment, where a census was taken; in the civil station, where no regular census was taken, the proportion as given was about 40 per cent. The proportion per cent. of recoveries was 12, and that of deaths was 85 to 88.

Liability to attack.

As regards liability to attack, both the buffaloes and cattle of Assam (which are our only breeds) are equally liable; the imported cattle (of which there are a few) are not so liable. Age makes no difference; the females are more susceptible. The ill-nourished cattle are more liable to take the disease than those better fed.

Symptoms.

The first symptoms observable are dulness and disinclination for food; after this follow drooping of ears, entire loss of appetite, staring coat, followed by discharges from all the mucous surfaces—eyes, nose, mouth, and vagina; there is high fever and great increase of temperature, heaving of the flanks, swelling of the tongue and throat, aphthous ulceration on the cheeks, tongue, and gums; great difficulty in breathing, in some cases cough; but this was not a general symptom; this was the febrile stage, which varied from 3 to 7 days, some cases running a shorter course; then followed the dysenteric or typhoid stage; there were frequent dysenteric discharges; tympanitis came on; extreme foetor of the breath and discharges, exhaustion, and death. I never noticed shivering, but I noticed muscular twitching; there was early suppression of milk. There was a cutaneous eruption in many cases, but not in all; sometimes it appeared to be vesicular, and at others scabby. I noticed it principally on the neck, back, and axilla; I observed it in about one-third of the cases.

Post-mortem appearances.

I held some 18 or 20 *post mortems*; my attention was chiefly directed to the thoracic and abdominal viscera. The appearances were as follows:—

Mouth.—Ulcerated patches on the tongue and cheeks, tongue swollen, pharynx and œsophagus, mucous membrane injected of a dark magenta colour; ulcerated patches in pharynx and aphthous deposit.

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The first three stomachs in most cases showed very little deviation from their normal condition. The 4th stomach was in every case congested, ulcerated in patches, and contained more or less puriform fluid of dark claret or magenta colour, of the same colour as the mucous membrane. The duodenum was also ulcerated, glands in some cases enlarged, in some the centres of ulceration. In the jejunum the same injected condition of the mucous membrane appeared; the Peyer's glands and solitary glands were enlarged, and on section presented a cream cherry appearance; base surrounded by congestion.

Large bowels.—The appearance was very much the same. Disease did not exist to the same extent as on the small intestines. The liver, spleen and kidneys, and pancreas in most cases, presented little deviation from their normal character. When the disease first appeared, and during the first six weeks of its prevalence, in every *post-mortem* I held, I found extensive traces of inflammation of the lungs. In the worst cases they were in a state of red *hepatization*. In those cases there was also effusion of lymph into the cavity of the pleura; latterly the signs of lung mischief were not so evident. In those cases in which the lungs were inflamed there was also pericardial effusion and endocardial inflammation. There was no disease of the valves or muscles of the heart; I might mention that in a lingering case, some time before death set in, there was gangrene of the lower part of the rectum and vagina.

This is the most contagious disease I know of, more so than small-pox or scarlet fever among human beings. I have known of a case of bullocks being brought into Debrooghur from a neighbouring factory, six miles off, where the disease had not existed, and not being unyoked or allowed to go near any cattle of the station where disease was then raging; but these bullocks became diseased five days after their return home, and so must have contracted the disease by simply passing over the roads in the station. Every care was taken to prevent their catching the disease; they were sent and returned by an unfrequented road, along a tract where little or no disease existed, and under the charge of a *burkundaz* (special messenger), and merely stayed for a quarter of an hour in my compound, where there was a large number of diseased cattle, though special care was taken that none of them should come near these bullocks. However, the ground and paths were covered with dysenteric evacuations of diseased cattle. After their return to their factory, they were attacked by the disease in five days. They were in a shed with 19 other bullocks, all of which were attacked and all died, with the exception of one; this shed was completely isolated, and the disease at that time did not spread to any other cattle in that locality, nor, indeed, did it till two months afterwards, when it was again introduced from Debrooghur, its track being easily traceable from house to house: this occurred in the Lawol factory, and about the same time an equally striking instance occurred in the Boghora factory.

Again, I would allude to the way in which the disease was introduced into Debrooghur. A sepoy of the 42nd Regiment brought a cow from Golaghat, where the disease was then rife, into cantonments, no disease whatever existing in Debrooghur or within a radius of 70 miles around it: this was in the month of June or July: the march occupied less than seven days. Shortly after this cow's arrival, the disease showed itself in her, and the next cow attacked had been tied near this animal; the disease gradually spread from this centre.

Question.—Are you aware of the existence of this murrain in North Luckhimpore before the arrival of the cow above referred to in Debrooghur?

Disease in North Luckhimpore.

Answer.—Yes, I was receiving official reports regarding it from my subordinate stationed there; but there was no communication between the portion of North Luckhimpore affected and Debrooghur.

Question.—Do you believe the disease there to be the same disease?

Answer.—Yes, identically the same; and it was introduced there from Nigrating, in the neighbourhood of Golaghat, I believe by buffaloes.

Question.—Have you ever heard of the contagion being carried from one locality to another by any other means or agency than that of cattle?

Answer.—No, I have not.

Question.—Do you believe that any other animals besides ruminantia can contract the disease?

Other animals.

Answer.—Yes, swine were attacked, and the disease ran a more speedy and fatal course in them than in ruminants; but I made no *post-mortem* examination. I do not believe that dogs or jackals contract the disease from eating diseased flesh.

Question.—As you say you believe this plague has been originally imported into this province, have you any idea when it was so introduced?

Date of importation.

Answer.—I cannot give any definite period, but it was anterior to 1853. I have heard it stated by the natives that prior to the outbreak of 1853 the cattle of this province suffered from two or three outbreaks. An interval of seven years occurred between each outbreak, and I am of opinion from what I heard that they were the same type of disease.

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J. B. White, Esq.
Increase of price.

Question.—You have stated that there is no doubt that the price of cattle has greatly increased of late years; do you attribute this wholly or only in part to the frequent recurrence of the plague?

Answer.—I do not think that the plague had anything to do with the enhancement of price amongst cattle, or, at any rate, very little. I attribute it chiefly to the large amount of money which has been thrown into the province, owing to the tea enterprise. When I first arrived in the province in 1858, tea speculation was only in its infancy. By that time the country had hardly recovered from the losses among cattle which occurred in the plague of 1853: yet at that time cattle were 50 per cent. cheaper than they were a few years later, after the tea mania had set in, and though cattle are very little employed in the cultivation of tea.

Treatment.

I have treated cattle affected with this plague during the present outbreak, and I am of opinion that if taken in the earlier stages treatment is efficacious, *e. g.*, I myself treated the Government cattle on this system, all attacked by the disease, and found that on the average 9 out of 12 recovered. I did not treat all alike. I treated according to the stage, *i. e.*, in the febrile stage I gave tartar emetic, calomel and digitalis; in the dysenteric stage, sometimes chalk and opium, and at others ipecacuanha and opium, the latter with more satisfactory result. The treatment was supplemented with nourishing food, such as soojee, conjee water, &c., &c. Under the orders of Government, I also treated many cases with carbolic acid and quinine in doses of half a drachm and one drachm every two hours. The result was not unsatisfactory, but it did not form a specific. But when I used the carbolic acid, the disease had assumed a much milder type, consequently I am induced not to put much faith on the carbolic acid; but I will always use it on account of its antiseptic qualities, in conjunction with the other drugs above alluded to.

Sanitary measures.

In the month of July last, when the disease first appeared, I suggested to the authorities, civil and military, that a police cordon should be placed round the sudder station, where we knew of the existence of the disease, in order to prevent all ingress and egress of cattle. The measure was so far successful that the disease was confined to the station and its environs for the first three months. It was only when the precautions were relaxed, because it was believed that the disease had almost disappeared, that it extended some 6 or 8 miles off the station *i. e.*, to Madarghat and Jameerah. I feel convinced that were it not for those precautionary measures first adopted, the disease would have spread generally through the length and breadth of the district within the first month of its appearance in the station, and the loss to the ryots would have been as great as it was in 1853. I got all the ghats (ferries) stopped, and guards put on bridges in every direction. In addition, all the cattle—affected and unaffected—were removed to the uninhabited *churs* of the Berhampooter; I also recommended the burial of carcasses. But after the first, second, or third day it was found impracticable, as the number dying was so great, and the amount of laborers at the disposal of the authorities so small; I then advised that the carcasses should be all collected and conveyed in boats and thrown into the Berhampooter; this was done.

Disposal of carcasses.

When cattle were dying from the disease, special precautions were taken to prevent the Chamars from removing the hides. Horns and hoofs are not made use of by the chamars.

Other animals.

Swine and deer I have seen affected with the disease, and a deer kept in the Debrooghur jail died of the same disease.

Cholera.

I know of no instance of man being affected by the contagion of the disease; the cholera and cattle plague were always synchronous.

Cattle plague in its milder form prevails now, and at the outbreak of plague, cholera appeared for two months.

Weather.

As I have observed before, when the disease has once broken out, I do not think that any change in the weather has any effect on it.

Introduction from Central Asia.

I wish to state, having seen it mooted in the public papers that it is possible that the disease could have been introduced from Central Asia across the Himalayan range, that no such communication exists or ever has existed, and I never heard of the plague existing amongst the cattle in the hills. I am certain that whenever it was first introduced into Assam, it was imported from Lower Bengal, because it has always worked up the valley from that direction in the case of every outbreak.

DEBROOGHUR. *Evidence of B. E. C. COMBER, Esq., Manager of the Burboorooah Tea Factory, Assam, recorded 10th February 1870.*

Description of locality.

The information which follows refers to Jameera Monzah, which is a pittar about 5 miles long by 2 miles wide, surrounded by numerous villages, and situated south-west of Debrooghur. It is used for rice cultivation, and there is also light jungle and grazing ground on either side of it.

Number of cattle in locality.

As regards the number of cattle in the locality and the number to square mile, no statistics are available. Cows are kept in great quantities for milking purposes; the bullocks used for cultivating the land are few compared with the total number.

The breed of cattle in this district has been allowed to deteriorate year after year, and no attempt appears to have been made to improve the breed. In-breeding has been permitted to any extent, and this alone will account for the small, weak, and generally useless class of cattle in the district, and is, I imagine, a great reason why they so easily succumb to the disease. BURBOOROOAH.
B. E. C. Comber, Esq.

Cattle are employed for rice cultivation, but the larger number I believe to be kept for milking only. The Assamese hold their social position in a great measure from the number of cows and buffaloes they possess. Uses for which cattle are employed.

Bullocks and also cows are employed in ploughing the *dhan* fields, but little used for draught purposes. The animals generally are allowed to graze either in the rice stubble or grass ground surrounding the villages, being housed in a rough shed during the night.

The Assamese care little beyond the actual possession of the cattle and are loth to sell milk. They also seem to use little themselves.

The cattle are collected in the evening and housed in a rough shed, each village having its own accommodation; in some cases I believe the cows share the owner's hut. Mode of housing.

The animals are sent to feed on rice stubble or at other seasons on grass land attached to the villages. I do not think there is ever a great scarcity of forage, and water is always procurable near villages. Mode of feeding and watering.

The grass and fodder obtainable in and about the villages consists of what can be found on the rice fields and the grazing ground adjoining. The grass is of a good quality (*doob* grass), and, I imagine, nearly equal to hay. Particular kind of grass and fodder.

There is no want of water in Assam; during the greater part of the year it is available all sides, and during the cold season each village is provided with wells. Water whence obtained.

Cattle are herded during the day and attended by boys, who take them in the evening to their several villages. Herd.

Cattle are, I believe, confined within a certain district, thus the Jameera pittar, surrounded as it is by several villages, affords pasture for all the cows and bullocks within the radius of the pittar.

The general condition of the cattle in Assam is decidedly bad, consequent, no doubt, on the careless system which prevails of allowing the animals to herd, and no precaution being taken to prevent in-breeding. General condition of cattle.

No attempt appears to have been made to improve the stock, and the young bulls are allowed to herd with the cows, a practice which of course causes the stock to deteriorate. Bullocks and buffaloes increase in value at the commencement of the *dhan* season, and it is natural to suppose that in consequence of the great mortality the price will be greater during the coming season. Stock how kept up.

There are no hâts (markets) near the villages. The people go to Debroo, which is six miles distant, to purchase and sell cattle. Markets.

There is no export of cattle from the district.

Export of cattle.

I have had no experience as regards the hide trade. All the cows that have died from the disease have, as far as I know, been buried at once with their hides on. Export of hides.

I made particular arrangements for a staff of men to bury the dead cows on the factory land.

The ordinary mortality amongst cattle is slight, but from my experience I do not think I am exaggerating in saying that from 50 to 60 per cent. have fallen victims to the plague. Mortality among cattle, ordinary and from plague.

The coolies at this factory owned 107 cows when the disease appeared; the amount now is reduced to 44, showing a mortality of 63, which is considerable; besides this, I have lost 6 out of 12 bullocks and cows belonging to the Company and myself. I am now writing of my personal experience, but I am told that the natives in the Jameera pittar, which is close to this, and comprises a number of villages, are considerable sufferers.

My experience does not extend beyond 1863, but I am told by the natives that in 1854 or 1855 an epidemic occurred, though, I am told, somewhat different in character from the present one, being more of the nature of cholera with pain; whereas in this instance there appears to be no pain, and the animal seems to gradually sink from disease. History of plague.

I do not think that there is any difference in the liability of cattle to attack as regards breed, age, sex, and condition. I have had experience of three different classes, *i. e.*, buffaloes, large imported cattle, and common Assamese cattle, and they all seemed alike liable to take the disease. Kind of cattle most liable to attack with regard to breed, age, sex, and condition.

The animal when attacked shows languidness, drooping of ears, and general debility, rough coat, want of appetite, but desire for water, apparently no pain, but discharge from nose and mouth, the skin is rough and also the hair. Symptoms.

BURROOOGHUR. Swelling of the tongue and throat, with difficulty in breathing, and cough were apparent in the later stages when diarrhoea had set in, and when, I imagined, there was little hope of saving the animal.

When diarrhoea set in, I found from my experience that there was no hope, and in each case the animal died, though chalk mixture and other remedies were applied.

The animal when attacked shows a decided inclination to lie down, or to rush to water, and appears generally restless, though evidently not in great pain. Extreme languor afterwards comes on, and violent diarrhoea sets in. I have never examined a body after death.

Contagiousness.

The disease appears to be most contagious. Every measure was taken at this factory; a guard was stationed at the main road leading to the villages; this was successful for a certain time, but from the circumstances of one diseased animal having escaped the notice of the guard and being allowed to herd with the factory cattle, the whole mischief was done. My plan was to isolate a diseased cow or bullock, and I provided separate houses for this purpose. The original bullock shed where the disease first made its appearance was dug out at least 2 feet, and lime and fresh earth supplied, my impression being that any deposit of mucus from the diseased animal would be prejudicial.

Treatment.

I am unable to give an opinion as to the treatment of cattle affected with plague.

Sanitary measures.

Measures should be taken to isolate the cattle as much as means will admit. If disease appears, the unhealthy animals should be immediately separated from the rest.

In every case where an animal dies it should be at once buried. I believe that, as a rule, the animal is buried as it dies.

I strictly carried out the orders of the Superintendent of the Company, by having a small force, say some five or six men, to bury the dead animals at some distance from the lines, so as to prevent unhealthiness in the cooly lines.

Prevalence of disease among other animals.

I have heard of goats having been attacked, but no other animals. I have not myself seen any attacked. I have myself a number of goats which were grazed with diseased cattle, but none of them were attacked.

Whether any epidemic prevailed simultaneously.

I do not think that the cattle plague has affected the health of the people in the district generally, and cholera and small-pox have not been more apparent this year than in others.

Mr. Comber having been provided with Form No. 4, as drawn out by the Commission, has kindly filled it in, and now produces it, after reading which the Commission put the following questions:—

Markets.

Question.—Is there any cattle market at Debrooghur, weekly, monthly, or yearly?

Answer.—No, there is no regular market, but at the different pittars the people meeting together talk over their respective circumstances, and thus come to know who have a surplus and who are in want of cattle, and thus dealings are transacted.

Second attack.

Question.—Do you know whether an animal which has once had the disease and recovered, is again liable to take the disease, or whether an animal which has once recovered is considered by the natives more valuable than others which have not taken the disease?

Answer.—It has never come under notice, so I cannot say. *2nd.*—I do not know that the natives make any difference.

Agriculture.

Question.—Do you think the agriculture of the country is likely to suffer in consequence of the disease?

Answer.—It is hard to say; at present I do not think that it has suffered.

Price.

Question.—Do you think the price of cattle will increase in consequence?

Answer.—Yes, I think it will next season.

Effect on stock.

Question.—Do you think that a sufficiency of cattle remain for agricultural and dairy purposes?

Answer.—Yes, I certainly think so, and in fact, as far as the disease has gone at present, I do not think that it has done much harm to the country, though it may raise the price of cattle for the time. The country was overstocked before, and now that there are fewer, it is likely that those left will be better looked after, and thus the breed improved.

Preventive measures.

Question.—If it was considered necessary for the Legislature to interfere, with a view to staying the spread of the disease, could you recommend any plan which in your opinion should be adopted?

Answer.—The only thing that I can think of is to introduce a strict system of quarantine in all places in which the disease has shown itself from the very commencement.

Question.—Do you consider the disease to be indigenous to the country?

Answer.—From what I have heard, my experience being limited to the present outbreak, I certainly consider that it is not indigenous, but imported.

BURROOOGHUR.
B. E. C. Comber, Esq.
Disease indigenous.

Examination of the REV. E. H. HIGGS, *taken at Debrooghur on the 10th February 1870.*

DEBROOGHUR.
Rev. E. H. Higgs.

Question.—What experience have you had with regard to the present and past cattle murrain in Assam?

Answer.—I have been in Assam for the last 19 years, during which time I have visited nearly every part of it, but have chiefly resided at Debrooghur, from which place I have made frequent excursions into the interior of Luckimpore District, both north and south. In 1854-55 I had experience of the murrain then prevalent. I had experience of it both in Debrooghur itself and also in North Luckimpore; in the former place only among domesticated animals, but in the latter both among domesticated and wild animals.

Question.—Do you think that the disease now prevailing is the same as that which prevailed in 1854-55?

Answer.—From external appearances I should say not.

Question.—What were the external appearances of the disease as it prevailed in 1854-1855?

Symptoms of 1854 disease.

Answer.—Running from the eyes, nose, and mouth, very high fever, great difficulty in eating, drinking, and swallowing, chiefly caused by the soreness of the mouth and tongue, the mouth looking as if it had been severely scalded, the tongue being covered with blisters, great congestion of the inside of the cheeks. I did not observe anything with regard to the roof of the mouth, but the throat in any case was as severely affected as any other part of the mouth; did not observe any external swelling. The feet got sore, commencing in the cleft of the hoof and gradually spreading all round the top of the hoof, which in some severe cases eventually sloughed right away. The external coating of the tongue also in some cases sloughed away. I did not observe other blisters on other parts of the body. After the first symptoms, *i. e.*, the running of the mouth, nose, and eyes, the bowels became relaxed; then a scanty green slimy dung came away, apparently involuntarily, and in the latter stages blood appeared mixed with the stools, with clots half bloody and half matter-like, and pain was evinced in the passage of these stools. During these latter stages the animal appeared to be in great pain, frequently getting up and down, looking round to its flanks, and when down extending his nose straight out and bringing, as it were, as much of its belly on the ground as possible. The stench from these dysenteric stools was very great. Animals attacked generally died in from two to four days, but I think some animals died even under the 48 hours.

Question.—Did you make any *post-mortem* examination of the cattle which so died, and if so, what diseased appearances did you find?

Post-mortem appearances.

Answer.—I made several, both in company with Dr. Maclean and also by myself, and found acute inflammation extending from the mouth down the gullet, all through the stomachs and bowels. I noticed particularly the condition of the fourth stomach. It attracted my attention specially, being more like the stomach of other animals, and its inner surface was not only intensely inflamed, but in some places ulcerated, the ulcers varying in size and in depth; in some cases the wall of the stomach having been perforated and the contents of the stomach in the abdominal cavity. The cells of the second stomach were in some cases found more or less damaged by the walls of the cells being broken into one another. The folds of the third stomach were found inflamed at their loose edges; the small bowels I did not examine, but the larger bowels were found in the same state as the fourth stomach, except covered with patches of orange and dark red color, and here and there were patches of bad fat-looking material adhering to the lining membrane. I did not examine the lungs, but Dr. Maclean found them, also the brain, very much congested.

Question.—In what respect do you consider the appearances of the present disease differ from those of the disease as it showed itself in 1854-55?

The present disease.

Answer.—With regard to the present disease, I can only speak of external appearances, and the great difference which I have noticed is, that in the present instance I have not noticed the great soreness of the mouth or feet. In the present disease the coat seems to stand on end much more than in the former attack. I have had but little opportunity of judging of the present disease, only having seen a few cases.

Question.—Where did the disease make its first appearance in 1854-55, as far as you can remember?

Origin of disease of 1854.

Answer.—We heard first that it was raging in the Golaghat District, and was introduced here by some men of the 42nd Regiment bringing up some cattle with them from that district to Debrooghur.

DEBROOGHUR.
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Of the present disease.

Question.—What do you consider to have been the origin in the present instance?

Answer.—As far as I have heard, it originated in the same way as the disease of 1854-55.

Question.—Do you consider the disease to be indigenous to the country, or do you think it is imported?

Disease indigenous.

Answer.—I am of opinion that it is often conveyed from one district to another, but I consider that it is indigenous to the country, inasmuch as I believe that it is always in some one or other part of the country; but when it is imported from one part of the country to another, it is always of a more virulent type in that place to which it has been imported.

Infectiousness.

Question.—Are you of opinion that the disease is infectious?

Answer.—As a rule, I certainly consider it to be infectious, but I have known of individual cases in which it would appear not to have been so, but those cases I think attributable to the fact of the individual animal not being susceptible to the disease.

Buffaloes.

Question.—Do you consider the disease more destructive to buffaloes than cows?

Answer.—Yes, the present outbreak I do, but in the 1854-55 outbreak I did not notice any difference. I know of a case this year in which one of my servants had 23 buffaloes, all of which died; he had also 25 cows, of which he lost 24, the other one only being saved through being separated from the rest.

Second attack.

Question.—Do you think that an animal which has once been attacked and recovered can be again attacked?

Answer.—I cannot say of my own knowledge, but the people have a very strong idea that they cannot; in fact, the people who have such an animal will not sell it, though other people may be and are anxious to buy it at three or even four times its original value.

Agriculture.

Question.—Do you think that the agricultural prospects of the country will suffer in consequence of the great mortality which has taken place among cattle?

Answer.—No, I do not think that it will,—that is, speaking of the country or district as a whole; it may fall very heavily on individuals, but the country at large will not suffer materially.

Increase of cattle.

Question.—Can you give us any idea as to the rate of increase among cattle in the country?

Answer.—It is very great. I can speak of my own herd which began with 20 cows, and at the end of 11 years I had sold 185, and besides these, of course, there had been the usual amount of mortality.

Breed.

Question.—Do you think that the breed of cattle can be improved in the country; if so, by what means?

Answer.—There is room for very great improvement, which might be effected if only the apathy of the people could be overcome. I myself was successful in rearing a superior breed of cattle from native stock. I showed them to the people and endeavoured to persuade them to follow my example, but though they were willing to pay me for my enhanced prices, they would not do anything for themselves.

Legislation.

Question.—Do you think that there is any cause for the Legislature to interfere in the event of another outbreak?

Answer.—Only in so far as to strengthen the hands of the local executive authorities, by making legal the measures which they have already adopted.

I would here add that in reference to my note book, I find an entry on the 16th February 1869 to the effect that up to date 10,000 cattle had been reported dead of plague. I mention this, as the cultivation of the rice lands does not actively commence till August, by which time the mortality must have increased, and yet, notwithstanding this, there has been a better rice crop than has been known for years, thus showing that as yet the agricultural prospects of the district have not suffered.

The following statement was handed by Mr. Higgs to the Commission when he attended to give evidence:—

Practically there is only one breed of cattle in Assam.

In 1851, cows in milk and plough bullocks were commonly bought for Rs. 4 to 6 per head. In 1855 they were double this price, and in 1860 they were Rs. 10 to 12. At present the price is from Rs. 15 to 30. In 1860 male buffaloes were bought at Rs. 10 to 12 each, and female for Rs. 25 to 35. At present male buffaloes are worth Rs. 30, and Rs. 150 to 200 can be obtained for a good number of female buffaloes, if young and in fair condition.

Uses for which cattle are employed.

Cattle are used chiefly for the milk they yield.

Compared with the total number of cattle in Assam, the number used for agriculture is very small indeed, and only during two or three months in the year.

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No cows are ever employed for agriculture or burden.

Cattle are seldom used for draught or burden, except for ploughing. When so used, their treatment is good. I have never seen an animal ill-treated by the Assamese. Ill-treatment of draught and plough cattle in Bengal is common enough. The cows and buffaloes are chiefly kept for dairy purposes.

The cattle are housed in huts similar to those occupied by the generality of ryots. Twenty cows are crowded into a space 12 x 10 feet, which is hardly ever cleaned out, and is generally 18 inches deep in filth.

The cattle have invariably to shift for themselves.

There is always a scarcity of forage for cattle in this part of Assam, except from December to June, when the jungle can be burnt and the cattle pastured in the newly springing grass. The grazing grounds proper cannot support the immense herds of cattle kept by the Assamese. There are no particular kinds of grass or fodder used, and there is no stall feeding.

As a rule, cattle are never herded at all. The cattle are driven out in the morning to go whither they wish all day, and are sought for in the evening if they don't come home by themselves,—that is, if they happen to be giving milk at the time, or if there is any alarm of a tiger being in the neighbourhood. Cattle are not herded and driven for pasture to other districts.

On the whole, the condition of cattle is tolerably good, and varies according to season.

The stock is kept up anyhow, the matter being left to Nature. No special bulls are kept, and the natives of this part of Assam would not use them if there were any, as I have proved by experience. There is no importation of cattle into the district.

There is no particular mode of buying and selling. The cattle are not usually taken about for sale. The buyer goes to search in neighbouring villages for what he wants; seldom goes far from home. Cattle are sold in greater numbers at the times of the revenue instalments falling due.

The only regular export of cattle from this part of Assam, and that only to a limited extent, is to the Mishmee Hills in the cold weather. The Mishmees buy up the old and worn bullocks at a cheap rate, Rs. 3 or 4 each; they say that they soon fatten in the hills, and that they then sell them to the Lham country.

There is no trade in hides.

Except from plague there is no mortality among cattle in Assam, barring old age. But at the same time a form of foot and mouth disease is always present, more or less; but the mortality caused by this is not very great, and beneficial rather than otherwise, as almost the only safety valve, preventing the cattle themselves becoming a plague.

The only cattle plague of which I have had any personal experience was that of 1854, an account of which by various people may be found in the Journal of the Agricultural and Horticultural Society of the time. I had a large herd of cattle of my own at the time, and took much trouble in treating the cattle of natives when attacked; and meeting with some success, I gained some reputation, and for some years, up to the time of my leaving Assam in 1863, was frequently applied to for treatment of cattle; and from this I am able confidently to say that isolated cases of foot and mouth disease in cattle have constantly occurred from 1854 to 1863, and also during the last two years. The present plague was markedly ushered in by an accession of cases of foot and mouth disease. Previous to 1854 I had not heard of any cases of cattle plague; but the natives informed me at the time that a similar form of disease prevailed periodically in about 20 years. This plague of 1854 was unmistakably what is called "foot and mouth" disease, and was introduced into this district from Golaghat by a detachment of the local regiment bringing with them on relief a herd of cows, according to their custom. The disease at the time was raging at Golaghat. The present disease was introduced into this district in the same way precisely. At the time of the plague of 1854, or rather just before it broke out here, there was nothing remarkable about the weather too; after it broke out here it was fancied that there was unusual drought, but the weather record regularly kept by me did not bear this out. The disease did not originate here; it was introduced, and was not perceptibly influenced by weather. The plague of 1854 lasted about 6 months.

It may be said that there is only one breed of cattle in Assam; my observation leads me to conclude that the young entire bulls and old decrepit plough cattle are most liable to be attacked, and least likely to recover. The young vigorous heifers not so frequently attacked, and less likely to succumb. I am speaking of 1854. This plague seems to have run right through whole herds without discrimination. The symptoms of the disease are as follows:—

Referring to the plague of 1854 or 1853, shivering was not observed; appetite was apparently good, but the animal was unable to eat from the state of the tongue; rumination ceased soon after attack; there was high fever, coat staring; discharge from eyes, nose and mouth;

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the tongue was swollen and eventually covered with small ulcers, and the outer skin sloughed away; the throat was swollen and highly inflamed; the breathing was very hard, and cough was not observed; great looseness of bowels was not observed, except in cases far advanced, and then generally blood and mucus were present; the secretion of milk was almost invariably quite suppressed; the posture was crouching, with neck stretched out at full length, and laid flat on the ground.

Post-mortem appearances.

In 1854 I examined very many bodies after death, with the assistance of Dr. Maclean, the then Civil Surgeon. I believe his report of the *post-mortem* examinations is to be found in the Agricultural and Horticultural Society's Journal. Shortly, we found the whole of the intestines, from the throat and gullet, right to the extremity of the large gut, highly inflamed and ulcerated; lungs inflamed, but not always; food not passed from first stomach.

Treatment.

In 1854 or 1855 I most successfully treated the disease then prevailing on an extensive scale. As soon as possible after the symptoms had shown themselves, I bled the animal copiously, according to its age, size, and strength; kept the mouth, nose, and eyes clean by repeated washing, occasionally with chloride of lime and water; encouraged the animal to suck rice gruel made with water in which hay had been boiled, and kept it clean and warm. This treatment was the only one found to answer, and not more than 5 per cent. of those so treated died.

Prevalence of disease among other animals.

In 1854 or 1855 the wild animals—buffaloes, deer, pigs—died in very large numbers during the plague. I speak from personal observation. I have no personal experience as to what has happened lately. A severe outbreak of cholera immediately preceded the cattle plague of 1854 or 1855, and cholera was prevalent also immediately preceding the plague of 1869-70.

Baboo Nobin Chunder Burooah. *Evidence of BABOO NOBIN CHUNDER BURAOAH, 2nd Grade Moonsiff of Debrooghur,—recorded 11th February 1870.*

Stock.

Loss.

Is a native of Jorehaut in the Sebsaugor District. Has lived for 30 years in Debrooghur; owns some 50 beegahs of land close to Debrooghur. Has some 20 head of cattle now; had some 80 head of cattle before the plague. Lost some 60 head; out of the remaining 20, 12 fell ill and recovered; they died in the months of September and October. Witness states,—the disease came to my land from the village of Kurriamaree, which had got the disease from Debrooghur, into which it was imported by sepoys' cattle from Golaghat. I saw the diseased cattle myself; the symptoms I noticed were,—refusal of food, swelling of throat, stupid appearance, drooping of ears, discharge from eyes, nose, and mouth, in which excoriations formed, great thirst, after a few days watery, offensive stools—in some cases containing blood—were frequently passed. They died after 5 or 6 days. Those which manifested an eruption (5 or 6 in 20) recovered.

Previous outbreaks.

In about the year 1856 many cows died of a severe disease like cholera, which was characterized by purging and rapid death. Previous to that, while Assam was under Native rule, about the year 1722, (*Secabda*), a similar disease to the last prevailed in Sebsaugor. I heard this from my forefathers.

Foot and mouth disease.

Between these outbreaks, foot and mouth disease, which generally breaks out in the month of August, has prevailed annually. It is called *soboka*, *khurpakka*, and, *khooah*.

Price.

The price of cattle of all sorts has risen much.

A cow which would now cost Rs. 24, would cost Rs. 8 ten years ago.	
Bullock " " " 20 " " 6 or 7 " "	
She buffalo " " " 150 " " 60 or 70 " "	
He buffalo " " " 40 " " 27 " "	

Cause of increase.

I attribute the rise of price to the loss of cattle; other articles, such as mustard oil, rice, &c., have also risen in price. This is owing to the influx of Europeans and the greater demand for articles and larger amount of money brought into the country. This, no doubt, also assists in raising the price of cattle. A rupee now is much cheaper and less valuable than it was. After 1856 the agriculture of the country did not materially suffer.

Agriculture.

I am of opinion that there may be some inconvenience in cultivating this year, but manual labor will supplement that by bullocks. The same amount of land is cultivated now as formerly.

Infectiousness.

I consider the disease highly infectious; I separated my cattle without effect, but to no great distance; but I know of an instance in Deorgaon, when a man (Housedhur) on hearing of the approach of the disease sent his buffaloes to a distance of one day's journey. They all escaped; I consider therefore that this is an effectual method of preventing the disease. I know other instances: one Jeynoor of the Debrooghur bazaar, who saved 6 buffaloes by sending them across the Berhampooter. The Sheristadar did the same and saved his cattle.

Quarantine.

I think that it would be an excellent measure if, in future outbreaks, a village attacked with disease should be placed in quarantine, and cattle not allowed to enter or leave that village.

I am of opinion that the disease can be conveyed by man. The disease existed in a place called Sahnah Koti, and as long as the cowherds were prevented coming to Debrooghur, no disease appeared then; after the men came, in spite of orders to the contrary, disease broke out in Debrooghur.

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Baboo Nobin Chunder Burooah.

Conveyance of disease.

I have heard that swine and deer were attacked by the disease. I have seen a tiger which was found dead during the prevalence of cattle disease. Ulcers existed on the mouth, and the thighs and tail were covered with excrement. I know of no medicine for the disease. I think that if segregation is effectually carried out many cattle may be saved.

Swine and deer. Tigers.

Examination of H. E. S. HANNAY, Esq., of the Hannay Tea Estates,—taken at Debrooghur H. E. S. Hannay, Esq. on the 11th February 1870.

I reside at Debrooghur, where I have been since the commencement of 1860.

Locality.

I can only give any information with regard to the country round about Debrooghur, say for a distance of 3 or 4 miles. The soil is clayey.

I should say that on the average there are 13 or 14 cattle to a house; this does not include buffaloes, which, as a rule, only belong to the rich men in the village, though there are generally a good many of them in each village. I can give no idea as to the number of cattle per square mile.

Number of cattle.

The only breeds are the common Assamese cattle and buffaloes; the latter are for the most part bred up here, the wild bulls generally being the sires of the young stock.

Breed and value.

Before this plague came, I do not think that the price had changed much during the last ten years, but since the plague set in the price has greatly increased, especially with regard to plough bullocks, which are worth more than double what they were before the plague,—i. e., those that were worth Rs. 25 a pair before the plague, are now worth at least Rs. 60, no matter what the size. With regard to cows, there is not much difference. With buffaloes the difference has been in the same proportion as with the plough bullocks.

Cattle are used for ploughing, dairy, and draught, such as pulling in timber and bamboos for the building of houses, as also firewood. Carts are not used by the natives, and the few that are used belong to Europeans.

Uses of cattle.

Agriculture is carried on from February to the end of March, and from May to the end of July. Bullocks and buffaloes are used for agricultural purposes. I have never noticed a cow being used, not even a barren one. I have never seen any bullocks or other cattle used for pack work. The cattle used for ploughing are generally taken to work at daylight, and after two or three hours' work they are let loose for the rest of the day to pick up what they can; at night they are taken home and housed, but I am not aware that they are fed during the night in any way. The dairy cows are treated in much the same way as the plough bullocks, that is to say, they are turned loose to graze and brought home at night. They are not milked till 10 or 11 in the day. I can't say what the proportion of the different kinds of cattle is: a man will only keep enough of bullocks to plough the land he cultivates, whilst he will keep as many cows as he can get, whether he wants the milk or not, just to say that he is the owner of them.

The cattle are either kept in half of the owner's own house, or there will be another house for them very similar to that in which the owner lives. The sheds are made of bamboo sides and thatched roof.

Housing.

The food of the cattle consists of simple grazing in the jungle, or after the rice crop is cut in the pittars. I do not know that any of them are stall-fed. With regard to water, they go to any place where it can be got; if a river is near they go to it, if not they go to the nearest ditch: I have never seen water being drawn for cattle.

Feeding and watering.

The grass which cattle feed on is, as a rule, the *dob* grass off the Government roads, also the young shoots of *ooloo* grass which spring up after the jungle has been burnt.

Cattle are, as a rule, herded during the day, and at night shut up by their respective owners,—that is to say, all the cattle of a village generally feed in the same ground during the day. I do not think that they are herded and sent for grazing to other districts, nor do I see any reason why they should; as a rule, each village having sufficient pasture ground for its own cattle for the whole year, though of course the cattle in the low land villages come badly off during the rains.

Herd.

The general condition of cattle is, I should say, as a rule, not bad; but the cold weather is the worst time for them, except in those places near swamps, which then afford capital pasture lands.

Condition.

DEBROOGHUR.

H. E. S. Hannay, Esq.
Stock how kept up.

The stock is kept up, not by importation, but by breeding, which is carried on indiscriminately, all the animals, of whatever sex, being turned out together and allowed to breed in-and-in as they like, no special bulls being kept for the purpose.

I do not know of any importation going on, with the exception of a few female buffaloes which we imported from Bengal; I cannot say at what price they are sold, but I should think a male would be worth about Rs. 20 or 25.

Markets.

There are no cattle markets about here: all the purchases are by private transactions.

Hides.

There is no export of cattle, nor of hides, the Assamese not trading in them. There are no dealers in hides.

Mortality.

In ordinary years I should say that the percentage of deaths was very small, and am of opinion that as many are killed by wild beasts as die from natural causes. In the plague I should think that from 50 to 60 per cent. died.

History.

As regards the history of murrain, I cannot say anything of my own knowledge; but the old factory servants tell me that some 12 years ago there was a plague of a similar nature, though not so severe as the present one; they say that it came from lower down the river.

There is no doubt that the present disease was introduced into this district by some buffaloes brought up from Golaghat. I do not think that the disease is indigenous to this province, but am of opinion that it is always imported from some place or other. I have never heard of any plague having existed here prior to that which I have referred to as having occurred some 12 years ago.

I do not know of any other plague existing among cattle. I have not seen anything of the foot and mouth disease, though it may sometimes appear during the rains. There is another disease which affects the tongues of the cattle, but that the Assamese can easily cure for themselves.

I cannot say whether different varieties of plagues are apt to prevail at different seasons, as this is the first outbreak I have seen.

Liability to attack.

I should say most certainly that the buffaloes suffered most from this murrain, even including the wild ones. Of cattle, we have only one herd. I do not think that age or sex makes any difference, though I do think that poor condition tells after one animal has been attacked, but at the same time do not think that it renders the animal less liable to attack.

Symptoms.

The symptoms of the present murrain are,—want of appetite, rough staring coat, drooping ears, running from the nose, great thirst, so much so, that the animal generally made its way to the nearest water, where it stood and drank till dysentery set in, when it shortly afterwards died. Did not notice any shivering. The skin is covered with little sores, the hair coming off, showing the skin covered with scales. I did not notice any swelling of the tongue or throat. I observed heaving of the sides and cough. There is looseness of bowels and passing of blood. I cannot say whether there was any change in the secretion of the milk. The animal stands in a dejected position, with drooping head and a great disinclination to move.

Contagiousness.

The disease is highly contagious; my reason for so thinking is that I have one garden which is entirely cut off from the surrounding country by a large pittar, the only access being by a private road of my own, passing my Manager's house. He refused to allow any ingress or egress for cattle, and the consequence was that no disease showed itself in that garden, though it was raging all round. After a long time one of the cows belonging to the garden accidentally got out and crossed the pittar on to the Debroo side, when a watch was kept to prevent its return, but its owner brought it back during the night by a circuitous route through the jungle; within two days of its return, the disease broke out in the garden and carried off nearly every head of cattle in it. I cannot say whether the cow that strayed was the first to die or not, but there is no doubt that it introduced the disease.

Treatment.

I treated my cattle with tartaremetic, opium, calomel, and digitalis, from "Stonehenge on Dogs," giving an increase of the dose named for dogs. I treated a great many by distributing pills among the coolies. I know of 13 recoveries. Diet consisted of only warm water.

Sanitary.

Cleanliness was attended to, sick were kept apart from healthy, specially at grazing time, and I had all the carcasses buried. The whole animal was invariably buried.

I have noticed pigs die of the disease,—I have seen this myself,—but not wild animals.

I have known a cooly eat the meat of a cow dead of rinderpest, the carcass having been buried about one day, without bad effect, so far as I know. The disease does not generally prevail at present, except in one out-factory of mine.

Legislation.

Question.—In case of any future outbreak, do you recommend interference of Legislature?

Answer.—Yes, certainly; the local authorities should have the power of enforcing such measures as may seem to them to be necessary in order to stay the progress of the plague by infection. I believe that the present outbreak would have been attended with greater loss had

not the Deputy Commissioner adopted measures which to a great extent checked the spread of the disease; and, as Justice of the Peace, I saw that such measure were carried out in and about the mouzahs near my several factories; but it should be observed that these measures were not strictly legal. I would also advocate the appointment of duly qualified individuals to act as Inspectors of Cattle, and they should submit periodical reports to the Magistrate on the state of health of cattle. I would certainly recommend that no Assamese Mouzahdars should hold such an appointment, as from their apathetic nature their reports cannot be relied upon.

Question.—What is your opinion as to the contagious or infectious powers of this cattle plague?

Answer.—I believe that by a sound animal feeding on the same pasture, living in the same house, and inhabiting the same shed with the diseased animal, he will contract the disease; but I do not think that the disease can be caught by a sound animal walking over the ground traversed by a diseased animal. In the instance of my own cattle, I was particular in having them kept apart from diseased cattle, which were to be seen all about the neighbourhood; but my cattle had to walk over the same ground in the neighbourhood of my house, and not one of my animals became diseased.

Question.—Do you believe that much loss has been or will be sustained by the late outbreak?

Answer.—No, I do not; because it has not gone over the whole province. The agriculturists who may require bullocks or buffaloes for ploughing can obtain a sufficient number, and there is a sufficient number in the country: indeed, I believe before the plague there were too many. There will be no harm done at all in any way; the country at large will not suffer: a few individuals may.

Statement supplied by CAPTAIN J. F. FITZG. COLOGAN, *Adjutant, 42nd Regiment, Assam Light Infantry,—dated 22nd February 1870.*

ASSAM.

Captain J. F. Fitz G.
Cologan.

Locality.

The following information applies to the Debrooghur cantonment.

The soil consists of clay with a substratum of sand.

The number of cattle in cantonments before the plague broke out was 940.

Number of cattle.

The cattle are all Assamese, bred in the districts round about; their average value is Rs. 20. They cost Rs. 10 per head ten years ago, and now from Rs. 15 to 30 and 40.

Breed.

Value.

Cattle are entirely kept by the men of the regiment and residents of the bazaar for the sake of the milk; about 100 cows in the bazaar and Futtagaon are kept, the milk being sold to residents in the station for food and butter, and also to the *halwaies* for sweetmeats.

These cows are housed in sheds made of bamboo, *ekra*, and grass, about 12 feet in length, 10 feet in breadth, and from 7 to 8 feet high.

Housing.

Cattle are grazed and fed with common rice boiled and *kalai*, and taken to the Debroo river to drink.

Feeding & watering.

The kinds of grass are known as *doob*, *chob*, *khur*, *khuggra*.

Cattle are herded by day in the cantonment pasture lands.

Herding.

The general condition of cattle is above the average of Up-country cattle.

Condition.

The stock is kept up by breeding in-and-in; there is no importation of cattle.

Stock how kept up.

Cattle are bought and sold by private dealings; there are no hats or markets where cattle are disposed of.

Buying and selling.

The mortality among the cattle has been till the plague broke out about 1 per cent.; since the plague appeared about 66 per cent.

Mortality.

Reports say that the plague visited cantonments about 10 or 12 years ago, but of this there are no official records. The recent plague answers the description of the Russian rinderpest. It spread by contagion it is said. It broke out in June 1869, and continued in the cantonment to the end of July. It has been known to exist in the neighbourhood up to the present date.

History.

The statistics of cattle plague in cantonments are shown in the appended form.*

Statistics.

No breed, age, sex, or condition of cattle seem exempt; buffaloes and cows appear to have suffered equally.

Liability.

The symptoms observed were those usually assigned to rinderpest.

Symptoms.

The cantonments were cleared of all cattle, and the diseased separated from the healthy across the Debroo river. Some carcasses were buried, but deaths becoming too numerous, the carcasses were thrown into the Berhampooter, some distance from the station. The hides, horns, and hoofs were buried with the carcasses.

Sanitary measures.

* See Appendix No. 3.

ASSAM.

Alliga.

Evidence of ALLIGA, Mouzahdar of Lahowl Mouzah,—recorded 29th January 1870.

I had originally 17 cattle; 17 were attacked by the prevailing disease, 3 survived.

Distinguishes three kinds of disease,—one with running of the eyes, nose, and mouth, another purging and dysentery, and another a dry eruption all over the body: latter form the most likely to recover. Says that a similar disease occurred 14 years ago.

Collia.

Evidence of COLLIA, Mouzahdar, Ekraooli,—dated 28th January 1870.

No disease at present. Has had no disease in his mouzah. Has charge of three villages, Doundhai, Bindakotia, and Ekraooli.

The cattle of his villages are grazed separately from those of adjoining mouzahs. They are separated by the Lessa river and distance. There is disease in one locality, Decumbari, north of the river, about two miles from his place. Says there are three kinds of disease, but does not know much about them.

Mathbas.

Evidence of MATHBAS, Mouzahdar of Meripittar,—taken 29th January 1870.

Has no disease in his village. Lost a great number of cattle from disease 15 years ago. The symptoms then observed were the same which cattle now exhibit. The disease occurred in May. The only difference between these two visitations is, that formerly the outbreak and disease ran through their course more rapidly than now. The few cattle which recovered then lost their hair and got a new coat. Half a day was the average duration of a case at that time. Says that the cattle of his village are not allowed to mingle with the cattle of neighbouring villages, in consequence of a Police order to that effect. Describes three forms of disease, according as the ears, eyes, or bowels are affected.

MADARKHAT.
Sadun Chunder.

Evidence of SADUN CHUNDER, Sherishtadar in the Political Agency of Debrooghur,—dated Madarkhat, 30th January 1870.

Question.—How long have you been in the district?

Answer.—I am a native of this District, Debrooghur. I live about one mile from the town of Debrooghur.

Question.—Do you own cattle, both buffaloes and cows?

Answer.—Yes, both buffaloes and cows.

Question.—How many of each do you own?

Answer.—I had 30 cows at the time the disease broke out, and about 20 buffaloes.

Question.—Have you lost cattle during the present outbreak; if so, how many?

Answer.—Out of my 30 cows, 22 died, but none of the buffaloes were attacked, they being in a different place.

Symptoms.

Question.—What were the symptoms of the disease your cattle died of?

Answer.—The first symptom of the disease that I noticed was a long, loud cough, and then the ears began to droop; there was running from the eyes, they were off their feed, but had great thirst, some of the animals even purged a great deal, but in other cases the bellies of the animals were greatly distended. In those cases in which purging commenced from the first, some of them, say from 30 to 40 per cent., survived. I never saw any eruption in the cattle in the first instance, nor even in those which had purging from the first attack; but in those which were attacked without purging, I noticed that 3 or 4 days after refusing food pustules appeared on the ears, and also scabs on the body, but no matter came from any part of the body. The mouth was full of sores.

Question.—Please state your opinion as to the origin of the disease?

Answer.—I am of opinion that my cattle were affected from being sent into Debrooghur for water at the time the disease was raging there.

Question.—In what months were your cattle attacked?

Answer.—In the month of Assar (June).

Question.—Did all your cattle die of the same disease?

Answer.—Yes, all the 22 that I have referred to died of the same disease; but I would here say that some of them were already weak from the foot and mouth disease.

Varieties of disease.

Question.—Are you aware of any other epizootic disease prevalent amongst cattle?

Answer.—Yes, foot and mouth disease—*sobakar*; swollen throat—*sookan bakoolier*; swelling of joints—*bish bakoolier*: in this latter there is purging, the swelling is hard. This disease takes place after the hard work in ploughing.

MADARKHAT.
Sadun Chunder.

Question.—Have you ever before met with a like disease?

Answer.—The murrain which we had before was not the same as this; there was no thirst, and it was more fatal; there was no running from the eyes and nose; there was bad discharge, but no dysentery; there were sores in the mouth: this was about 15 years ago. I never heard of the disease before in this part of the country, though my father said that he had heard of it lower down the country.

Question.—What is your opinion as to the disease being infectious or otherwise?

Contagiousness.

Answer.—I am of opinion that the disease is highly infectious, and that cattle can catch it from drinking at the same water as diseased cattle, even if the watering-place is at a running stream. I do not know of any cases in which the disease has broken out spontaneously; cattle catch the disease from going to the same pastures and watering-places as diseased cattle. The disease generally shows itself in 3 days, but if a dead animal is left, and other cattle are allowed to go near it, the disease will show itself in one day.

Question.—Do you know of any mode of treating the sick cattle?

Answer.—I do not know of any cure.

Question.—Do you know of the disease being communicated to any animals other than cattle?

Answer.—There were goats, pigs, and deer dead of the same disease. Two kids I remember died without any purging; but I have never seen any case in which cattle have died in which there has not been purging sooner or later.

Examination of FUTTICK RAM, Mohurir, agriculturist at present,—dated Madarkhat, 31st Futtick Ram, January 1870.

Question.—Are you a native of this place?

Answer.—I am a resident of this place.

Question.—What is your age?

Answer.—I am 40 years of age, and always lived here.

Question.—Are you an owner of cattle?

Answer.—I am an owner of cattle.

Question.—How many cattle did you own six months ago?

Answer.—I had 26 cattle before the disease.

Question.—How many have you got now?

Mortality.

Answer.—I have five now.

Question.—What has happened with the rest?

Answer.—The rest died of the disease.

Question.—What disease did they die of?

Answer.—*Hija*, *mowar* or *jahani*.

Question.—Describe the symptoms of the *hija*?

Symptoms.

Answer.—Refused food; drooping head; refused water; on the third day purging commenced, offensive odour from the mouth, excoriations on the tongue and gums, and a running from the nose and eyes; at first the stools were of a light color, and afterwards bloody; the cattle died some in two, some in three days, but some have lived as long as six days.

Question.—Did any of the cattle attacked recover?

Answer.—Three recovered out of the 23 attacked.

Question.—Did you adopt any mode of treatment?

Answer.—I washed their mouths out with warm water and gave them tender grass to eat.

Question.—Did you hear of any such disease before?

Answer.—When I was a boy I heard of the disease; I mean when I was 20 or 23 years old. History.

Question.—Did many cattle die of that disease?

Answer.—Many cattle died then; more than those which have died now.

Question.—How did your cattle catch the disease?

Answer.—My cattle got the disease from those belonging to Mr. White; they did not graze in the same land; the other cattle of the village grazed in the same ground as mine, but mine were the first to get the disease. The land on which my cattle fed bordered on that on which Mr. White's fed, with no fence but a road between them. Mr. White's cattle fed in the garden and also on the pittar.

MADARHAT.

Futtick Ram.

Price of cattle.

Question.—How did Mr. White's cattle get the disease?

Answer.—They went into Debrooghur.

Question.—What was the price of cattle 10 years ago, and what now?

Answer.—The cattle which would have cost Rs. 10 or 12 ten years ago, would now cost Rs. 16 or 20.

Question.—To what cause do you ascribe this rise in the price of cattle?

Answer.—I attribute the rise in price to the disease in cattle.

Question.—Are you of opinion that the present disease will cause a further increase in the price of cattle?

Answer.—I am of opinion that the price of cattle has risen owing to this disease. [Cannot say why he thinks so.]

Question.—After the murrain 15 years ago, were cattle imported from other districts, or have they since been imported?

Answer.—I do not know that they were.

Infectiousness.

Question.—Do you consider the disease to be infectious?

Answer.—Yes, I think that it is, because it has spread from one place to another.

Question.—Do you know of any instance in which people, in order to escape from the effects of the plague, have driven their cattle into the jungles?

Answer.—No, I do not.

Question.—Do you think that disease might break out in a distant place without being brought by infection?

Answer.—No, not unless there was communication of some sort or other; but I do not think that a man passing from diseased cattle to healthy ones could take the disease.

Question.—Are you aware of any like disease breaking out in the interim?

Answer.—I have only known two occasions on which this disease has broken out, 16 or 17 years ago, or more.

Ordinary mortality.

Question.—When there is no plague, how many in 20 die from ordinary causes in one year?

Answer.—Two or three old ones and two or three calves.

Question.—How are your cattle fed and watered?

Answer.—In the day they go to the common grazing ground; they come home in the evening and are given dhan and water.

Question.—Did wild animals ever kill your cattle?

Answer.—No.

LAHOWL.
Doni Ram.

Evidence of DONI RAM, *Mohurir of the Muttuck Tea Company Limited, Lahowl, 6 miles south of Debrooghur,—taken 31st January 1870.*

Question.—Are you a native of this district?

Answer.—Native of Lahowl; been in the employ of the Muttuck Company for 10 years.

Question.—Do you own cattle?

Answer.—I owned 23 head of cattle—8 bullocks, 4 cows, and 11 young stock—before the plague; now 7 head of cattle—5 bullocks and 2 cows. I had 7 buffaloes, the whole of which have died.

Question.—Of what disease have your cattle died?

Answer.—They died of *hija* or *jahani*.

Question.—Describe the symptoms of the disease as observed?

Symptoms.

Answer.—I first noticed a cough, drooping ears, loss of appetite, staring coat, discharge from nose, froth from mouth, like a cold. After three days diarrhoea or dysentery supervened. I observed shivering also.

Question.—Did you notice any eruptions on the bodies of your cattle when they were sick?

Answer.—I did not observe any eruption on the bodies of my cattle.

Question.—Out of the remaining seven cattle were any attacked?

Answer.—Two suffered from a slight manifestation of the disease, drooping of ears and refusal of food, but the bowels were not affected.

Question.—How did your cattle get the disease?

Answer.—I cannot say.

Question.—Was there any sickness among the cattle in the neighbourhood of your house at the time? LAHOWL.
Doni Ram.

Answer.—Mr. White's cattle were attacked before mine.

Question.—In what month did Mr. White's cattle have the disease, and when did your cattle catch it?

Answer.—Mr. White's cattle in Kartick (October), and mine in Agran and Pous (November and December).

Question.—Was there any communication between your and Mr. White's cattle?

Answer.—Yes, Mr. White's cattle would come to my premises, and they grazed and watered in the same *khall*.

Question.—Did you ever know of any such disease before? History.

Answer.—15 or 16 years ago a great many cattle died from the same disease.

Question.—Did more cattle die then than in the recent plague?

Answer.—More have died on this occasion.

Question.—Has any like disease prevailed in the interval?

Answer.—No disease of this sort has prevailed in the interval.

Question.—How did Mr. White's cattle get the disease?

Answer.—Can't say; but Mr. White's bullocks went to Debrooghur, where the disease had been prevailing, two or three times.

Question.—Do you consider the disease to be infectious?

Answer.—I don't know.

Question.—What was the price of cattle 15 years ago, and the price now? Price of cattle.

Answer.—A cow that would cost some 6 or 7 rupees 15 or 16 years ago, would cost 15 to 20 rupees now. I attribute the increase of price to the loss of cattle.

Question.—Has the price increased already from the present murrain?

Answer.—Cattle have not been bought and sold as yet, as the agriculture has not commenced.

Question.—From the number of cattle that have died during the present murrain, do you think that less land will be cultivated? Cultivation.

Answer.—People will have to purchase cattle to carry on the full amount of cultivation.

Question.—Are you a cultivator of land?

Answer.—Yes, I cultivate 28 beegahs.

Question.—How many bullocks are requisite to cultivate that amount of land?

Answer.—Eight bullocks.

Question.—How many more bullocks will you have to buy for tilling your land?

Answer.—Three more.

Question.—How do you expect to get them?

Answer.—Wherever the disease has not been.

Question.—How much do you expect to give for them?

Answer.—About Rs. 20 each.

Question.—How are your cattle fed, and are they housed or not?

Answer.—They go out grazing at will in the common. At night they are tied up in a shed.

Question.—When plague does not prevail, how many cattle die out of 20?

Answer.—In ordinary years two or three die in a score.

Question.—If you have 20 cows, how many calves would you expect to have in one year?

Answer.—Sometimes 10, sometimes 20, according as cows bear every year or every two years.

Question.—Do you take any special care in regard to the breeding of your cattle? Breeding.

Answer.—No special arrangements are made for breeding. Bulls and cows graze together.

Question.—Had you any bulls of your own?

Answer.—I keep no bulls of my own.

Question.—Taking cattle generally, what is the proportion of male to female cattle?

Answer.—I can give no opinion.

Question.—Out of 20 male animals, how many are left entire and how many are gelt, and at what age are they gelt?

Answer.—After three or four years all are gelt.

LAHOWL.
Doni Ram.

Question.—Have you ever had any cattle imported to your place from other districts?

Answer.—No.

[NOTE.—Mr. Myers, Manager of the Muttuck Tea Company, attended to assist the examination of this man; as Mr. Myers has recently joined his appointment, he is not able to give any information.]

MADARKHAT.
Muliah.

Evidence of MULIAH, Mouzahdar of Jugibahar,—taken on the 31st January 1870 at Madarkhat.

Question.—Are you a native of the district?

Answer.—I am a native of this place.

Question.—Do you own cattle, both buffaloes and cows?

Answer.—I am an owner of cattle, having 12 cows and 15 buffaloes. I have had as many as 18 cows and 20 buffaloes; at present I have only 2 cows and 1 buffalo, the rest having died within two months, *i. e.*, in Aghan and Pous (November and December).

Question.—What did they die of?

Answer.—There was only one disease, though there were different symptoms, and we have two names for these, *hija* and *mowar*.

Symptoms.

Question.—What are the symptoms of *hija* as observed by you?

Answer.—First, short dry cough, drooping ears, refuses food, but has great thirst; watering from eyes, nose, and mouth; watery and oily stools mixed with blood, of a red colour; a few of the animals had sores on the back between the shoulders, sores in the inside of the mouth on both sides, but not in the feet. The disease lasted from 6 to 9 days, in some cases only 3 days; all my cattle that were attacked died. One or two lived as long as 12 days after they were attacked. The cattle were uneasy, but I cannot say whether they were in pain or not.

Question.—Describe the symptoms of *mowar* as observed by you?

Answer.—I cannot give any difference between *hija* and *mowar*.

Question.—Did you ever before see any such disease in your part of the country?

History.

Answer.—Yes, I saw the same disease 15 or 16 years ago, but this is a more severe attack than that.

Question.—Did any other sort of murrain come under your observation?

Answer.—I do not know of any other sort of cattle plague.

Question.—How did your cattle get ill?

Answer.—I know of no cause.

Question.—How do you feed your cattle?

Answer.—I turn out my cattle to graze where they like on the common with other cattle of the village; they get nothing but what they pick up.

Infectiousness.

Question.—What is your opinion as to the disease being infectious or otherwise?

Answer.—I don't know.

Question.—Where do you water your cattle?

Answer.—At the river.

Question.—How and where are your cattle housed during the night?

Answer.—At night they are always shut up in a house.

Question.—What is the extent of the mouzah under your charge, also the number of inhabitants and the number of cattle?

Answer.—The mouzah contains about 8 or 10,000 beegahs, and the inhabitants are between 1,100 and 1,200, and own, I should think, 7 or 800 bullocks, 1,000 or 1,200 cows, and 5 or 600 buffaloes. In the 8 or 10,000 beegahs I do not include jungle lands. I should think that every year some 1,000 or 1,200 beegahs out of the 8 or 10,000 were left uncultivated. One pair of bullocks could cultivate about 12 beegahs in the year. I cannot say whether the mortality in this mouzah has been sufficient to interfere with the cultivation.

Question.—Has the price of cattle risen since the prevalence of the plague?

Answer.—I cannot say, as at this time of the year no purchases are made; when the time for cultivating comes round then we shall see.

Question.—What was the price of cattle 10 years ago, and what is the present price?

Answer.—The cattle which 8 or 10 years ago would have cost Rs. 10 or 12, now cost Rs. 20 or 25.

Question.—To what cause do you ascribe the rise in the price of cattle for the last 8 or 10 years?

Answer.—I attribute this to the disease of 15 years ago.

Price of cattle.

Question.—Do you take any special care with regard to the breeding of your cattle?

MADARKHAT.
Muliah.
Breeding.

Answer.—No, I do not; the cows and bulls herd together, the same with the buffaloes. I do not know anything of wild buffalo bulls.

Question.—How is your mouzah supplied with cattle?

Answer.—I purchase my cattle in the neighbouring villages.

Question.—Have you ever had cattle imported to your mouzah from other districts?

Answer.—I am not aware of any cattle having been imported into this from other districts.

Evidence of BORICK, Mouzahdar of Madarkhat, taken on the 31st January 1870.

Borick.

Question.—Are you a native of this district?

Answer.—I am a native of this place.

Question.—Do you own cattle, both buffaloes and cows?

Answer.—I am an owner of cattle, having had 6 bullocks, 3 cows, and 8 buffaloes; at present I have only got one bullock, the rest having died in Pous (December) last.

Question.—What did they die of?

Answer.—They died of *jahani* and *mowar*; they are the same disease.

Question.—What are the symptoms of *jahani* or *mowar* as seen by you?

Symptoms.

Answer.—At first the animal looks stupid and droops its ears, has a dry cough, refuses food, but has not unnatural thirst; has watery stools, sometimes mixed with blood, and dies in 8 or 10 days; sometimes in 3 days.

Question.—Did any of your cattle which were attacked recover?

Answer.—Only one out of all my cattle which were attacked recovered; the only symptom of the disease which it showed was, that it refused food for three days.

Question.—How and where do your cattle get food and water?

Answer.—The cattle feed on the common ground; they drink at the river; they are not stall-fed.

Question.—How did your cattle get sick?

Origin of disease.

Answer.—The disease came to my mouzah through Jugibahar Mouzah, where the cattle were ill; the cattle of the two mouzahs feed and water at the same places.

Question.—What is your opinion of the disease being infectious or otherwise?

Infectiousness.

Answer.—The disease comes from infection, and also breaks out spontaneously in particular cases.

Question.—Did any cattle plague ever visit your country before?

Answer.—The disease was here some 15 years ago, breaking out in Debrooghur Station; the disease was the same as that now prevailing.

Question.—Did more cattle die then than the number that died in the recent plague?

Answer.—About the same number of cattle died in both attacks.

Question.—Did the plague appear first in your mouzah?

Answer.—It has never in the first instance broken out in my village; it has always been imported from other villages.

Question.—Have any cattle died of this disease in your village in the interval?

Answer.—No cattle have died of this disease between the attack of 15 years ago and this outbreak.

Question.—You say you are 40 years old; now, what was the price of cattle when you were young?

Price of cattle.

Answer.—The cow that would have cost Rs. 7 when I was a boy, would now cost Rs. 20 or 25.

Question.—When did the price begin to rise?

Answer.—The price began to rise after the murrain of 15 years ago.

Question.—Has the price risen owing to this murrain?

Answer.—I cannot say, as no purchases are made at this time of year, but I expect to have to give from Rs. 20 to 23 for a bullock and from Rs. 16 to 20 for a cow.

Question.—Has the price of buffaloes risen since you were a boy?

Answer.—Yes, a buffalo which would have cost Rs. 20 or 25 when I was a boy, would now cost Rs. 100.

MADARKHAT.
Borick.
Cattle dealing.

Question.—Where do you get your cattle from?

Answer.—I purchase cattle all round in the neighbourhood, but always choose a village where no disease has shown itself.

Question.—Where do the ryots and mouzahdars get their buffaloes from?

Answer.—From the Naga Hills.

Question.—Have any Bengalee buffaloes ever been brought to your part of the country?

Answer.—I have not seen any, but I have heard of them.

Question.—In healthy years how many cattle die from the effects of old age out of 20?

Answer.—One or two in 20 generally from old age.

Question.—What increase of cattle would you expect from the same number during the same time, say 20 cows?

Answer.—I should expect one calf from each cow—half and half, male and female.

Question.—If a man owns 20 head of cattle, how many of them would be bullocks and how many cows on an average?

Answer.—There would be more cows than bullocks as a rule.

Question.—Do you ever use a cow in the plough?

Answer.—Cows are not used in the ploughs, not even the barren cows.

Breeding.

Question.—Do you take any special care with regard to the breeding of the cattle in your mouzah?

Answer.—No special care is taken in breeding; the cow goes to any bull.

Question.—Out of 20 male calves, how many would be left entire and how many gelt?

Answer.—None are gelt till 3 years old; then all are gelt, with the exception of one which is picked out as the finest.

Question.—Did you adopt any mode of watering and feeding during the murrain?

Treatment of sick.

Answer.—No treatment, with the exception of giving them boiled rice, green grass and warm water.

Question.—Is the water given to the cattle sweet or brackish?

Answer.—The water in the mouzah is good, not salt.

Question.—Are there a sufficient number of cattle left in your mouzah to carry on cultivation without purchasing from others?

Answer.—No, a great number will have to be purchased; I should think about 7 to each house.

Question.—Have you any idea of the number of cattle in your mouzah?

Answer.—No, I cannot say.

Exemption of one village.

Question.—You say that there is a village in your mouzah where there has been no disease; to what cause do you ascribe this circumstance?

Answer.—The cattle belonging to it were taken into the jungle away from all others, and are there still; they were so taken when the disease showed itself in the villages near theirs. They are about two miles in the jungles; the owners took them there of their own accord, having heard that another man had saved his by so doing.

Cause.

Question.—How did you dispose of the cattle that died?

Answer.—I buried them three or four *haths* deep. I did not do so before the disease. All the villagers do so now, because the Deputy Commissioner has so ordered.

Evidence of Villagers of Madarkhat, 1st February 1870.

JONMIE COLETA, OMOR GOPIE, MOGONA DHOOLIA, HINGI GOPIE, PAD BOR ATOME, LOYBOR GHURPOOLIA, BOOCKOO LATONE, PICK GOPIE, KOOLA GOPIE, JOORMOHUN DHOOLIA, SOOKMUL GOPIE, PIABOR ATOME, DEEN COLETA, BANCHI ATOME, AND ROOPYE COLETA, all residents of Madarkhat, state as follows:—Have had opportunities of observing the symptoms of the disease, as every one of them lost some of their cattle from the effects of the plague. The symptoms, as seen by them, are,—drooping ears, running from eyes, nostrils, and mouth, coughing slightly, and passing watery and bloody stools. The diseased cattle would refuse food, and die from the 3rd to the 12th day. They consider the disease to be infectious. The sick were not treated in any way by them; they had observed a like disease somewhere about 15 years ago. They did not notice any eruption on the skin of the diseased animals.

[NOTE.—The rest of the evidence given by these witnesses being exactly the same as that already recorded, it was considered unnecessary to write further].

Examination of LAHOR, a cultivator of Madarkhat, taken on 1st February 1870.

MADARKHAT.
Lahor.

Question.—Are you a native of this place? and what is your age?

Answer.—I was born here and have lived here ever since. About 55.

Question.—Do you own any cattle?

Answer.—Yes, I am an owner of cattle; I had 9, but 8 of them have died.

Question.—What did your cattle die of, and when?

Answer.—They died of *jahani* in Pous (December.)

Question.—Describe the symptoms of the disease as seen by you?

Symptoms.

Answer.—Their ears drooped, they had a running from the eyes and mouth, refused food, had great thirst, frequent stools, afterwards mixed with blood, when they died.

Question.—Did you adopt any mode of treatment for curing the disease?

Answer.—Did not try any treatment.

Question.—In how many days did your cattle die?

Answer.—They died in from three to eleven days; did not notice that they had any eruption in any part of their bodies.

Question.—To what cause do you ascribe the disease?

Answer.—Do not know why they died; the cattle round about died, and so they died. I heard that the disease first showed itself at Debrooghur.

Infectiousness.

Question.—Do you consider the disease infectious?

Answer.—I am of opinion that the disease is infectious, because it came to our village from Debrooghur.

Question.—Did you ever see any such disease before?

Answer.—Yes, about 12 years ago, the same disease as this; but in my opinion the disease was not as severe on that occasion as on this.

Question.—How much land have you under cultivation, and how many cattle would be required to cultivate it?

Answer.—I have got three poorahs of land. I have only one bullock left; one plough would cultivate two poorahs. I have no money to buy fresh cattle, and consequently I shall have to dig the land myself.

Question.—Where do you get your supply of cattle from?

Answer.—In the surrounding villages where there has been no disease.

Question.—Do cattle dealers come to your place to buy or sell cattle?

Answer.—No, people come to buy cattle for their own use.

Question.—How are your cattle fed, watered, and housed?

Answer.—Grazed in the common ground during the day; at night brought into the house and fed on straw; get water at any place they can.

Question.—How do you breed your cattle?

Answer.—No care is taken with regard to the breeding.

Question.—Do you think the people will have to buy cattle in order to carry out their cultivation next season?

Answer.—There are not enough cattle left in my village to carry on the cultivation.

Question.—What is the price of cattle now, and what was it 15 years ago?

Answer.—Cattle which would have fetched 15 years ago Rs. 7, would now fetch Rs. 20.

Price of cattle.

Question.—What is the cause of this increase?

Answer.—Cannot say, unless it is that money is cheaper now than it was then. I do not think that there are any more cattle in my village now than there were 15 years ago, and that more land has been brought under cultivation.

Question.—You have told the Commission that you consider the disease to be infectious. Do you think it would be better for the Government to interfere?

Answer.—I should like Government to interfere, so far as it did not concern me.

Examination of MULONA, an agriculturist of Madarkhat, a resident of the place,—dated 1st Mulona, February 1870.

Question.—Are you a cattle owner?

Answer.—I am an owner of cattle. I had 12 head of cattle; among them 6 bullocks and 6 cows. I have now 2 cows and 2 bullocks, the rest having died in Aghan (November) last of *jahani* or *mowar*. I had also 9 buffaloes, all of which have died.

MADARKHAT.

Symptoms.

Question.—What were the symptoms of the disease?

Answer.—A cough, drooping of ears, watering from the mouth and nose, frequent stools—sometimes with blood, sometimes without, and death after 4 to 12 days.

Question.—Did you adopt any sort of treatment?

Answer.—I did not try any medicine with the cows or bullocks, but two doctors came and gave medicine to my buffaloes, but with no effect.

Question.—To what cause do you ascribe this disease?

Answer.—I do not know.

Infectiousness.

Question.—Do you consider the disease to be infectious?

Answer.—I consider the disease infectious, because I have noticed that it is communicated from one village to another.

History.

Question.—Did you see a like disease before?

Answer.—Yes, about 12 or 15 years ago in this village.

Question.—Is there any hamlet near your village in which the cattle have not been affected?

Answer.—No, I do not know of any.

Question.—How many cattle were there in your village before the plague?

Answer.—Before this disease broke out there were 200 or 300 cattle in my village; now from 20 to 24. I cannot say how the cultivation will be carried on.

Question.—What is the present price of cattle, and what was it 15 years ago?

Answer.—The cattle which 15 years ago cost Rs. 5 or 6, now cost from Rs. 15 to 20.

Question.—What is the cause of this rise in the price of cattle?

Answer.—Cannot say, unless it be on account of the disease 15 years ago.

Breeding.

Question.—Do you take any special care as regards the breeding of your cattle?

Answer.—No, no care; and if good bulls were imported, the people would not send their cows to them; what would be the use of it, a small bullock can do as much work as a big one. Even if there was no charge, I should not send my cow to the big bull.

Question.—After the appearance of this plague amongst them, did you let them loose and allow them to graze on the common pasture?

Answer.—Yes, I made no change.

Moosah Kolita.

Examination of MOOSAH KOLITA, an agriculturist of Madarkhat,—dated Madarkhat, 1st February 1870.

Question.—Are you an owner of cattle?

Symptoms.

Answer.—Yes, I am; before the disease I had 16 buffaloes, 8 bullocks and 12 cows, all of which have died; they all died in the month of Aghun of jahani or mowar.

Question.—Please describe the symptoms of the disease as observed by you?

Answer.—Cough, drooping ears, watering from the eyes and mouth, watery stools, sometimes mixed with blood; they died in from 4 to 7 days.

Question.—Have you ever seen disease amongst any other animals?

Answer.—No, I have not.

Question.—How did your cattle get the disease?

Infectiousness.

Answer.—The disease came from Debrooghur.

Question.—Then is the disease in your opinion infectious?

Answer.—Yes, I think that it is, because it was communicated from village to village.

Question.—How many cattle were there in your village before the plague? how many are there now?

Answer.—Before the disease broke out I should think that there were 400 or 500 head of cattle in my village, now there are only about 20. I do not know how the cultivation will be carried on.

Question.—What is the price of cattle now, and what was it 15 years ago?

Answer.—Cattle are the same price now as they were 10 or 15 years ago.

Evidence of HOOD GOSSAIN, aged 65 years, a resident of Lahowl, and a Government Pensioner, Madarkhat,—dated 2nd February 1870.

MADARKHAT.
Hood Gossain.

Question.—Have you any experience regarding the present cattle murrain?

Answer.—I have, and I lost nearly all my cattle from it. I lost 33 bullocks and cows and 18 buffaloes.

Question.—Did any of your cattle recover?

Answer.—Seven recovered.

Question.—Did any escape the plague?

Answer.—Yes, 20 buffaloes that I sent away to a distant jungle escaped, and they remained all right in that jungle.

Question.—What is the name of the disease that attacked your cattle?

Answer.—It is the same disease, but that it has three different names, viz., jahani, mowar, and hija.

Question.—Have these three kinds of disease different symptoms?

Answer.—No, they are one and the same fatal disease with three different names, and the symptoms are one and the same.

Question.—Please describe the symptoms of the disease?

Answer.—The very first symptom is,—off feed, great thirst, drooping ears, afterwards running from the eyes, nose, and mouth, sores inside the lips and mouth, and diarrhoea.

Question.—How many days does the disease take in running its course?

Answer.—From 5 to 16 days.

Question.—How many per cent. of the attacked recover?

Answer.—25 per cent.

Question.—Have you ever seen this disease amongst the cattle of this district in former years?

Answer.—Yes, I saw it 12 or 15 years ago, and I remember my father said it had occurred in 1830 or 1831.

Question.—Do you believe that the same disease occurred at three different times?

Answer.—Yes, the very same disease.

Question.—Was mortality as great in former years as now during the present attack?

Answer.—More cattle died in the attack 12 or 15 years ago; a fewer number died during the attack of 1830 and 1831.

Question.—What is the ordinary mortality amongst cattle in this district from ordinary causes?

Answer.—I should say 9 or 10, and this number includes losses of cattle which are killed by wild beasts.

Question.—As there are no cattle slaughtered in this district, and as the cattle are ordinarily so very healthy, and breed regularly, what is the increase per annum of stock?

Answer.—From 18 to 20 per cent.

Question.—Is the proportion of sexes with the young stock about equal?

Answer.—I should say about 2 cow calves to 1 bull calf.

Question.—As there are twice the number of cows to bulls, and breeding is carried on very regularly, to what amount will the stock increase in 10 years?

Answer.—I have given you the scale, and you can make the calculation.

Question.—Do you think that there is a sufficient number of cattle in the country to carry on the cultivation?

Answer.—A rich man may be able to cultivate his lands, but it will be very difficult for the poor men to do so, and I fear that half the land will remain uncultivated.

Question.—But you have said that there is a yearly increase of the stock; and as the last murrain was 15 years ago, surely the additional stock of the interval will afford supplies for the present loss, even after deducting the number of cattle lost during the present attack?

Answer.—There is doubtless, from the increase of stock during the last 15 years, a sufficient number of cattle in the whole country; but in those districts where the murrain has prevailed, individuals of small means will have great difficulty in cultivating their lands.

Question.—What is the present price of cattle, and what was it 15 years ago?

Answer.—The bullock that is now got for Rs. 20 to 30 fetched 15 years ago Rs. 5 to 7.

Price of cattle.

MADARKHAT.

Question.—To what cause do you ascribe the increase?

Answer.—To more land being brought under cultivation than before, and to greater demand for cattle.

DEBROOGHUR.
Mohun Gossain.

Evidence of MOHUN GOSSAIN, aged 40 years, a resident of Lahowl, a farmer,—dated Madarkhat, Debrooghur, 3rd February 1870.

Question.—Have you seen any of the cattle affected with, dying or dead from the murrain that is at present raging in this district?

Answer.—Yes, I have seen my own cattle die from this disease.

Question.—When did you see the disease first?

Answer.—I saw it first about fifteen years ago.

Question.—After that, when did you see it next?

Answer.—I saw it next in last October.

Question.—What do you think to be the cause of this disease?

Answer.—I do not know whether it comes from a deficiency of food or water, or from bad food and bad water, or it may be in the air.

Question.—Well, 15 years ago, do you remember whether at that time there was a deficiency of food or water, or whether there was any special state of the atmosphere which might cause the disease? Were people affected with any epidemic at that time, or were other animals, wild or tame, affected with any similar disease?

Answer.—Human beings were not affected with any disease; but I saw dogs and pigs that had died from eating the carcasses of the diseased cattle. I remember that the disease came from the west.

Question.—Did the disease break out in Gowhatty or anywhere towards the west before it appeared here?

Answer.—Yes, I heard that the disease had at first appeared in Gowhatty, and this information I had derived from the dāk runners.

Question.—Where did you hear of the present outbreak first appearing?

Answer.—In Rungpoor—Sebsaugor.

Question.—Did you ever hear of the cattle belonging to the Naga and the neighbouring hill tribes being affected?

Answer.—No.

Question.—Which is the furthest point last where you have heard of the disease raging?

Answer.—At a place called Deenjoe, 5 miles off.

Question.—Did the disease first appear there or here?

Answer.—It broke out here at first.

Infectiousness.

Question.—Do you consider the disease to be infectious?

Answer.—Yes, animals can catch the disease by sleeping, feeding, and drinking together. I also know that my cattle caught it from a distance of 240 yards from the village cattle.

Question.—At the time that the village cattle were affected, did any of their attendants come to their cattle-sheds?

Answer.—Yes, they did.

Question.—Do you think that these attendants brought the infection with them?

Answer.—Yes, possibly; but in the case of my cattle, I believe that they caught the infection through the air being contaminated by the carcasses of the diseased village cattle being thrown out in the vicinity of my house. The stench from these was great.

Legislative interference.

Question.—Do you think the Legislature ought to interfere, in order to prevent the infection spreading from this murrain?

Answer.—Yes, the people ought to be ordered to isolate cattle suffering from infectious diseases, and to bury those that have died from these; and in the event of their not discharging the order, they ought to be fined.

Question.—Do you think the people would like to institute a local murrain fund by having a small tax, say one or two annas per annum per head of cattle, for the purpose of compensating owners of cattle for losses they may sustain by future outbreaks of murrain?

Answer.—Yes, I think the people would like to have a fund instituted by such means.

Question.—You say you saw the disease 15 years ago; did you ever hear of any such disease before? DEBROOGHUR.

Answer.—Yes, my father told me that the same disease had raged in Rungpoor—Sebsaugor—at the time of the Native rule, before the English took possession of this country. I am not certain how long, but I think 10 or 12 years before.

Question.—Did the disease at that time break out at Lahowl and Madarkhat?

Answer.—No.

Question.—Was there any communication between Rungpoor—Sebsaugor—and these places?

Answer.—No, they were under different sovereigns and hostile to each other.

IMPORTATION OF BUFFALOES.

From J. H. B. HALLEN, Esq., Staff Veterinary Surgeon, President, Cattle Plague Commission, to the Commissioner of Assam; below Gowhatty, on board the Steamer "Koel,"—(No. 150, J. H. B. Hallen, Esq. dated the 15th February 1870). GOWHATTY.

The Commission have found during the course of their inquiry regarding the present cattle plague of Assam that it is generally believed that the plague was imported into Assam by some Bengalee buffaloes, I therefore have the honor to request that you will be so good as to obtain information on the following points:—

A. When, whence, and to what portion of Assam were the buffaloes said to be infected imported. Whether buffaloes said to be infected were imported on more than one occasion; and if so, state the number of buffaloes on each occasion and the number of times they were brought.

B. Time occupied from leaving Bengal to date of arrival in Assam.

C. Whether any plague had prevailed before or was prevailing at the time of the departure of the buffaloes from Bengal in the District of Bengal, whence the buffaloes came; and if so, which kind of plague.

D. Whether any of the batch of the imported buffaloes died in transit to Assam, or died from plague immediately or shortly after arrival in Assam.

The Commission will feel extremely obliged if you will obtain the best information on the above points from reliable sources, and, if possible, not from hearsay only, but from officers or persons who are able to record facts, or report what they themselves saw bearing upon the subject.

From COLONEL WILLIAM AGNEW, Officiating Commissioner of Assam, to the President of the Cattle Plague Commission, Calcutta,—(No. 118, dated Gowhatty, the 6th April 1870). Colonel W. Agnew.

In reply to your reminder No. 205, dated 29th ultimo, I have the honor to forward copies of the reports received up to date from the officers who were required to furnish the information asked for in your letter of the 15th February last.

2. The report of the Deputy Commissioner of Luckimpore has not yet been received. It will be sent to you hereafter.

From MAJOR A. K. COMBER, Deputy Commissioner of Kamroop, to the Personal Assistant to the Commissioner of Assam,—(No. 47, dated Gowhatty, the 22nd March 1870). KAMROOP. Major A. K. Comber.

With reference to your Circular No. 35 of the 16th ultimo, I have the honor to state that on the receipt of it I issued perwannahs to a few of the selected Mouzahdars in the district, through whose mouzahs the Bengalee buffaloes are said to have been brought up for sale, and asked them to answer Dr. Hallen's questions. After careful personal inquiry, I now beg to submit extracts from their reports for the information of the Commissioner.

The Mouzahdar of Choyance states that a drove of 125 buffaloes have recently been brought up to his mouzah from Sarun—Chuprah; that the drovers told him they took full two months to come up to Volashbare; and that no plague broke out among them, nor did any death occur during their journey. The Mouzahdar personally inspected the herd, and found no disease whatever prevailing among them. The buffaloes were pulled down merely for want of food and from the fatigue of a long journey.

The Mouzahdar of Sila states that three batches of buffaloes from Bengal, about 900 in number, were brought to North Gowhatty last year on three different occasions. The drovers told him that they had taken nearly three months on their way from Bengal to Assam. The buffaloes had suffered from no disease, but they had become emaciated for want of food and from fatigue.

KAMROOP.

Major A. K. Comber. From the report of the Mouzahdar of Khátá it appears that only a week ago 300 buffaloes were brought there from village Neraraj, in Zillah Purneah, and that the sirdar drovers, named Bousee and Fondée, told him that they took two months to come up as far as Nulbaree. There was no disease prevailing among the herd.

The other Mouzahdars to whom perwannahs were issued on the subject state that no Bengalee buffaloes passed through their mouzahs during the past year.

Under the above circumstances, I am of opinion that the present cattle plague was not imported into this district by the Bengalee buffaloes.

DURRUNG.

Major Thomas Lamb. From MAJOR THOMAS LAMB, Deputy Commissioner of Durrung, to the Personal Assistant to the Commissioner of Assam,—(No. 1608, dated Tezpur, the 23rd March 1870).

With reference to your letter No. 35 of the 16th ultimo, conveying copy of a letter from Mr. J. H. B. Hallen, President, Cattle Plague Commission, dated February 1870, I have the honor to submit the information therein called for.

A. No record is kept of the number of buffaloes imported. They might be roughly estimated at from 200 to 500, on each occasion brought from the Districts of Bhaugulpore, Purneah, and Mozufferpore in February 1860, January 1865, March 1867, January 1868, and January 1869.

B. The time occupied from leaving Bengal to date of arrival in Assam is not known.

C. It is not known whether any plague was prevailing at the time of the departure of the buffaloes from Bengal.

D. Large numbers died immediately after their arrival in this district, and their bodies were lying in different places near the road. From inquiries made during my cold weather tour, I learnt that the disease was most severe in villages situated near the main line of road along which the buffaloes were taken. In 1867-68 a large number died within a few miles of Tezpur. The Commissioner requires positive proof of facts at this late date; all that could be obtained would be general statements of villagers which would be of no more value than what I heard in conversing with people while I was in the Mofussil. If necessary, some men can be sent for and their depositions taken on oath.

P. S.—The delay in submitting this reply to your letter is owing to my having called for reports from some of the Mouzahdars, which have only just arrived.

NOWGONG.

Capt. F. B. Mitchell. From CAPTAIN F. B. MITCHELL, Officiating Deputy Commissioner of Nowgong, to the Personal Assistant to the Commissioner of Assam,—(No. 107, dated Nowgong, the 18th March 1870).

In reply to your memorandum No. 35, dated the 16th ultimo, forwarding copy of a letter from the Cattle Plague Commission to your address, asking for information regarding the cattle disease in Assam, I have the honor to enclose a letter on the subject from my District Superintendent of Police, whom I had instructed to make inquiries regarding the several points on which information was required by the Commission. My own impression is that the disease was brought to this district from Bengal, as it broke out here immediately after the arrival of certain herds from that country.

From the Officiating District Superintendent of Police, Nowgong, to the Deputy Commissioner of Nowgong,—(No. 55, dated Nowgong, the 16th March 1870).

I have the honor to forward you the result of the inquiries made by the officer deputed by me relative to the information regarding the cattle plague required by the President, Cattle Plague Commission.

Importation of buffaloes.

A. During the months of March and April, in the years 1868, 1869, five herds of buffaloes, numbering from 80 to 150 in each herd, arrived in Nowgong from the Bengal Districts of Rungpore, Dinagepore, and Purneah, and amongst them were several diseased ones. On both occasions they came from Bengal via the District of Gowhaty and Jogie Police Station in this district. Whilst in this district, on both occasions they remained at the villages of Battodrobah, Kawaimaree, and Shansorah, until the animals were disposed of to purchasers, who took them to all parts of the district. During the two years also, some six batches, with diseased animals amongst them, came from the District of Rungpore and camped on the plain at the mouth of the river Meesha, in the jurisdiction of Koliabar Police Station.

B. The journey from Bengal to Assam occupied from 1 to 2 months.

Disease among them.

C. At the time of the departure of the buffaloes from the Districts of Rungpore, Dinagepore, and Purneah, there was a cattle plague prevailing there, and during the journey to Assam many of the animals died. The plague is described as follows:—

The animal first shows the symptoms by its difficulty in swallowing, and ultimately refusing food; a general dulness, swelling of the sides of the mouth, itchiness about the skin, which

gets covered with pustules of a brownish color; the animal would continually be heaving and unable to travel any distance; then would follow a liquid discharge of stinking faeces; when this purging increased, the animal's breath would become offensive and it would gradually get worse and stagger, until it fell and succumbed to the disease.

D. Some of the cattle in these batches died in transit, and some on arrival, the latter being those that were the most debilitated; their deaths are attributed to the above described disease.

All the above information has been obtained from the villagers of Battodrobah, Kawaimaree, and Shansorah, at which places the traders camped, and which appears to me to be a reliable source.

From the description of the disease, it appears to me to be the murrain or pestilential fever which is at times so common in England.

From CAPTAIN A. E. CAMPBELL, Deputy Commissioner of Sebsaugor, to the Personal Assistant to the Commissioner of Assam,—(No. 232, dated Sebsaugor, the 10th March 1870).

SEBSAUGOR.

Capt. A. E. Campbell.

I have the honor, with reference to your Circular memorandum No. 35, dated 16th ultimo, forwarding copy of a letter from the President of the Cattle Plague Commission, to the Commissioner of Assam, to forward copy of a letter, No. 36, dated 7th instant, from the Assistant Commissioner of Golaghat.

2. The information given by that officer of the importation of Bengalee buffaloes into this district is all I know; and as the disease for a long while was entirely confined to the vicinity of Golaghat, I can state nothing from my own personal observation.

From LIEUTENANT L. BLATHWAYT, Assistant Commissioner of Golaghat, to the Deputy Commissioner of Sebsaugor,—(No. 36, dated Golaghat, 7th March 1870).

GOLAGHAT.

Lieut. L. Blathwayt.

In reply to your memorandum No. 162, dated the 19th February 1870, forwarding copy of a letter from the President, Cattle Plague Commission, to the address of the Commissioner of Assam, I have the honor to report as follows.

2. In the month of March 1869, some three hundred buffaloes were brought to this sub-division from Bengal. They were halted in the Mouzah of Bokakhat, and a few were sold there. A few days after their arrival the cattle disease broke out in this mouzah.

3. So far as I have been able to ascertain, the Bengalee buffaloes did not themselves suffer so much from the disease as the Assamese; but the fact that the appearance of the disease in this sub-division was nearly simultaneous with the arrival of the Bengalee buffaloes, and in the very places to which they were brought, had led me to believe that the plague was imported by them.

4. I regret I am unable to give reliable information on any of the other points mentioned by the Commission.

From MAJOR R. STEWART, Deputy Commissioner, Shillong, to the Personal Assistant to the Commissioner of Assam,—(No. 136, dated Shillong, the 25th February 1870).

SHILLONG.

Major R. Stewart.

With reference to your memorandum No. 35, dated 16th February, and its enclosure, I have the honor to state that no buffaloes appear to have brought the cattle disease into this district, these animals not being used in these hills, and never passing through them.

From A. C. CAMPBELL, Esq., Assistant Commissioner of Burpettah, Assam, to the Personal Assistant to the Commissioner of Assam,—(No. 249 A, dated Camp Kana Koosi, the 19th February 1870).

ASSAM.

A. C. Campbell, Esq.

In reply to your memorandum No. 35, dated 16th instant, I have the honor to forward the following information on the points referred to in Mr. Hallen's letter to your address, on the subject of the alleged importation of the cattle plague into Assam by means of infected buffaloes from Bengal.

Answer.—I saw several herds of buffaloes passing through the sub-division at different times from December 1868, when I assumed charge here, to March and April 1869. The owners said that they had come from Dinagepore, Purneah, and Rungpore, and were proceeding to Upper Assam to dispose of their cattle. I had no reason to believe that the cattle in these herds were infected. I had no opportunity of ascertaining the precise number of cattle which passed through on these occasions, nor can I say how many herds passed through; but on a rough calculation, about 600 or 700 head of buffaloes passed through during the period above specified.

Question 4.

ASSAM.

Question B.

Answer.—The buffalo owners, on the occasions on which I questioned them on this point, intimated to me that the time occupied by them in reaching Burpettah from their homes averaged from a month to six weeks, as they had to travel slowly in order to obtain pasture for their cattle.

Question C.

Answer.—Of course, if any plague was prevailing in Bengal at the time of the departure of the buffaloes, it is not likely that the owners would furnish any information as to the nature of the plague, or admit that there was any plague at all; and on this head people in Assam had no means of obtaining information, except through the buffalo owners themselves.

Question D.

Answer.—The buffaloes which passed through the sub-division appeared to me in weakly condition, caused evidently by insufficient pasturage. I saw several dead and dying animals on the track through which they passed. In every instance the body seemed a mere skeleton. In all instances of death from cattle plague which I witnessed in Assam during the great plague of 1852-53, the animals lost nothing in flesh, and, generally speaking, the weakly were exempt from the disease, while those in good condition were stricken down. I have not the least hesitation, therefore, in expressing my belief that the mortality among imported buffaloes on the way and after they were sold was not caused by plague, but from the effects of neglect and insufficient food during their long march from Bengal to Upper Assam.

In conclusion, I may mention that one of the buffalo owners who passed through the sub-division towards Upper Assam in the early part of last year, returned about the beginning of June with the greater portion of his herd of buffaloes, which he informed me he was about to take back to his country, as the people in Central and Upper Assam were prejudiced against buying them, owing to the belief that they were plague-stricken. On arrival at Burpettah, this man found his further progress homeward arrested by the country being inundated, and as he and his companions were all suffering from fever, he disposed of his buffaloes at Burpettah at a very great reduction in their value, and, with the exception of a few weakly ones so purchased, they are all (over a hundred in number) at this present time in capital condition.

MUNGLEDYE.

J. J. S. Driberg, Esq.

From J. J. S. DRIBERG, Esq., Extra Assistant Commissioner, Mungledye, to the Personal Assistant to the Commissioner of Assam,—(No. 492, dated Mungledye, the 21st February 1870).

I have the honor to acknowledge the receipt of your Circular memorandum No. 35 of the 16th instant, forwarding copy of a letter from the President, Cattle Plague Commission, and in reply thereto beg to submit the following remarks:—

2. I am unable to give any reliable information in answer to the questions put by the members of the Commission.

3. Several herds of Bengalee buffaloes travel through Mungledye annually between November and February, and sometimes as late as March. In Mungledye the plague broke out towards the latter part of April 1867, so that it can scarcely be attributed to buffaloes passing through a month earlier; and at this late period it is impossible to obtain any trustworthy information on the subject, or to collect facts to show whether the importation of Bengalee buffaloes brought the disease into the province in 1867.

4. I may state, however, that I have seen several herds of buffaloes passing through to Upper Assam, but never noticed any mortality amongst them. Had any large number died on or alongside the Government road in 1867, it would have been brought to notice, and the absence of any such information leads me to conclude that the mortality was not very great. Last year I believe the owners lost a larger number of buffaloes than usual; but the cattle plague was not raging in Mungledye, nor did it show itself immediately after.

5. I am not aware of any buffaloes already infected having passed through Mungledye.

NORTH LUCKIMPORE.

John Campbell, Esq.

From JOHN CAMPBELL, Esq., Extra Assistant Commissioner, North Luckimpore, to the President, Cattle Plague Commission, Sudder Street, Calcutta,—(No. 23, dated Luckimpore, the 22nd March 1870).

With reference to your letter to the Commissioner of Assam, dated on board the *Koel*, below Gowhatty, I have the honor to furnish you such information as I am able on the points therein referred to.

2. I have been unable to ascertain whence the batch of buffaloes that passed through the sub-division in March last were brought. The buffaloes were taken to the Sebsaugor District, across the "Majoli," to Golaghat. The batch was, I believe, the first introduced into the sub-division for many years. There is ordinarily no importation from Bengal.

3. I regret that I am quite unable to supply you with reliable information on the points B and C; I did not at the time inquire into them.

4. I believe several buffaloes died in the Durrung District prior to their arrival in the sub-division. One died in the sub-division just where the first outbreak occurred. It is said to have died of the plague, and I have no reason to doubt the correctness of the statement.

From CAPTAIN JOHN GREGORY, Deputy Commissioner of Luckimpore, to the Personal Assistant to the Commissioner of Assam,—(No. 31, dated Debrooghur, the 14th April 1870).

DEBROOGHUR.
Captain John Gregory.

I have the honor with reference to your memorandum No. 35 of 16th February last, to forward a copy of a letter from Mr. Campbell, in charge of the Sub-division Luckimpore, where the cattle plague first broke out in this district.

2nd.—Last year, on my journey to Debrooghur through the Sub-division of Golaghat, I observed that many head of cattle had died in the Mouzahs of Nohoronie and Deorgaon, in the Sebsaugor District. On my asking some of the native gentlemen whom I met on the road as to the cause of the death of the cattle, I was informed that a batch of diseased Bengalee buffaloes had been brought to Nikree Chapree, where the Awniatee Gossain's buffaloes were grazed, and that the disease had spread to them, and from them to the cattle of Nohoronie and Deorgaon Mouzahs.

3rd.—Where these Bengalee buffaloes were imported from, neither Mr. Campbell nor I can say.

Extract from letter from JOHN CAMPBELL, Esq., Extra Assistant Commissioner, North Luckimpore, to the Deputy Commissioner of Luckimpore, Assam,—dated 8th April 1870.

LUCKIMPORE, NORTH
John Campbell, Esq.

"On points B and C of the Cattle Plague Commission's letter I can give no information at all. No inquiries were made at the time, and it is impossible now to get any reliable information.

"I can only state that a batch of buffaloes was introduced into the Narainpore Mouzah of this District at the end of March 1869; whence they came I cannot say, except that they came from some district of Bengal. The batch was brought through the Durrung District and taken into Golaghat. This is the first importation of buffaloes into the sub-division for very many years.

"I cannot say if any buffaloes died in transit to Assam or not; I heard of deaths in the Durrung District, and one died just after its arrival in Narainpore Mouzah, the plague breaking out soon after."

NORTH-WESTERN PROVINCES.

BENARES DIVISION,

COMPRISING THE DISTRICTS OF BENARES, AZIMGURH, GORUCKPORE, BUSTEE, AND MIRZAPORE.

Index of Records.

[N. B.—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Benares.	Historical Sketch ...	...	...	Page 343.
	Collector of Benares ...	...	22nd July 1868 ...	<i>Selections, Government of India, No. 69, p. 216. Reports that no disease prevails.</i>
	Secretary to the Government of N.-W. P.	119a	24th June 1869 ...	A report regarding the murrain, chechuck, which broke out in the Benares District in October 1868, and the result of a village-to-village inquiry.
	A. Shakespear, Esq., Commissioner of Benares	102	12th May 1869 ...	
	M. Brodhurst, Esq., Officiating Collector of Benares.	146a	10th ditto ...	
	A. Shakespear, Esq., Commissioner of Benares.	100	Ditto ditto ...	Giving a description of the murrain which broke out among the Commissariat cattle in March last, and detailing the measures adopted.
	Colonel G. A. Fisher, Commanding at Benares.	133	23rd March 1869 ...	Setting forth the orders issued by Colonel Fisher on the occasion of the outbreak of cattle disease among the Commissariat cattle.
	Ditto ditto ...	152	10th April 1869 ...	Reports upon the cessation of cattle disease among Government cattle in cantonments since preventive measures were adopted.
	Ditto ditto ...	187	6th May 1869 ...	In continuation of the above, makes certain remarks regarding the above outbreak.
	C. Barrow, Esq., V. S. ...	...	23rd March 1869 ...	Describes the symptoms and post-mortem appearances of cattle attacked with rinderpest during the late outbreak among the Government Commissariat cattle.
	Ditto ditto ...	...	5th May 1869 ...	In continuation of the above.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Benares—continued.	Captain H. W. D. Chester, Sub-Assistant Commissary General.	288	6th May 1869 ...	Forwards a report of cases of rinderpest among the Commissariat cattle at Benares in 1869, p. 347.
	A. Shakespear, Esq., Commissioner, Benares.	201	7th August 1869...	Forwarding the Proceedings of the Committee appointed to report upon the epizootics lately prevailing among cattle in the Benares District, p. 348.
	W. A. Forbes, Esq., C. B., Commissioner, Benares Division.	155	21st May 1870 ...	Forwarding correspondence connected with a disease which has lately shown itself in the Benares District, p. 362.
	Captain G. T. J. Graham, District Superintendent of Police, Benares.	426	13th April 1870 ...	Submits a report on cattle disease and cattle poisoning in the Benares District, p. 362.
	A. J. Lawrence, Esq., Magistrate of Benares.	48	3rd May 1870 ...	Forwarding the above to the Commissioner with remarks, p. 364.
	<i>Ditto ditto</i> ...	50	9th May 1870 ...	Forwarding letter with the Commission's Form No. 1 filled in.
	Villagers of Moredaha ...	...	30th May 1870 ...	Evidence taken by the Cattle Plague Commission in the District of Benares, p. 365.
	Doorga Persad Aheer ...	...	1st June 1870 ...	
	Collector of Azimgurh ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 216. The Tehsildar of Mahool in Azimgurh reports that there has been a good deal of mortality among the cattle, but no contagious disease.</i>
	J. Sladen, Esq., Officiating Magistrate.	245	19th September 1870	Reports the prevalence of che-chuck in several tehsils of the Azimgurh District during the years 1869 and 1870, p. 367.
Goruckpore.	Collector of Goruckpore ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 215. No cases of cattle disease reported from Goruckpore.</i>
	T. E. Elliot, Esq., Magistrate of Goruckpore.	201	7th November 1870	Forwarding a report from Mr. Berril, District Superintendent of Police, Goruckpore, describing the most fatal cattle diseases of the district.
	Stephen G. Read, Esq., Goruckpore.	D. O.	30th ditto ..	Describing the epizootic diseases which have recently attacked cattle in the Goruckpore District.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Ghazee-pore	Collector of Ghazee-pore ...	...	23rd July 1868 ..	<i>Selections, Government of India, No. 69, p. 216. A few cases of cattle disease were reported from Pergunnah Zamaueah in the Ghazee-pore District.</i>
	W. Oldham, Esq., Magistrate of Ghazee-pore.	350	18th July 1870 ...	Reports an outbreak of cattle disease in several villages to the north-east of Ghazee-pore, p. 367.
	<i>Ditto ditto</i> ...	412	13th August 1870...	Forwarding correspondence regarding cattle poisoning.
	H. Gardener, Esq., Inspector of Police.	...	6th ditto ...	Reports the cessation of cattle disease in the Ghazee-pore District after a heavy fall of rain.
	Mr. J. Bourke ...	...	10th ditto ...	Describes the nature of the cattle disease in the Ghazee-pore District, p. 367.
Mirzapore.	Collector of Mirzapore ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 216. No disease reported from Mirzapore.</i>
	J. Simson, Esq., Officiating Collector of Mirzapore.	462	22nd November 1870	Forwards Form No. 1 of the Cattle Plague Commission duly filled in for his district.
Bustee.	Collector of Bustee ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 215. States that pet-bhagee, a sort of cattle murrain, prevailed in the Bustee Tehsil in 1868, and describes symptoms.</i>
	P. Wigram, Esq., Officiating Magistrate.	126	31st August 1870...	Reports that cattle disease is more or less prevalent in his district.
	W. Cooke, Esq., Zemindar, Bustee.	D. O.	15th November 1870	Submitting a memo. regarding the prevalent cattle diseases in the Bustee District.

HISTORICAL SKETCH.

The history of cattle disease in the North-Western Provinces is considerably more meagre than in Lower Bengal, but they both possess this feature in common, that the source of interest in the subject was the same, namely, a communication from the Madras Government, similar to that which has been noticed at page 38, giving a description of the outbreak of murrain in the District of Kurnool of that Presidency, and enquiring whether anything of the same sort had been observed within the jurisdiction of the Government of the North-Western Provinces. This letter (No. 1934, dated 27th October 1863) was sent to the Sudder Board of Revenue on the 3rd of December, with a request that the Commissioner of Jhansie, in whose Division murrain had appeared in 1861-62, should be requested to furnish information on the subject, or "any other officer within whose jurisdiction distemper may have appeared." Dr. Pearson, Superintendent General of Vaccination, was addressed separately on the same subject.

In reply to this communication, the Sudder Board of Revenue submitted (20th April 1864) papers regarding cattle disease in Dehra Doon, Jhansie, and Lullutpore, which will be noticed hereafter. The reference to Dr. Pearson appears to have been without result.

Early in the year 1868 (17th January), the Government of India, in the Home Department, addressed the several local Governments, calling for papers relating to cattle murrain, with a view to their publication in a volume of Selections. The documents above referred to were accordingly transmitted by the Secretary to the Government, North-Western Provinces (4th January 1868), and will be found at pages 200—204 of the "Selections from the Records of the Government of India, Home Department," No. LXIX.

In June of the same year the Commissioner of Allahabad submitted to his Government reports regarding cattle disease in the District of Banda, which were subsequently forwarded (14th July) to the Government of India, and will be found in the same volume at pages 205—207.

Meantime, reports had been received by the Home Department regarding cattle disease in the Hurdai District of the Province of Oudh in November 1867 (Selections, pages 194—199). Copies of these documents were forwarded to the Government of the North-Western Provinces on the 8th February 1868, with a view to ascertain whether a similar disease existed in these Provinces, and whether the abundance or otherwise of salt had any effect upon the health of cattle. This question was referred to the Board of Revenue, who issued a Circular, No. B, dated 27th March 1868, to all Collectors. This Circular elicited replies from all the Collectors of these Provinces, which were summarised by the Secretary on the 23rd July 1868, transmitted to the local Government on the 22nd July, and to the Supreme Government on the 13th August.

These replies, which are printed in the Selections (pages 208—216), contain for most districts the earliest extant records on the subject of the diseases of cattle in them, and will be frequently referred to in these sketches. This account of the development of information regarding cattle murrain in these Provinces has been written here once for all, and will be referred to as occasion requires.

As regards the districts of the Benares Division; the Collectors of Benares, Goruckpore, and Mirzapore report that no cattle disease had appeared in their districts. State-
1868.ments of this sort are to be understood as referring to known or reported cattle disease; for the personal inquiries of the Commission in all the localities visited by them disclosed, in these as in the Lower Provinces, a traditional or unrecorded history of cattle diseases, stretching back beyond the recollection of the present generation. This was notably the case with the Benares District, where oral testimony revealed the existence of cattle plague in the years 1849, 1855, 1857, and 1865.

HISTORICAL SKETCH.

The Collector of Bustee describes a plague which he calls *petbhagee*, whose symptoms were "languor, refusal to eat, diarrhoea, bloody stools, a swollen appearance, and sometimes maggot-infested lips," and which prevailed in the Bustee Tehseel adjoining the Fyzabad District. This may have been rinderpest, but the number of cattle affected by it is said to have been small. In Bansee considerable cattle sickness prevailed in September and October 1869; eight different cattle diseases are said to be known in this district.

The Collector of Azimgurh also reports that a good deal of cattle mortality had occurred on the confines of the Fyzabad District. It is worthy of note here that, as will be more fully shown in Appendix 4, a system of cattle poisoning was discovered in the Fyzabad District in February 1869, and it is not improbable that this may have been in part the cause of the mortality noticed by the Bustee and Azimgurh Collectors.

The report from Ghazeepore is more precise. Cattle disease had occurred in Pergunnah Zumaneah, on the Shahabad side of the Ganges, which was investigated by a farrier from the Kyrantadhee Stud, and pronounced to be a

1869. contagious typhoid fever—no doubt rinderpest. In the year 1869 cattle disease became

a subject of great attention in Benares. It appears from the Proceedings of the Home Department (Nos. 172 to 174 of 21st August) that cattle disease appeared both in the district and among the Commissariat herd in the early months of 1869. It appears from a letter of Mr. M. Brodhurst, the Collector of Benares, that up to the month of March "there had not been a rumour of the existence of any cattle disease in the district." In a report to the Sudder Board of Revenue (dated 4th March) Mr. Brodhurst states that:—

"A few months since there was some sickness and loss of cattle, but at present there does not seem to be any, except in two villages of the Benares Tehsil, where considerable loss is said to have been sustained amongst the cattle from a disease termed by the natives *chechuck* or *small-pox*. Reports were called for from the Tehsildars, and as a result of these a village-to-village inquiry instituted. From these inquiries it appeared that the disease had broken out in October 1868. The Tehsildars had some difficulty in eliciting information from the people, but they found the symptoms of the disease to be,—hair standing on end, ears drooping, a sticky saliva from the mouth, distention of the stomach, frequent purging—first of watery, then of bloody discharges—and death in from one to nine days after attack."

The remedies used by the people are specified: ghee, the rind of *kodha*—a kind of gourd,—fomentation of the face with decoction of neem, and poojahs. The latter had been performed by chamars for money received. The Tehsildars were inclined to believe that many of the deaths were attributable to poisoning. Mr. Brodhurst goes on to say that on the 9th May he had seen cattle belonging to Rajah Sir Deonarain Singh suffering, in the neighbourhood of Benares, from symptoms similar to those above described. This, he remarks, could not be owing to poisoning, because the chamars were not allowed to take the hides. The Rajah had lost 13 cattle in Benares, and the same disease had broken out among his cattle on an estate near Syudpore, in the District of Ghazeepore. The Rajah's cattle were of superior breed and lived under good sanitary conditions, and succumbed to the disease, while the weaker and comparatively worthless were not attacked, or if attacked, recovered. Cases of cattle poisoning had been brought to light in the district, and 27 persons had been punished for the crime within 6 months; arsenic being the poison used. In the adjoining District of Jounpore the mortality, alleged chiefly from poisoning, had been very great during the preceding few months. The result of the village inquiries is shown in the statement at page 358, and the Collector surmises that the deaths had not probably exceeded one per cent. of existing stock. Proclamations had been issued enjoining segregation, and forbidding movement of infected cattle. While these inquiries were being prosecuted regarding the cattle of the district, disease had broken out among the Commissariat slaughter cattle in the military cantonments. The disease broke out on the 13th of March 1869 amongst a batch of cattle which had been purchased at the Kat Berhampore Fair, in the Shahabad District, on the 10th of February, and marched to Benares, arriving there on the 18th, 13 days before the disease broke out.

HISTORICAL

Four cattle died on the 13th March: these must have sickened some days before. The progress of the disease is shown in the statement prepared by Captain Chester, the Commissariat Officer, at page 347. The matter was reported to the Officer Commanding the Station on the 21st, and a special Committee was at once appointed "for the purpose of examining the cattle and taking such steps as might be necessary to check the spread of the disease." Veterinary Surgeon C. Barrow, of the 19th Hussars, carefully examined the cattle, reported that they were suffering from rinderpest, and recommended separation, the slaughter of diseased animals, burial, quarantine, and continued inspection. His letter is printed in full at page 360. Accordingly, 17 animals were slaughtered, the skins were destroyed, the carcasses buried, and the sheds thoroughly disinfected. The disease died out by the 27th. The slaughter cattle were carefully inspected by a Veterinary Surgeon, and the meat by a Medical Officer, and the strictest separation of sick and healthy enforced. The result was that in a stock of 230 head, 93 were attacked, 35 died, and 18 were destroyed. A second batch of cattle was bought at the same fair on the 10th of April, and marched to Benares, where they arrived on the 18th of April. They were inspected and found apparently healthy, and housed with the remaining cattle; disease, however, broke out among them on the 22nd, four days after the introduction of the new cattle. The progress of this new outbreak is shown in Captain Chester's statement at page 348, and the nature of the disease pointed out by Veterinary Surgeon C. Barrow in a letter dated 5th May 1869 (page 361). The disease died out on the 7th May after 77 had been attacked in a stock of 340, and 37 had died; 18 sheep were also attacked with similar symptoms, and 9 of these died. The destruction of diseased animals was not resorted to on this occasion,—separation, cleanliness, and medical treatment (bleeding, purgatives and tonics) being the means employed to combat the plague.

Attention was now directed to ascertain whether disease had existed at the fair or along the road by which the cattle had marched. It was found that a similar disease had broken out among 130 cattle purchased at the same fair and marched to Dinapore: 10 died out of 30 attacked. The Collector of Ghazeepore reported that a "contagious fever" had prevailed among cattle in February and April at two of the halting places, and it was subsequently ascertained from the Assistant Magistrate of Buxar that *seetlah* had broken out at the April fair and in some of the surrounding villages. All the correspondence summarised above was sent up to the Government of India, and the matter attracted the notice of His Excellency the Viceroy, who ordered an inquiry. A Committee was accordingly convened, consisting of Colonel Turner, Mr. Brodhurst, Collector of Benares, Dr. R. Cockburn, Civil Surgeon, Captain H. D. E. Chester, Deputy Assistant Commissary General, and Veterinary Surgeon E. Stanley, 5th Lancers. This Committee, after a careful investigation, came to the conclusion that the disease was rinderpest, and was endemic. They could not recommend "stamping out," but urged segregation and legislative action to that end. The Proceedings, which have not been hitherto published, are given in full in this Appendix, because of their interest and as an example of the benefit which may be expected to arise from convening station committees on such occasions, in the way of eliciting the truth and suggesting measures appropriate to the country and peculiarities of the place.

While the evidence regarding the prevalence of disease in the Benares District in 1869 is so strong and clear, the information from other districts of this Division is scanty. In Jounpore there was "very great loss of cattle" during the year. This was attributed partly to disease and partly to poisoning. There can be no doubt that both causes were in operation. The deaths were estimated by Mr. Daniell, the Magistrate of the District, at 12,000 head, and it is very difficult to say how many were due to one or other cause. The impression gained by the Commission during their visit to this district was, that disease was responsible for the majority of deaths, and that here, as in other parts, poisoning was practised under cover of the disease, and that when

HISTORICAL SKETCH. A few cases of the latter were discovered, the people were prone to attribute all their losses to a cause which satisfactorily accounted for some.

On the 25th of January 1870 the Collector of Benares reported that cattle disease no longer existed in the district.

It was found, however, in April to be extensively prevailing, and in a return furnished by the Police, dated the 1st of May, 1,139 deaths are reported out of 1,388 cases—82 per cent.—probably an exaggerated statement. A careful local investigation was made by the District Superintendent of Police. Cases of poisoning were discovered, but the investigations satisfied the Collector that these were few in number, and even after stringent orders for burial were passed and enforced, deaths continued to occur as before. The reports of the District Officers are full of interest and are given in detail. Veterinary Surgeon Lemon, Royal Horse Artillery, accompanied the District Superintendent of Police into the district and studied the disease, giving directions for treatment. He found the disease so much milder in type than he had known it in England, that he at first doubted its identity with rinderpest. At the request of His Honor the Lieutenant Governor, this district was visited by the Commission on the 30th of May. The disease was found to be prevailing in the immediate vicinity of the city of Benares, and cases were examined: the *post-mortem* examinations made, and evidence taken, convinced them that it was the same form of disease which they had previously met with, namely, rinderpest, an opinion in which Mr. Lemon, after re-considering all the evidence upon the subject, concurred. The disease in this district appears to have died out about this time, and no subsequent reports were received. The District of Jounpore was visited by the Commission early in June, for the purpose of inquiring into the subject of cattle poisoning. Efforts were made to discover the existence of disease, but without success. Cattle disease prevailed in the Ghazeepore District in July and August, but not in a severe degree, and seems to have been put a stop to by a heavy fall of rain.

The Magistrate of Azimgurh reports the prevalence of *chechuck* in some tehsils of the district in April, May, and June. The information given is meagre.

In the District of Bustee cattle disease is well known, and both rinderpest (*bhawanee*, &c.) and foot and mouth disease are said to exist. The latter prevailed in August towards the north of the district. Hoven appears to be a common disease in the district, caused by improper feeding, and called *petbhaghee*, &c.

In Mirzapore disease prevailed extensively from March to November. The disease prevailed in 125 villages of Pergunnahs Kuntal, Chunar, Roberts-gunge, and Burhur, the greater number of the villages being included in the latter. The diseases are called *seella*, *runghoa*, and *batass*. In a stock of 347,754, 33,250 cattle are said to have been attacked—9.56 per cent. of stock; 10,705 to have died—3.07 per cent. of stock, and 32.19 per cent. of attacked; and 22,545 to have recovered. The diseases are pronounced infectious. *Seellah* appears to indicate rinderpest, and as the symptoms are not clearly distinguished, it is difficult to know what the other two names represent.

In the District of Goruckpore no official report of prevailing disease was received; but from a private letter received by a member of the Commission, it appears that both foot and mouth disease (*kang*) and rinderpest (*chechuck*) are well known, and prevail yearly. Other diseases are mentioned, which it is impossible, from the imperfect descriptions given, to identify, but hoven (*bhaghee*) is among them.

DISTRICT OF BENARES.

BENARES.

From the Executive Commissariat Officer, Benares, to the President, Special Committee for prevention of spread of Cattle Disease at Benares,—No. 288, dated the 6th May 1869. Captain H. W. D. Chester.

In forwarding statement showing the number of cattle attacked up to date since the second outbreak of cattle disease amongst the Government slaughter cattle at this station, I have the honor to inform you that the second outbreak commenced on the 22nd April 1869 amongst a new batch of bullocks purchased during that month at the Kat Berhampore Fair, about 90 miles from this, in the Shahabad District. They were marched to this *via* Buxar and Ghazeepore.

As the first outbreak first appeared among a batch of bullocks purchased at the same fair in February, I gave orders that they were not to be brought into cantonment until I had inspected them.

The cattle arrived at the Rajghaut on the 18th April, and the following morning I inspected them with the station butcher. As every animal appeared healthy and in good condition, I ordered them up to the cattle-shed in cantonment.

Directly the first outbreak had been suppressed, I had the floors of all the sheds dug up, fresh earth laid down, the feeding troughs whitewashed, and the floors, pots, &c., sprinkled with lime-water.

I have pursued the same treatment, *viz.*, bleeding from the jugular vein, administering purgatives and tonics. It will be seen by the statement that out of 77 attacked, 37 have died, and I imagine that about eight more that are still sick will not recover; the percentage of deaths will then be about half of the number attacked, whereas during the first outbreak the percentage of deaths was about two-thirds of the number attacked.

Report of cases of Rinderpest in the Commissariat Department at Benares.

Number of animals at time of outbreak.	Number of animals attacked and suspicious.	Number of animals convalescents.	Number of animals died.	NUMBER OF ANIMALS KILLED.		Number of animals healthy.	Date.
				Rations.	Destroyed.		
296	36	...	4	7	...	253	March 1869.
285	20	6	8	2	...	249	13th, Saturday.
275	21	8	6	4	...	236	14th, Sunday.
265	15	10	6	4	...	230	15th, Monday.
255	7	14	4	5	...	225	16th, Tuesday.
246	6	14	1	4	...	221	17th, Wednesday.
241	22	14	2	4	...	199	18th, Thursday.
235	27	14	1	4	...	189	19th, Friday.
230	8	16	3	2	17	184	20th, Saturday.
208	10	16	...	4	...	178	21st, Sunday.
204	16	16	...	5	1	166	22nd, Monday.
198	4	33	...	4	...	157	23rd, Tuesday.
194	4	37	...	4	...	149	24th, Wednesday.
190	...	41	...	4	...	145	25th, Thursday.
186	...	1	...	4	...	181	26th, Friday.
182	...	...	...	...	...	...	27th, Saturday.
...	196	...	35	...	18	...	

Number of animals at time of outbreak.		Number of animals attacked and suspicious.		Number of animals convalescents.		Number of animals died.		NUMBER OF ANIMALS KILLED.				Number of animals healthy.		DATE.
								Rations.		Destroyed.				
Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.	
384	...	...	...	...	...	...	...	2	...	...	...	377	...	22nd Apl. 1869.
382	...	24	...	...	...	...	...	5	...	...	...	353	...	23rd "
377	...	...	...	...	...	3	...	4	...	...	...	349	...	24th "
370	...	...	...	...	...	4	...	2	...	...	...	347	...	25th "
364	...	...	...	...	...	1	...	4	...	...	...	343	...	26th "
359	...	...	...	...	...	3	...	4	...	...	...	339	...	27th "
352	...	...	...	...	...	2	...	4	...	...	...	335	...	28th "
346	...	...	...	...	...	1	...	4	...	...	...	331	...	29th "
341	...	...	...	...	...	1	...	4	...	...	...	327	...	30th "
336	165	19	13	...	...	1	...	4	1	...	...	304	151	1st May 1869.
331	164	...	...	...	...	2	2	2	21	...	...	302	130	2nd "
327	141	...	3	...	...	3	3	4	1	...	...	298	126	3rd "
320	137	29	1	...	...	5	3	4	1	...	...	265	124	4th "
311	133	...	1	...	...	5	...	4	1	...	...	261	122	5th "
302	132	...	...	...	...	5	1	4	1	...	...	257	121	6th "
293	130	...	...	...	...	1	...	4	...	...	...	253	121	7th "
288	130	...	...	...	...	...	...	...	...	...	...	...	...	8th "
...	...	77	18	...	...	37	9	...	...	...	...	...	...	

N. B.—The third column cannot be filled up, as the return was not kept in this form during second outbreak.

BENARES. From R. SIMSON, Esq., Secretary to the Government of the North-Western Provinces, to the Secretary to the Government of India, Simla,—(No. 747A, dated Nynce Tal, the 8th September 1869).

With reference to the endorsement from your office, No. 2856, dated 21st June last, forwarding correspondence, and requesting that a Committee be nominated to report on the outbreak of murrain amongst the cattle and sheep in the Benares District, I am desired to forward, for submission to His Excellency the Viceroy and Governor General in Council,

a copy of a letter* from the Commissioner of Benares, with copies of enclosed papers, being a report of the Proceedings of the Committee assembled for the above purpose.

2. The original correspondence received with the endorsement under reference is herewith returned.

A. Shakespear, Esq. From A. SHAKESPEAR, Esq., Commissioner of the Benares Division, to the Secretary to the Government of the North-Western Provinces,—(No. 201, dated the 7th August 1869).

With reference to the order of Government, No. 193A, dated the 6th ultimo, I have the honor to submit herewith, in original, the Proceedings of the Committee assembled at this station for the purpose of inquiring into the cause and nature of the cattle plague which a short time ago prevailed in this district, and to return the original enclosures which accompanied your communication under acknowledgment.

Proceedings of Committee. Proceedings of a Committee assembled at Benares on Saturday, the 17th of July 1869, under instructions received from His Honor the Lieutenant-Governor of the North-Western Provinces to inquire into and report upon the nature and course of an epidemic which has lately prevailed amongst the Government and other cattle in Benares, and the District, and of the proper mode of treating such outbursts.

The Committee is composed as follows:—

COLONEL A. TURNER, Bengal Staff Corps.

M. BRODHURST, ESQUIRE, Collector and Magistrate, Benares.

SURGEON-MAJOR COCKBURN, Civil Surgeon, Benares.

CAPTAIN CHESTER, Deputy Assistant Commissary General, Benares.

VETERINARY SURGEON E. STANLEY, 19th Hussars.

The Committee assembled at 10 A. M. at the Library, Civil Lines, Benares: all present.

Letter No. 170, from A. Shakespear, Esquire, Commissioner of the Benares Division, dated Benares, 10th July 1869, to Colonel Fisher, Commanding at Benares, is read and appended, marked 1.

Letter, in copy, No. 193A of 1869, Revenue Department, from R. Simson, Esquire, Secretary to Government, North-Western Provinces, to A. Shakespear, Esquire, Commissioner, Benares Division, dated Nynce Tal, 6th July 1869, giving copies of official memorandum, Military Department, No. 165, dated Simla, 8th June 1869, signed H. W. Norman, Major-General, and a copy of a memorandum by the Right Honorable the Governor General of India in Council, Military Department, dated Simla, 2nd June 1869, and memorandum No. 2856, Home Department, Public, Simla, 21st June 1869, signed J. Geoghegan, Under Secretary to Government of India, is read and appended, marked 2.

The enclosures noted in Major-General Norman's official memorandum No. 165 of 8th June 1869 having been read—

CAPTAIN CHESTER, a member of the Committee, is questioned, and in reply gives the following answers:—

The epidemic first appeared in the Commissariat cattle-yard here amongst a batch purchased at Kat Berhampore by my agent and marched up by some of the establishment. They left Berhampore on the 10th of February last and marched up, halting daily at Bajpore, Buxar, Kutwar Ghat, Mohamadabad, Ghazeepore, Nundgunge, Syudpore, Chowbepore, and into Benares on the 18th. The disease did not appear in this batch till the 13th of March. The second batch was purchased under the same circumstances, and marched up by the same stages. They left Berhampore on the 11th of April and arrived at Benares on the 19th of April. The disease appeared in this batch on the 24th of April. I had never seen any

similar disease before; but as I thought the treatment I adopted the best, I used it. I had not then heard of the existence of this disease elsewhere. I had purchased other cattle elsewhere about that time. They caught this disease afterwards.

Captain Chester wishes to make a few remarks.

Remarks by Captain Chester.—The Officer Commanding at Benares has stated in his letter No. 152 of the 10th of April, that the Committee of Inquiry at Benares ordered all the skins of diseased cattle to be destroyed, but I had ordered this to be done from the commencement of the outbreak almost.

No. 1163, W. PERKS, 2nd Battalion, Her Majesty's 60th Rifles, is called before the Committee, and in reply to questions states as follows:—

I was a butcher by trade before I enlisted. I am the station butcher here.

I saw two cases at Home in 1865 of a disease similar to that which lately broke out in the slaughter cattle here. I was one of the men selected to go and assist a farmer making up his hay at Dover, and I saw two cows sick. I asked what was the matter with them, and they said it was cattle plague. I do not know what became of them. The symptoms were a running at the nose and eyes, and purging. I do not know if the cattle plague was about Dover then. I saw the dead cattle opened at Benares. I opened them myself in the presence of Mr. Barrow and Captain Chester. The peculiarities I observed about them were, the gall enlarged, the stomach very much inflamed, spots all over the stomach—red spots. I opened two dead sheep by order of Captain Chester, but theirs was not the same disease as the horned cattle had; this was in the second outbreak; their livers were quite rotten. I did not open any of the sheep in the first outbreak.

The witness withdraws.

ABDOOL GUNNY, Commissariat Meat Agent, is called before the Committee, and in reply to questions states as follows:—

I purchased a batch of cattle for the Commissariat in February last at Kat Berhampore Fair. All the cattle I purchased arrived here safely. The people who brought the cattle up here made no report to me of any sickness existing amongst other cattle on the road. The second batch was purchased by me and marched up under precisely the same circumstances as the first. I was in the first fair three days, and in the second fair two days, and I saw no sickness there and heard of none. The Dinapore Commissariat Agent was there. I have heard from the cattle dealers that sickness of the same kind as was at Benares did break out amongst those he purchased there. I have been twenty years in this work, and I have never before seen a similar disease to this one at Benares. Since February last, I have heard from cartmen coming into Benares that a disease has existed in the district, of which the symptoms were similar to those of the Commissariat cattle here. I know of no name for this disease, and neither I nor those who told me of its being in the district have ever heard of such a disease before. I do not know of any such cases of disease existing in or near Benares now. There have been two outbreaks of disease amongst the Government sheep here. I cannot say if it was the same disease as that amongst the horned cattle, but they were much purged and had a running at the nose and mouth.

The witness withdraws.

KIDDERNATH PUNDIT, an Agent of the Maharajah of Benares, is called before the Committee, and in reply to questions says as follows:—

The Maharajah has from 250 to 300 villages in this district. I have heard of the existence of cattle disease in many of these villages ever since October last. Amongst the draught cattle of the Maharajah at Ramnuggur he lost eighty, and one hundred and twenty-five milch cows in the other villages. The disease is called *seetlah*, or *cheekuck* (i. e., small-pox). The symptoms are,—first hot breath from the nostrils, extreme heat inside of the mouth if the hand is inserted; if the mouth is opened, it looks as if it had been scalded; then a thick, slimy discharge from the mouth and nose, and from the eyes a watery one, and at the same time extreme heat of body; sometimes dark spots appeared on different parts of the skin of the body; occasionally blood flowed from the nose and anus in the latter stages of the disease; even after these symptoms the animal sometimes recovered, and, in fact, about fifty per cent. recovered of those attacked. Of the attacked, those which were freely purged, excrement being freely mixed with blood, recovered; those which passed merely blood died. We treated them with a mixture of neem leaves, barley meal, curd and whey, with, we think, a beneficial result. I have seen similar disease to this ten or fifteen times before, and the last time was three years ago; and in that year forty-three draught cattle of the Maharajah died of the same disease at Ramnuggur, and it prevailed at the same time in the other villages, but the disease was not so virulent as this last epidemic. We believe the disease to be contagious, and it is the custom to keep the cattle of a village in which the disease exists separate from the healthy villages. I know nothing about this disease amongst sheep.

The witness withdraws.

BENARES. HURPERSHAD PANDY, a Darogah of the Cattle Department of Rajah Sir Deo Narain Singh, is called before the Committee, and in reply to questions states as follows:—

5th witness—a Cattle Darogah of Rajah Sir Deo Narain Singh. Sixteen of the Rajah's horned cattle died at Benares and fifteen at Syudpore in the Ghazeeepore District, after the following symptoms. [The symptoms now described by this witness are precisely the same as those by the last witness.] The cattle mostly died about from the third to the eighth day. About six or eight years ago a similar disease broke out amongst the Rajah's cattle, only of not so virulent a type. I have been eighteen or twenty years in the Rajah's service. I have heard that a similar disease has occurred two or four times before in the district, and many cattle have died of it, but I have not seen it myself in the district. We treated the disease with spice, neem leaves, and milk, but with no benefit at all. Out of the cattle attacked at Benares, twenty-one in number, sixteen died, and of the nineteen attacked at Syudpore, fifteen died, where the Rajah's cattle which had been attacked were removed to for change of air. There were two cows and two calves tethered within a few yards; they were attacked twenty or thirty days after the Rajah's cattle were first sent to that place, and one cow and one calf died.

The witness withdraws.

The following correspondence, which has been obtained from the Commissioner of Benares, and in which are all the letters written and received by him subsequently to his No. 98 of 6th May 1869, and gives all the information he has on the subject of the Committee's inquiry, is now read; the Committee first noting that Mr. Shakespear's No. 98 has already been read with Major-General Norman's official memorandum No. 165 of 8th June, being part of the printed paper, No. 1118 of 22nd May 1869, from the Secretary to Government, North-Western Provinces:—

LIST.

No. 85 of 7th May, from the Commissioner of Benares, to the Collector of Benares, requesting a full report regarding the appearance of an epidemic cattle disease in the Benares cantonments and surrounding district.

No. 100 of 10th May, from the Commissioner of Benares, to Secretary to Government, North-Western Provinces, in continuation of No. 98 of 6th May.

No. 102 of 12th May, from the Commissioner of Benares, to Secretary to Government, North-Western Provinces, forwarding, in original, a report from the Collector of Benares regarding the existence of cattle disease in his district. (Note by the Committee.—No copy of the Collector's report accompanied this.)

No. 110 of 7th May, from the Commissioner of Benares, to the Officer Commanding at Benares, requesting to be furnished with a full report of the appearance of an epidemic cattle disease in the cantonments and surrounding district.

No. 116 of 12th May, from the Commissioner of Benares, to the Commissioner of Patna, reporting that Government slaughter cattle had been purchased at the fair at Kat Berhampore in February and April last, and were marched up *via* Buxar and Ghazeeepore, and that, after arrival at Benares, a disease, said to be similar to rinderpest, had broken out amongst them; and asking for information as to the existence of similar disease amongst the cattle at Kat Berhampore Fair and the neighbourhood, or at Bajpore or Buxar, through which the cattle marched to Benares, and as to any similar disease having appeared at Dinapore amongst cattle purchased at the same fairs.

No. 131, from the Commissioner of Benares, to the Collector of Ghazeeepore, dated 12th May, calling for information whether any disease similar to rinderpest existed in February and April last at the stages named in his district, those where the Commissariat cattle halted on the march up.

No. A. of 28th May 1869, from the Collector of Ghazeeepore, to the Commissioner of Benares, reporting that a contagious fever of the kind indicated existed in February and April last at Mohamadabad and Nundgunge, and that the cattle at Kotwah, Ghazeeepore and Syudpore were free from it.

No. 206, from Personal Assistant to the Commissioner of Patna, dated 10th June 1869, to the Commissioner of Benares, forwarding copy of a letter from the Cantonment Magistrate of Dinapore, to the Magistrate of Patna, dated 28th May, with a copy of No. 301 of 27th May, from the Deputy Assistant Commissary General, Dinapore, stating that 180 head of cattle had been purchased at Kat Berhampore in February last, and 105 in April; that during the former month no deaths occurred, and during the latter only two, but that ten occurred during March amongst cattle purchased at Kat Berhampore from a disease showing running at the nostrils, heated sides, indicating the existence of intense fever, and violent purging; and that at first the disease was treated with buttermilk mixed with bael fruit, which

proved partially successful; but that as some ten out of thirty attacked died, the few which were subsequently attacked were treated with carbolic acid, and of these none died.

Treatment.—Solution of carbolic acid (Calvert's No. 5), one table-spoonful to a pint bottle of water, of which a dessert-spoonful mixed with a large wine-glassful of water was given internally, and a little of the solution applied to the nostrils with a piece of cotton.

No. 206 of 10th June, from Assistant Commissioner of Patna, to the Commissioner of Benares, with reference to 116 of 12th instant, intimating that a reference on the subject has also been made to the Magistrate of Shahabad, whose report will be forwarded when received.

No. 147 of 15th June, from the Commissioner of Benares, to the Secretary to Government, North-Western Provinces, forwarding the report of the Dinapore Commissariat Officer regarding the existence and treatment of the disease amongst the cattle he purchased at Kat Berhampore, also the Collector of Ghazeeepore's report; and adding that no fresh cases had occurred amongst the Government cattle at Benares since the 8th ultimo.

No. 227 of 26th June, from the Personal Assistant to the Commissioner of Patna, to the Commissioner of Benares, forwarding copy of a letter, No. 107 of 5th instant, from the Assistant Magistrate of Buxar, on the subject of the cattle disease, and No. 162 of 1st instant, forwarding the above letter No. 107 in original, copy as received, to the Secretary to Government, North-Western Provinces. (No copy of No. 107 supplied to the Committee.)

The Committee now adjourns till Monday, the 19th instant.

Monday, 19th July 1869.

The Committee re-assembles this day, pursuant to adjournment: all present.

ALLY HOSSEIN, Tehsildar of Benares, is called before the Committee, and in reply to questions states as follows:—

I first heard of the existence of cattle disease in this district in the commencement of March last, when the Putwarries were summoned before the Collector to report as to the state of the crops. From that time inquiries were made from village to village in my tehsilee, and those inquiries have now been made in every village. The total number of deaths amongst the horned cattle in my tehsilee from the outbreak up to the end of June are 2,347; this is, on a rough estimate, a loss of about one per cent. on the total number of cattle. In my opinion, three-fourths of the loss is owing to poison and one-fourth to disease. My reason for this opinion is, that the cattle in best condition, young and with good hides, are the ones that died; also, that where the zemindars are men who act for themselves, they send for the chamars, frighten them, and the disease stops; another reason is, that in one village it appeared that the chamars had taken money from the villagers for poojahs, and then the disease stopped. I went to fifteen or sixteen villages; there had been sickness there, but at the time I went there was none. When I first went to the villages I found that the ryots would tell me nothing about the disease, but when I explained to them that no case would be brought before the Courts, they at last told me regarding the deaths that had taken place amongst their cattle. Some of them said that the cattle had died of disease, and others expressed doubts that they might have died from poison; but they said they were unable to prefer complaints in the Magistrates' Courts, as they had no proofs. I heard that arsenic was the poison used. I know of no cattle being ill at the present time nearer here than twelve miles, and I am not certain that there are any within that distance; but I am making inquiries. The people generally would most strongly object to their cattle being killed, even if compensation for them was given: the Hindoos would part with their own lives first. Some of the Mahomedans would not make so much objection, provided they were compensated. The zemindar who threatened the chamars was Baboo Lall Bahadoor Singh; he pays a revenue to Government of Rs. 12,000 in this tehsilee; he has several villages, and I do not know in which village he threatened the chamars, but I heard of it when making inquiries in other villages. I have been in this district nine years, and I have heard of this disease being off and on for the past three years.

The witness withdraws.

GOORUN, a cowherd, resident of Seerole, Benares, is called before the Committee, and in reply to questions states as follows:—

I have seventeen cows. I have heard of this disease existing for about five months, but I heard of its being at Jounpore for about a year, and I did hear of its being in one village in this district, *viz.*, Sersole, in the Chundowla Tehsilee, about a year ago. Within the last twenty years I have seen this disease, small-pox, four times,—firstly, about twenty years ago, when I had forty head of cattle, and eighteen died in eight days; about fifty died in my village at that time, and it prevailed elsewhere; the next outbreak took place about fourteen years ago, when a large number died; then when the mutiny was going on, Mr. Horne, who was afterwards Judge here, had a great number of cattle collected here for Government purposes, and a great number of

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Proceedings of Com-
mittee.

Second day's meeting.

6th witness—Tehsil-
dar of Benares.

7th witness—a cow-
herd of Seerole.

BENARES.
Proceedings of Com-
mittee.

them died—the disease also prevailed in the district; then about four years ago a great many sheep died—nearly all the sheep in the district died; there was no disease of the horned cattle at that time; and lastly this attack. Ramdehull, cowherd of Sewpore, about a mile and a half from here, lost seventeen out of about thirty; and a man named Muheesh, a cowherd who lives close by here, lost six out of ten between one and two months ago; Kasee, in the Rada Bazaar, about a mile from here, lost ten out of sixteen about the same time. I also heard that some of the Coorg Rajah's cattle were sick. I hear the disease still exists. I hear the disease exists now at a village called Chookepoora, near Buxara, where there are some buffaloes ill. All the above alluded to disease was small-pox. Besides this disease, there has also been, to my recollection, foot and mouth disease, but cattle do not die from that much; in fact seldom. I do not know of any disease existing now, excepting at the village I mentioned, and of that only from hearsay. [The symptoms now described are identical with those given by the 4th and 5th witnesses, and the treatment is much the same.]

The cattle did not benefit from the treatment. The present attack, so far as I know, has not extended to sheep. I have not the least reason to think that any of the cattle have died from poison, and I have not heard of such here; but I have heard that in the district chamars do poison cattle occasionally. I have seen within the last five months from two hundred and fifty to three hundred cattle sick, and about half died. I saw them both sick and dead: they were of all ages and descriptions.

8th witness—a cow-
herd.

MUHESH, cowherd, residing close at hand, is called before the Committee, and in reply to questions states:—

I lost six head of cattle out of nine about two months ago—three cows and three calves. They died in from one to fifteen days; the cows first, and then the calves. The disease was small-pox. I have known this disease five or six times; it comes and goes. I am thirty years old. I do not know of any cattle being sick now. It ceased when the rain commenced and the weather got cool.

The witnesses withdraw.

The Committee now adjourns pending the receipt of information from Jounpore for which it has applied, and to obtain, if possible, a case of the disease, &c., &c., &c.

Wednesday, 4th August 1869.

Third day's meeting.

Appendices 3 and 4.

The Committee re-assembles this day: all present. Two letters to the Collector and Magistrate of Jounpore, to which no answers have as yet been received, are read and appended, marked 3 and 4.

Appendix 10.

Reply received after the adjournment of the Committee, Appendix 10.

Appendix 5.

A report by Mr. Brodhurst, a member of the Committee, is read and appended, marked 5.

Appendix 6.

A report by Mr. Stanley, a member of the Committee, is read and appended, marked 6.

Appendix 7.

Copies of Veterinary Surgeon Barrow's reports on the cattle disease, as it existed amongst the Government cattle at Benares during the months of March and May 1869, are appended, marked respectively 7 and 8.

Appendix 8.

Appendix 9.

A summary return showing the number of Commissariat cattle attacked, destroyed, died, recovered, and the mode in which the recovered cattle were disposed of during the above-mentioned outbreaks, is read and appended, and marked 9.

The Committee notes that it has attentively considered the following Reports:—

Report in the Supplement to the *Calcutta Gazette* of 10th February 1864.

Report by Dr. C. Palmer, dated 7th October 1865.

Report of Dr. Kenneth McLeod, No. 655, dated 13th November 1867.

Third Report of the Royal Commission on Rinderpest in England, 1866.

Report.

The Committee makes its Report as follows:—

1st.—Nature of
disease.

1st.—On the nature of the disease, as it has lately prevailed amongst the Government and other cattle in Benares and the district.

The disease appears to be that which has long been known, not only in this district, but also in many other parts of India, as *matak*, *chechuck*, *seetlah*, *gootee*, *puschima*, or small-pox. In many respects it much resembles the rinderpest, as was reported by the Royal Commission in England; but it does not appear to spread so rapidly by contagion or infection; the fatality amongst those attacked is sometimes as great as in England, but the Committee cannot decide whether this result is due to want of care and medical treatment, or to the virulence of the disease. With reference to the suspicion of deaths from poison which has arisen, the Committee is of opinion that such cases in the Benares District are quite exceptional.

BENARES.

Proceedings of Com-
mittee.
2nd.—Course of
disease.

2nd.—On the course of the disease.

The Committee is of opinion that the course of the disease cannot be traced, as it has existed on and off for many years; it is clear that it was not introduced recently by the Government cattle.

3rd.—On the mode of dealing with such outbursts, the Committee is of opinion that the "stamping out" process is so opposed to the religious feelings of the majority of the population of India as to be quite inapplicable to the country; and further, that when the disease exists in several hundred villages of the same district at the same time, this process, if attempted, would require such an amount of professional superintendence as could not possibly be afforded; moreover, the Committee entertains no suspicion of the disease having been imported or brought into the country, but considers it endemic or self-generating, for which "stamping out" is useless. The Committee is of opinion that segregation is the proper mode of meeting these outbursts, but without special legislation the difficulties of carrying this out appear insuperable.

3rd.—Mode of
dealing with such
outbursts.

The Committee adjourns *sine die*.

A reply from the Officiating Joint Magistrate of Jounpore, No. 372 of 2nd August 1869, to the Committee's letter of 9th July 1869, having been received after the final adjournment of the Committee, and seen by all the members, is appended, marked 10.

Appendix 10.

A. TURNER, Colonel,

Member.

APPENDIX 1.

From A. SHAKESPEAR, Esq., Commissioner, 5th or Benares Division, to the Officer Commanding at Benares,—(No. 170, dated the 10th July 1869).

I have the honor to forward copy of a letter from the Secretary to the Government, North-Western Provinces, with its enclosures,* in original, connected with the disease that has lately prevailed amongst the cattle at Benares.

* To be returned.

2. You will observe that the Magistrate and Civil Surgeon of Benares are named by the Lieutenant-Governor of the North-Western Provinces, and you are requested to nominate three other members to complete the Committee, whose duty it will be to carry out the instructions conveyed by the Government of India for an immediate inquiry being made into the nature and course of the epidemic and of the proper mode of treating such outbursts.

3. Intimation will be given to the Magistrate and Civil Surgeon, and you will be good enough to communicate to them the time and place at which the Committee will meet.

APPENDIX 2.

From R. SIMSON, Esq., Secretary to the Government of the North-Western Provinces, to R. SIMSON, Esq., A. SHAKESPEAR, Esq., Commissioner of the Benares Division,—(No. 193A, dated Nynee Tal, the 6th July 1869).

I am directed to forward, in original, the papers noted in the margin, having reference to the recent outbreak of disease among the cattle at Benares.

From Home Department, Government of India, to Government, North-Western Provinces, No. 2856, dated the 21st ultimo, and enclosures.

2. The Lieutenant-Governor desires that a Committee of five members may be convened for the purpose of making the required investigation. Of the five members, the Magistrate and Civil Surgeon are nominated to represent this Government, and the rest will be appointed by the Military Authorities.

3. You will submit the papers to the Officer Commanding at Benares, and say that, should he agree to nominate three members to the Committee, it would, in the opinion of this Government, be advisable that a Military Officer, a Commissariat Officer, and a Veterinary Officer should be on the Committee.

4. The favor of an early report is requested, together with the return of the original correspondence.

BENARES.
General Norman.

Office Memorandum by MAJOR GENERAL H. W. NORMAN, Secretary to the Government of India, Military Department,—No. 165, dated Simla, the 8th June 1869.

The undersigned has the honor to forward, for disposal in the Home Department, the

- From Adjutant General, No. 312E, dated 1st April 1869.
- To the Officer Commanding at Benares, No. 15, dated 7th April 1869.
- Telegram from Ditto, No. 57, dated 8th April 1869.
- From Adjutant General, No. 567E, dated 17th April 1869. One enclosure.
- To the North-Western Provinces Government, No. 155, dated 21st April 1869.
- From Ditto, No. 1118, dated 22nd May 1869.
- From Adjutant General, No. 865E, dated 25th May 1869. One enclosure.
- Copy of telegram from Commissioner of Benares, No. 22, dated 3rd June 1869.
- Demi-official letter from Officiating Commissary General, dated 4th June 1869.

† Dated 2nd June 1869.

accompanying correspondence* regarding an outbreak of so-called rinderpest, or a murrain, amongst the cattle and sheep in the Benares District.

2. A copy of a memorandum† by the Right Hon'ble the Governor General in Council is forwarded here-

with, from which the Home Department will see that it is His Excellency's desire that a Committee be formed for the purpose of making an immediate inquiry into the nature and course of the epidemic, and of the proper mode of treating such outbursts.

3. Any Officer under the Military Department, whose services may be considered desirable to aid in this investigation, will be at once placed at the disposal of the Home Department.

Governor General's Memorandum by the Right Hon'ble the Governor General of India in Council, in the Military Department,—(dated Simla, the 2nd June 1869).

The general description given of this disease does not agree with my painful recollections of rinderpest.

If it had been cattle plague of the malignant character with which England was afflicted three years ago, from the few and inefficient precautions taken, there would not be a beast alive in the neighbourhood of Benares at this moment. The accounts of the mortality also, by which it appears that only *one-half* of the cattle attacked died, do not agree with the usual effects of rinderpest, which was almost invariably fatal.

It appears also that a somewhat similar disease to that which afflicted the cattle has appeared among the sheep in the Commissariat Department.

I believed it was determined by experiment, while rinderpest was raging in England, that sheep did not take it. However it is most desirable that every precaution should be adopted, and the movement of any cattle suspected to have been in contact with a diseased beast should be strictly prohibited.

* Veterinary Surgeon Barrow states that a diseased beast had been moved by direction of the Collector to a distance of four miles from cantonment; nothing could be more unfortunate than such an act.

As it is now three weeks since the outbreak of the disease took place, Mr. Barrow's letter being dated the 5th May, and no notice apparently having been taken of the affair in the District Veterinary Surgeon's Office at Umballa till the 15th of May, and as the papers never reached me till the 1st June, it is difficult to say what measures can now be adopted. If the disease has disappeared, that inquiry which would have been most desirable will be too late. If, on the other hand, the disease turns out to be rinderpest, and no precautions except those detailed in these papers have been taken, I should not be surprised to hear of frightful loss in the cattle of the whole district.

I am, however, inclined to hold a contrary opinion, and to hope that the disease in question is not true cattle plague.

The papers should all go to the Home Department, with a view to immediate inquiry by competent persons.

It is quite clear from these papers that a considerable difference of opinion has existed between the Commissariat, the District Officers, and Veterinary Surgeon Barrow.

Strict orders should also be given in the Military Department that on future occasions no delay should take place in reporting such a serious affair as an outbreak of disease among cattle at all resembling rinderpest.

No. 2856, dated Simla, the 21st June 1869.

Endorsed by the HOME DEPARTMENT.

Copy, together with the enclosures in original, forwarded to the Government of the North-Western Provinces, with a request that a Committee may be nominated to report on the

epidemic, and that the result of their inquiries may be submitted for the information of the Governor General in Council. Original papers to be returned.

BENARES.

APPENDIX 3.

From COLONEL A. TURNER, Staff Corps, President of the Committee, to the Collector and Magistrate, Jounpore,—(dated Benares, the 19th July 1869).

Col. A. Turner.

Under orders from the Government of India, a Committee is now sitting here to inquire into, and report upon, the nature and course of an epidemic which has lately prevailed amongst the Government and other cattle in Benares and the district, and of the proper mode of treating such outbreaks.

As the Committee has been told that within the last year there has been a very great loss of cattle in your district, they request the favor of your informing them if such is the fact, and if so, what is the estimated loss, and whether the deaths have been caused by disease or poison, or from both causes; what the symptoms of the disease were when it first appeared in your district, and if it still exists there, to what extent, and for any other information on the points noted you may be able to afford them. As the Committee is directed to make its report as soon as practicable, they solicit a reply at your earliest convenience.

APPENDIX 4.

From COLONEL A. TURNER, Staff Corps, President of the Committee, to the Collector and Magistrate, Jounpore,—(dated Benares, the 29th July 1869).

Adverting to my letter of the 19th, to your address, soliciting information regarding the existence of cattle disease in your Collectorate, similar to the Russian rinderpest, I have the honor of requesting a reply, even should you not be in a position to furnish the Committee with any information, as a copy of my letter of the 19th is appended to the Proceedings of the Committee now about to be forwarded to the Supreme Government.

APPENDIX 5.

Memorandum by M. BRODHURST, Esq., Officiating Magistrate and Collector of Benares, on Cattle M. Brodhurst, Esq. Disease in the District of Benares during 1868-69,—dated 31st July 1869.

The existence of cattle disease in this district first became known to me about the commencement of March last. On the 4th of that month I communicated the fact to the Board of Revenue; on the 13th idem disease broke out amongst the Commissariat cattle, and the Officer Commanding at Benares, on the 3rd April, forwarded to me, for perusal, reports of a Committee, and requested information as to the existence of any similar disease elsewhere in the district. On the 9th idem I submitted a reply, giving whatever information on the subject I was then in possession of, and on the 10th May, in reply to a letter received from the Commissioner on the 8th idem, I gave all the further particulars that had by that time come to my knowledge.

My letter to the Commanding Officer is amongst the documents before the Committee, and my subsequent report to the Commissioner has been read to the Committee from the draft copy kept for record in my office.

The disease which appeared amongst the slaughter cattle in cantonments seems to have been of the same nature as that which prevailed in the district. The slaughter cattle may possibly have contracted the disease before they entered this district, but a comparison of dates will show that they cannot have first introduced the disease into the district, for not only was the disease reported before it broke out amongst the Commissariat cattle, but its existence in the district, for some months prior to that event, is placed beyond a doubt.

It is, I think, impossible now to prove whether the disease originated in this district or was introduced from elsewhere. We know, however, that, prior to the outbreak of the disease here, there had been great losses amongst the cattle in the adjacent District of Jounpore. We have evidence before us that in May last there was cattle disease in the neighbouring District of Ghazeeapore, and I have been informed by natives that a similar disease has within the last few months been noticed in one or two other adjoining districts.

From inquiries made during the last four or five years, the fact is established that cattle disease has made its appearance, at intervals, in all, or nearly all, of the districts of Southern India, and that the present is by no means the first time that widespread cattle disease has shown itself in this district, is proved by the evidence of persons who have witnessed what they narrate.

BENARES.

M. Brodhurst, Esq.

The two principal diseases of this district appear to be—

1st, *khora*, or *eczema epizootica*, or foot and mouth disease,—a disease which is apparently only too well known to the majority of native cattle owners.

2nd, the disease which has prevailed here for some months past, and of which the district is not yet entirely free, is of quite a different nature to that first mentioned. It is called by some of the natives *seellah* or *matah*, or *checkuck*, synonymous native terms for small-pox; by others it is known as *haiza* or cholera, from the severe purging it causes, and from its frequent rapid termination in death. In one village the people told me they called the disease either *matah* or *haiza*.

The most apparent symptoms of the disease referred to in the last paragraph are, as ascertained from report and personal observation:—

Drooping ears; staring coat; swelling of glands of throat; refusal of food; intense heat of body; distention of the stomach; foetid breath; running from the eyes; a thick sticky saliva from the mouth and nostrils, and sometimes from the nostrils also blood or bloody froth; violent purging, and subsequently sometimes evacuation of blood in large quantities. Death in from one to nine days.

The District of Benares contains 1,681 inhabited villages, divided into the two Tehsildarees of Benares and Chundowlee. The disease has on the present occasion appeared in 502 villages, and is reported to have destroyed up to the close of June last 3,890 head of cattle.

Reports received show that the murrain is now restricted to five villages, *viz.*, to two in the Benares Tehsilee, and to three in that of Chundowlee. I have twice visited one of the two villages above alluded to in the Benares Tehsil,—the second time being this morning, when I was accompanied by Mr. Stanley, Veterinary Surgeon, subsequent to my first visit. I had acquainted Mr. Stanley with the result of my observations, and had informed him that although the sick cattle presented several of the symptoms mentioned above, the disease of which they were suffering was of a much milder character than I had previously witnessed in other cases. When Mr. Stanley and I first arrived at the village, the natives informed us that since my first visit, only a few days previously, the disease had disappeared. This was soon, however, proved not to be the case. We certainly found that some animals I had previously seen ailing were then well, but several beasts were still not free of disease. Mr. Stanley inspected each of these cases carefully, and he will doubtless communicate to the Committee the result of his examinations. In this village (Choopeppore, Pergunnah Sheopore, Tehsil Benares), out of 200 head of cattle, 30 were attacked with the disease during the present month, 22 died, and 8 are still ill.

In Mouzah Surai, Pergunnah Muhwaree, Tehsil Chundowlee, the disease has been much more fatal. At the commencement of the present month there were 607 cattle in the village; of these, 163 took the disease, 137 died, 19 recovered, and 7 are still ill.

The disease, checked perhaps by the advent of the rainy season, seems to be dying out of itself, as it doubtless did on previous occasions. It may safely be said that very few, if any, of the recoveries are the consequence of treatment, and the natives generally allow that the remedies they have had recourse to have been of no avail.

The Agent of the Maharajah of Benares has stated that about 50 per cent. of the cattle attacked recovered. These results, however, are, I have reason to believe, from cases within my knowledge, much too favorable for the district generally. I consider that 25 per cent. of recoveries would be found to be above the mark, and I notice that of cattle that contracted the disease in Calcutta in 1864, and that had the advantage of being treated by Veterinary Surgeons, from 50 to 90 per cent. died. I believe that of cattle attacked with rinderpest in England, before stamping out was resorted to, a certain percentage recovered; and whenever an epidemic breaks out amongst either cattle or human beings, there will doubtless always be found to be, even without treatment, a certain number of recoveries.

The deaths reported up to date are 4,123, forming an estimated loss of about one per cent. on the horned cattle of the district, and representing a money loss of nearly Rs. 40,000. Considering the length of time that the disease has continued, the total loss of the district is surprisingly small, and proves that though the disease may, in some instances, have been of a virulent type, it must generally have been of a mild character, or at all events far less contagious than could have been imagined.

There have been some cases of cattle poisoning during the year; but the more I have inquired, the more I have been convinced that the vast majority of deaths that have occurred have been owing, not to poison, but to disease. This opinion is opposed to that of the Tehsildar of Benares, but is in accordance with those of the Tehsildar of Chundowlee and of a large number of persons, cattle owners and others, to whom I have spoken on the subject. The disease has attacked horned cattle of all descriptions, the young and old, male and female, fat and lean, the

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M. Brodhurst, Esq.

valuable and worthless. I think it unnecessary to enlarge on this point, as I am aware that the Committee do not coincide in the opinion expressed by the Tehsildar of Benares.

Judging from the symptoms described, the cattle disease of this district appears to be similar to the Calcutta epizootic and to the disease which prevailed in Sarun and elsewhere, reported upon in October 1865 by the Presidency Surgeon, Dr. C. Palmer.

Dr. Palmer writes,—“I am convinced that the disease now raging in England is the same we had here in 1864. I am persuaded it is a disease which for years has existed extensively in India, but which has up to this time not been recognized, and I am hopeful that it is amenable to treatment.”

Dr. Kenneth McLeod in November 1867 also wrote a report upon cattle diseases. He describes two, which he terms *gootee* and *puchima*, both with very similar symptoms to those of the Calcutta epizootic, and he calls *puchima* “rinderpest.”

Most, if not all, of the symptoms of the disease appear similar to those of rinderpest; but if it is the latter disease, it is difficult to account for its not having spread to a very much greater extent when once it has broken out in a herd, and considering that the sick and healthy cattle have very seldom been separated; it is, to say the least, singular that in many instances, whilst so few of the whole number have been attacked, that of those that have been attacked such a very small proportion should have recovered.

Whatever the disease may be, it has been seen and treated by several Veterinary Surgeons, members of the medical profession and others, and it is, I think, desirable that Government should now obtain from those of their Veterinary Surgeons in whose ability and experience they may place confidence, a decisive opinion,—1st, as to the name and character of the disease; and 2nd, as to the sanitary arrangements and treatment that should be resorted to, to guard against the disease, or to check and eradicate it.

Remedies have undoubtedly been prescribed by different authorities; but though they may be worthy of trial by Europeans or wealthy natives, they are generally quite beyond the means of the majority of the people. Any rules and remedies that may be prepared for distribution amongst the ordinary class of cultivators should be as brief, as simple, and as cheap as possible. A few such directions, drawn up by competent Veterinary Surgeons, and translated into Hindoe, would probably prove of benefit to the ryot, but anything beyond this would be utterly useless.

On the outbreak of the disease, segregation is no doubt most desirable, but to effect this with the present available means is, as any one with practical knowledge must be aware, next to impossible. The people whose interests are affected are grossly careless on the subject, and throughout the greater portion of the district there is positively no one to see that an order passed for separating the healthy from the diseased cattle is carried out. In the absence of special legislation, any number of orders may be issued without any appreciable advantage.

Mr. Barrow, Veterinary Surgeon, 19th Hussars, in his memorandum No. 55, dated the 6th May last, to the address of the Inspecting Veterinary Surgeon, wrote:—

“Has also the honor to report that yesterday two cases were brought to my notice in cantonment, one of which has since died, and one case in the district adjoining. This latter, upon inquiry, has been removed by order of the Collector, Mr. Brodhurst, to a distance of 4 miles from cantonments,—a course of procedure, in my opinion, much calculated to spread infection, &c., further through the district.”

Had Mr. Barrow stated the circumstances under which the removal was made, it would, I think, have been seen that no other course was open to me than the one I adopted.

The bullock referred to was tethered by the side of the Grand Trunk Road, at a distance of about 50 yards from cantonments, between the civil station and the city, at a place where there were many inhabited houses and other cattle, and by which a large number of cattle were frequently passing. The Cantonment Magistrate, at Mr. Barrow's request, brought the case to my notice. Although Mr. Barrow is a Veterinary Surgeon, and was the only one in the station, he made no suggestion as to what should be done with the diseased beast, and therefore, taking the above-mentioned facts into consideration, I thought it preferable to order the owner of the bullock to take the animal to a place near which cattle disease had already appeared, and where there was comparatively little chance of its spreading infection, than to leave it at a place, such as I have above described, where its detention would be nearly certain to cause an increase of the disease.

Mr. Barrow no doubt considered that the bullock ought to be destroyed, but in the absence of any direct orders from Government authorizing such a procedure, I should, I consider, have been deserving severe censure had I, knowing the strong feeling entertained by the Hindoos on the subject, ordered that the bullock should be slaughtered.

Both Mr. Barrow and the Inspecting Veterinary Surgeon are advocates for stamping out the disease in India as was done in England, and Dr. Palmer evidently considers this course might in some cases be resorted to; but the objections to the introduction into this country of the English practice of stamping out the disease are so obvious, and are so well understood by the Committee generally, that to enumerate them would be a mere waste of time and space.

Statement showing the result of inquiries made into Cattle Disease in the District of Benares.

PERGUNNAH.	NUMBER OF VILLAGES IN THE PERGUNNAH.			NUMBER OF VILLAGES IN WHICH INQUIRIES WERE MADE.			Number of cattle died.	Average number of deaths in each village.	Villages in which inquiries have not yet been made.	NUMBER OF VILLAGES IN WHICH DISEASE STILL EXISTS.
	Inhabited.	Uninhabited.	Total.	Number of villages in which cattle disease appeared.	Number of villages free of disease.	Total.				
Benares Tehsil.										
Dehat Amanut ...	129	11	140	62	58	120	300	...	9	1 Koorowha,
Kuswar Sirkaree ...	120	13	133	41	71	112	261	...	8	1 Jukhna.
Koleusla ...	140	8	148	16	124	140	159	...	...	1 Chibbila.
Pundraha ...	93	13	106	16	77	93	190	...	...	
Kuttehur ...	193	27	220	64	99	163	477	...	30	
Sooltaneepore ...	29	2	31	2	25	27	5	...	2	
Sheopore ...	107	4	111	35	72	107	143	...		
Jalhoopore ...	59	3	62	41	18	59	187	...		
Athgawan ...	138	27	165	101	25	126	486	...	12	1 Puchchimpoor.
TOTAL ...	1,008	108	1,116	378	569	947	2,208	6	61	4
Chundowlee Tehsil.										
Nurwun ...	127	58	185	37	90	127	410	...	...	1 Subul Jelalpore.
Burhwal ...	98	29	127	18	80	98	318	...	...	2 Koordeedeeah, Tajpore.
Dhoos ...	69	15	84	19	50	69	320	...	...	
Barrah ...	75	16	91	10	65	75	231	...	...	2 Chukia Purboopore.
Muhooaree ...	68	8	76	5	63	68	36	...		
Mujhwar ...	132	51	183	18	114	132	124	...		
Mowjee ...	41	11	52	4	37	41	100	...		
Kalhoopore ...	63	17	80	3	60	63	4	...		
TOTAL ...	673	205	878	114	559	673	1,543	13	...	5
GRAND TOTAL ...	1,681	313	1,994	492	1,128	1,629	3,751	...	61	9

APPENDIX 6.

Memorandum by Mr. E. STANLEY, Veterinary Surgeon, 5th Lancers, on Cattle Disease, dated Benares, 1869.

Having recently arrived in the station, and seeing only seven cases of the disease, four of which have died, two ill, and one recovering, I have had so little opportunity of making myself practically acquainted with the malady under consideration, that I make my remarks with diffidence, and only at the request of the Committee. From a careful consideration of the facts placed before me, and especially from the valuable information and statistics of Mr. Maynard Brodhurst, I am of opinion that the cattle disease prevalent for some months in this neighbourhood, although it somewhat resembles the rinderpest of Europe, is not identical with that disease which I saw in England in 1866, as it fails to exhibit some of the leading characteristic symptoms and morbid lesions of that terrible scourge, and also its wonderful power of spreading by infection and contagion, its resistance to all curative measures, and consequently its great mortality.

The disease in question appears to be of a typhoid character, and the opinion of the natives that it is *malak*, i. e., small-pox, is deserving of careful consideration, as variola and vaccinia are indigenous, and in a virulent form have, with other diseases, frequently devastated herds in this country, as may be seen from the different reports published by Government quoted by this Committee.

The following symptoms were observed in the cases that came before me :—

Fever, pulse and respiration accelerated, loss of appetite, suspended rumination, harsh coat, with general prostration; the mucous membrane of the mouth inflamed only along the sides of the tongue, its anterior dorsal surface showed excoriated cracks and spots, which enlarged as the disease progressed, the sub-mucous tissue was not exposed, the spots being covered by a dirty brown exudation; no excoriations or abrasions of the gums; no appearance of vesicles or aphthous exudation were visible in any stage of these cases; the throats were not severely affected. These negative morbid lesions are rarely absent in true rinderpest and are almost diagnostic. About the second day defluxion of tears, mucous discharge from the nostrils, and diarrhoea; these become aggravated during next few days, the faecal discharges become dysenteric and even bloody; from the sixth to the eighth days is the eruptive period; it first shows itself among the soft downy hairs at the corners of the mouth by a slight serous oozing, which develops into small excoriated spots; the muzzle swells slightly from cutaneous congestion, the eruption assumes a crustaceous form (without vesicle or pustule), is not confluent, but thickly scattered spots spread over the jaws, neck, elbows, flanks and trunk. The little crust is easily detached, and a circular excoriation, showing the true skin denuded of the cuticle and hair, is the only mark left, nothing like pus or ulceration being seen. This eruption might escape observation in its early stages, but is easily felt by passing the hand over the skin, and in the only animal recovering (twelve days sick), it can be seen raising the hair in thickly scattered spots all over the body. As soon as the eruption is fairly out, the diarrhoea changes its character, becoming more natural, lachrymal and nasal discharges diminish, temperature of the body falls, and a recovery is possible, though by no means certain.

Post-mortem appearances in a three-year-old buffalo cow, which died on the 12th or 13th day of illness (it is the only case I have been able to examine) :—

Nervous system—not examined; eyes—congested; nasal membrane—congested; lips and gums—healthy.

Tongue, palate—ulcers on the sides, base, and body of the tongue, also on the soft palate, and in the fauces surrounding the glottis, of irregular size and shape, the mucous membrane surrounding them highly inflamed and purplish (but no aphthous exudation), the ulcerated spots being filled with a hard cheesy excretion, which is not to be removed by scraping with a knife.

Pharynx, œsophagus—healthy; larynx, trachea, bronchial tubes—slightly congested; lungs—slightly emphysematous; pleura—healthy; heart—healthy—clotted blood and lymph extending from ventricles to auricles; pericardium—healthy; blood vessels—not examined; blood—partly fluid, partly coagulated; lymphatics—not examined; peritoneum—healthy; liver—healthy; gall bladder—full of bile; spleen—healthy.

Rumen, reticulum, omasum—contents semi-fluid; no abnormal appearances of lining membrane.

Abomasum—contents fluid, superficial small, ulcerated spots towards cardiac opening, slight congestion.

Small intestines, duodenum—well marked, scattered ulcerated spots similar to those observed in the mouth, patches of congestion in the jejunum, with scattered ulcerated spots, which in some parts were confluent; the ulcerations became more numerous on approaching the cæcum, and by removing the excretion from the base of the ulcers, the muscular tunic was exposed.

Cæcum—here the ulcerations abounded, and were so confluent that scarcely a spot of mucous membrane remained.

Colon—confluent ulcers scattered through its entire length, and in one place, where the bowel was much inflamed, there was a sort of aphthous deposit.

Rectum—at its junction with the colon for about 2 feet, the mucous membrane was entirely destroyed by ulceration, and the peculiar cheesy excretion gave a rugged appearance, almost resembling the lining of the rumen, the ulcers becoming more isolated towards the anus; intense inflammation was nowhere apparent.

Uterus and ovaries—healthy; vagina—healthy; vulva—healthy; udder—healthy.

Skin—eruption well marked over the whole body, superficial excoriation all over the head, probably caused by the crusts being washed off, as they were abundant under the jaw. The crusts are readily removed by gentle friction, the hair and cuticle coming away with them, leaving circular superficial excoriations not larger than split peas.

No pustules or vesicles were anywhere visible.

Remedial measures.—If rinderpest breaks out in India, the only remedy is to stamp it out. Mr. Brodhurst ably proves this course to be impracticable with the ryots' cattle. Even the separation of healthy from diseased could not be carried out without legislative force, as the ryots are so utterly apathetic and blind to their own interests. Segregation alone, properly carried out, would have a wonderful influence in checking the spread of this disease. As for medicinal agents, the reports already quoted abound in prescriptions. I would suggest an aperient dose when the animal begins to sicken, and, as the disease progresses, give cordials,

tonics, and then stimulants. As far more benefit may be expected from good nursing and attention to general comfort than from physic, drenches of meal gruels, a little and often, should be given to keep up the strength until the function of the rumen (*viz.*, rumination) is restored. The anatomical arrangement of the stomachs is such that the greater quantity of fluids pass directly by the first three stomachs into the abomasum or true digestive stomach, therefore I am averse to making an Apothecary's store of it. Facilitate the free circulation of fresh air, bed down with clean straw, and when unable to rise, rolling the animal three or four times a day on alternate sides, will afford great relief. Cleanliness and protection from rain will assist recovery.

As prophylactics, dilute carbolic acid, or its substitute, tar-water, might be given to the healthy; also rock salt placed within their reach. Inoculation and vaccination might be tried. Carcasses should be buried 6 feet under ground, with their skins slashed, or if it is desirable to save the skins, they should be disinfected in lime-water.

From these few cases I can safely say the disease is not *khoorah*, *i. e.*, eczema epizootica, neither do these cases answer the description of *puschima*, as given in Dr. McLeod's report; but its analogy to *gootee*, *matak*, or small-pox is evident. It appears to me *gootee* and *puschima* are the same disease,—the former when it is of a mild form, the latter when it is severe. Dr. Murchison, in the Third Report of the Royal Commission on Cattle Plague, published, London, 1866, considered rinderpest in many respects resembled the Indian small-pox. From the cases I have seen, the disease is not true vaccinia or variola, proved by the absence of the diagnostic pustules, by no cases of inoculation having occurred among the villagers or infection among the sheep (the eruption of small-pox in sheep is very marked, and could not escape observation). From these remarks it will be seen that I incline to the opinion that the disease is of a specific character, and from the history of previous outbreaks, I conclude it is endemic in India in the same scale as cholera, and therefore may be expected to occur periodically in localities favouring its generation. It is worthy of note that the rinderpest of Russia is far less fatal among the Steppe cattle where it originates, which will explain their living to carry it to surrounding countries.

The disease under consideration has by some been attributed to poison, but I may say that no agent I am acquainted with could cause such a train of symptoms or *post-mortem* appearances, though there can be no doubt cases of poisoning have occurred in the district.

APPENDIX 7.

Mr. C. Barrow.

From MR. C. BARROW, *Veterinary Surgeon, 19th Hussars, to the President of the Special Committee for the Suppression of Rinderpest*,—(dated Benares, the 22nd March 1869).

Having carefully examined various cases of disease amongst the bullocks in the Commissariat Department, primarily at the request of Captain Chester, and afterwards by order of the Officer Commanding the Station, I have the honor to report, for your information, that in my opinion the said bullocks, &c., are infected with a highly contagious and infectious fever, analogous to the Steppe murrain, rinderpest, or cattle plague that ravaged the herds in various parts of England during the years 1864, 1865, and 1866. The analogical symptoms as at present recognised by me are the following:—

In the primary stages of the disease, a slight increase of pulse, short, husky cough, watery discharge from the eyes, nostrils, and mouth, loss of appetite, dulness, staring coat, and occasionally constipation; as the disease becomes more advanced, diarrhoea sets in, accompanied with bloody discharge; slimy and copious discharge from the eyes, nostrils, and mouth, which adheres to the sides of the face, nostrils, &c.; increase of respiration accompanied with moaning and panting; great prostration, and death in from three to four days after the animal has first shown the disease. The analogical *post-mortem* appearances are as follows:—The first stomach, as also the second and third, are usually perfectly full of ingesta, but healthy; the fourth stomach, being the one showing signs of disease, the mucous membranes of which are strongly marked by extravasated blood, the same appearance existing along the course of the small intestines; the lining membrane of the heart, urinary organs, nostrils and trachea also showing the existence of inflammation; the gall bladder unusually full, and contents very dark in color; the membranes of the spinal cord and brain much congested.

The foregoing symptoms, &c., I am enabled to recognise, having been appointed Government Inspector during the outbreak of rinderpest in the County of Cambridge.

I have also the honor to submit to your notice, for the approval of the Committee, the following few suggestions:—

1. That printed hand-bills be circulated and posted in the bazaars, with description of symptoms of disease, &c., with orders to the Police to bring any suspicious cases to the notice of the Veterinary Surgeon, and to see the said suspicious case immediately removed from any healthy animals they may have been herded with at the time.

2. That when an animal has been pronounced by the Veterinary Surgeon to be diseased, the said animal should be immediately destroyed, the hide slashed, and the carcass immediately buried,—care being taken that they are buried at a sufficient depth.

3. That any suspicious case shall on no account be allowed to leave cantonments without the sanction of the Committee, the Cantonment Magistrate, or Veterinary Surgeon, but that the said animal shall be placed in quarantine for a period of nine days.

4. That all animals intended for slaughter in cantonments shall firstly be inspected by a competent person nominated by the Committee.

5. That no cattle should be allowed to enter or leave an infected district.

I have also the honor to forward a report of the number of cases that have occurred since the outbreak, as also a list of the number of deaths, &c., to date.

APPENDIX 8.

From MR. C. BARROW, *Veterinary Surgeon, 19th Hussars, to the President, Special Committee, Cattle Disease*,—(dated Benares, the 6th May 1869).

I have the honor to report that, after a lapse of twenty-one days, the contagious disease mentioned in my report of 23rd March 1869 has again made its appearance amongst a fresh herd of cattle that arrived in this station for Commissariat purposes on the 20th April 1869.

The first animals observed showing symptoms of disease (5 in number) were immediately separated from the rest, but succumbed to the disease from three to four days after the first notice of the attack had been given, during which time numbers of others had shown symptoms of the affection, and since which date the disease has been steadily on the increase, as will be seen by the statistical statement appended by Captain Chester, the Executive Commissariat Officer. Every means has been resorted to in carrying out to the fullest extent freedom from contagion and infection by separating the animals, the affected and non-affected, as much as possible.

From a tolerably extensive experience of the analogy of this disease in England, I would beg most strongly to recommend that those measures be carried out at this station (as far as compatible) which were adopted by the Members of the Royal Commission appointed to inquire into the origin, &c., of rinderpest in England, and by the adoption of which measures the disease was eventually stamped out. Amongst the principal measures, the following should, in my opinion, be immediately adopted, *viz.*:—

Frequent inspection, immediate segregation, prompt destruction of any animal when the disease has become fully developed, and that at this stage *no treatment* be allowed to be adopted. With reference to this last recommendation, so convinced were the Members of the Royal Commission of the ill effects attending the treatment of any diseased animal, that any person detected of this offence rendered himself liable to a penalty not exceeding £20.

I was induced some three weeks ago, as no fresh cases had occurred for a period of 20 days, to recommend to the Committee the remission of the restriction on cattle in cantonments ordered by them. The fresh herd of Commissariat cattle arrived during that period, and the disease showing itself amongst them, information was immediately given and the usual restriction again enforced. A disease of a somewhat analogous type has also appeared amongst the sheep in the Commissariat Department,—up to the present date 9 having died and 7 suspicious cases remaining.

APPENDIX 9.

Return of Government horned cattle in the Benares Commissariat affected during the outbreak of Capt. Chester. cattle disease during the months of March, April, and May 1869.

Number attacked.	Number destroyed.	Number died.	Number recovered.	REMARKS.
273	18	76	179	The cattle that recovered have, with the exception of 5, been issued as rations.

BENARES,
The 24th July 1869.

H. D. E. CHESTER, *Captain,*
Sub-Asst. Commy. General.

APPENDIX 10.

JOUNPORE. From R. J. CROSTHWAITE, Esq., *Officiating Joint Magistrate, Jounpore, to the President of the Committee, Benares,—(No. 372, dated 2nd August 1869).*
R.J. Crosthwaite, Esq.

In reply to your letter of the 19th ultimo, I have the honor to report that there has been a very great loss of cattle in this district during the last year. Mr. Daniell, the then Magistrate, in his report to Government, estimated the loss at not less than 12,000 head. The cause of this mortality he ascribes to disease and poison. From his report it would appear that the greater number of cattle died of poison. The poisoners were almost always chamars, and it appeared that they were supplied with poison, chiefly arsenic, by dealers in hides. Three men employed in this district to procure hides admitted to Mr. Daniell that they had sent upwards of 4,000 hides down the river to their employers. Since attention has been drawn to this crime, it has undoubtedly decreased, and the cultivators are now on their guard, and have succeeded in bringing many of the culprits to justice. At first they were persuaded by the chamars that a demon was destroying their cattle, and money was raised by a cess on every house in the village, and the amount made over to the chamars to offer sacrifices and drive the demon away. As the demon, however, re-appeared in a short time, and the zemindars were enlightened by Mr. Daniell's proceedings, the chamars are no longer able to impose on the owners of cattle, and there is some hope that a stop will be put to this crime. There is no doubt that a ball of *atta* mixed with pounded arsenic and wrapped up in leaves is generally used for poisoning cattle. They sometimes thrust a stick covered with a poisoned cloth into the intestines of the animal; they also thrust a needle wrapped up in cloth into it, but generally poisoning is resorted to.

2. With regard to disease among cattle, inquiries are now being made in order to reply to your letter; but as an early answer is required, I can only state on this point my belief that there is not at present any epidemic among cattle. I am also of opinion that a number of the deaths of cattle formerly accounted for by disease were really caused by poison.

BENARES. From W. A. FORBES, Esq., C. B., *Officiating Commissioner, 5th Division, to the President of the Indian Cattle Plague Commission, Calcutta,—(No. 155, dated 21st May 1870).*
W. A. Forbes, Esq.

I have the honor to forward certain papers* and correspondence connected with a disease which has lately shown itself amongst the cattle of the Benares District.

* From District Superintendent of Police, to Personal Assistant, Inspector General of Police, North-Western Provinces, No. 426, dated 13th April 1870.
From Magistrate of Benares, to Commissioner, No. 50, dated 9th May.
From Magistrate of Benares, to Commissioner, No. 51, dated 10th May, and one enclosure.
From Magistrate of Benares, to Commissioner, No. 54, dated 16th May, and one enclosure.

2. Mr. Lemon, Veterinary Surgeon, Royal Horse Artillery, is of opinion that it is not contagious, but that gentleman has lately been making further investigations, the result of which I will request the Magistrate to furnish you with.

Captain G. F. J. GRAHAM, *District Superintendent of Police, Benares, to the Personal Assistant to Inspector General of Police, North-Western Provinces,—(No. 426, dated 13th April 1870).*
Graham.

I have the honor to submit a brief report on cattle disease and cattle poisoning lately prevalent in this district.

2. On the 20th ultimo I was informed that cattle disease was prevalent in the Phoolpore Division, and at once ordered the Police to take measures to prevent its spreading. Native Doctor Chedee Sing was despatched by the Civil Surgeon to Rughoonathpore, and in consequence of reports received by him and my Police, the Magistrate of the District, the Civil Surgeon, and myself proceeded to Rughoonathpore on the 26th ultimo. As we suspected that the cattle had been poisoned, one of the animals which died whilst we were there was opened, and the contents of the stomach and the kidneys were forwarded to the Chemical Examiner at Allahabad. His report has not yet been received. We returned on the 27th ultimo, and from that day to this there has not been a single case of illness amongst the cattle at Rughoonathpore. This is strong evidence of poison having been the cause of the deaths. Arsenic was found in the houses of several chamars, and these were arrested and sent up for trial.

3. Mr. Inspector Clarke was then deputed to make enquiries into the cases of disease which occurred in other villages, and succeeded in discovering arsenic in several chamars' houses, and in arresting six suspected poisoners. In one case the poisoners, a boy and an old woman, were caught in the act by a zemindar, the owner of the cattle on which the attempt was made, and poison was found on their persons.

4. The following is a brief statement showing the several poisoning cases in which action has been taken by the Police since 26th ultimo:— BENARES.
Captain Graham.

1st.—CHOTOO CHAMAR of Rughoonathpore (Phoolpore illaqua), accused of giving the poison; under trial.

2nd.—RAMDEEHUL BHUR, Gorait of Baipoorie (Phoolpore Station), accused of selling arsenic Cattle poisoning to Chotoo; comes into Benares and buys arsenic; under trial.

3rd.—RAM DUSSOA, boy, chamar of Naiepoorie, had poison in his house; under trial.

4th.—SHEW CHURN CHAMAR of Durrekhoo (Rohinea), accused of giving arsenic to Mussamut Doolmee (No. 7); sentenced to 1½ year's imprisonment, 8th April 1870.

5th.—BUTCHA CHAMAR of Luttoo Secrole sold arsenic to Shew Chamar; confesses; sentenced to 1½ year's imprisonment, 8th April 1870.

6th.—LOTUN CHAMAR of Thurriadee (Chowbepore illaqua), accused of instigating poisoning, buys hides, bought two from Ram Doss, No. 2; under trial.

7th.—PHOOLLOO CHAMAR (boy) and Mussamut Doolmee of village Durrekhoo (Rohinea illaqua), caught in the act of giving poison; former sentenced to 15 stripes, latter to one year's imprisonment, 8th April 1870.

5. Having thus briefly noted the poisoning cases in which action has been taken by the Police, I will now proceed to the question of cattle disease, the prevalence of which during the past five months in this district is undoubted.

6. The following is a list of villages in which, during the present enquiry, it has been ascertained that disease has been prevalent:—

1st.—Rughoonathpore; 42 cases, 15 recovered, 27 died.

2nd.—Kaithowlie; since January 40 cases, all died.

3rd.—Ghumbheerpore, Nataipore, and Aheerapore; since January 89 cases, 75 died, 14 recovered.

4th.—Phoorapore; 9 cases, 4 died, 5 recovered.

5th.—Kutowra; 6 cases, 4 deaths, 2 recovered; all these villages are within a circle of seven miles.

7. From the above it will be seen that, as far as we have yet ascertained, 184 cattle have been attacked by the disease, out of which 36 have recovered and 148 have died. This is a serious loss to the district.

8. As regards the origin of this disease, two probable causes are the badness of fodder and the impurity of the water. In the villages which I inspected myself on the 7th and 8th instant, in company with Veterinary Surgeon Mr. Lemon, Royal Horse Artillery, I found that in most cases the food was of the worst description possible. The past year having been one of scarcity, the poorer classes have been unable to give their cattle any better food than barley or rice-stalks, dried sugarcane leaves and the bushes of gram mixed up together and steeped in water. This mixture is also often kept for days till it becomes stinking. In this state it is given to the cattle, and it is not to be wondered at that they die in numbers. Some of the people believe that the mortality is caused by the cattle eating the dried rice-stalks, and it is certainly curious that the commencement of the disease in the villages before mentioned coincides with the time of the rice being cut, *viz.*, in November last. With regard to the water, it of course varies in every village, but in those mentioned in para. 6, which I examined, it is of the very worst description. The inhabitants of the whole of them suffer to a great extent from *gootee*, swollen testicles, ringworm, and other diseases likely to be brought on by impure water.

9. As regards the arrest and mitigation of the disease, we can direct the segregation of the infected animals and such other measures as may seem desirable, but much also depends on the treatment which the affected animals receive at the hands of the owners. In this district the Magistrate has issued strict orders for the segregation of the sick cattle, but there are great difficulties in the way of this being thoroughly carried out. As much as possible, however, it is being done. Rules regarding the treatment of the sick animals are being drawn up by Mr. Lemon, and will be proclaimed throughout the district. The treatment which the infected animals receive from the owners may be summed up in the one word—*nil*. Once ill they generally leave them to their fate, though in a few instances *ghee* or *suttoo*, and leaves of the wood-apple tree (*bael*) are given to try and recover it. In most instances the owners have been too poor to afford *ghee* or *suttoo*. In the case of the wealthier classes the case is of course different. Rajah Sir Deo Narain Singh tried every remedy last year when the disease was amongst his cattle, but none had any effect.

10. It will thus be seen that cattle disease has been prevalent in the Phoolpore Division since last November, and that certain chamars of certain villages have taken advantage of its presence to poison animals for their own profit. No clue has yet been found to the instigators of the poisoning, and I am inclined to believe that the chamars are the sole culprits.

11. The disease is still prevalent. Poisoning has, I think, been entirely put a stop to, the chamars being now too much afraid to continue the practice. All the villages in which

BENARES.
Captain Graham.

disease or poisoning was reported to be rife up to the 8th instant were visited by me and Mr. Lemon, Veterinary Surgeon, Royal Horse Artillery, on the 7th and 8th instant. His report is herewith appended. He is still engaged in investigating the disease.

Statement of Cattle Sickness, Recoveries, Deaths, &c., from 1st January to 30th April 1870.

NAMES OF STATIONS.	Number of cattle reported sick.	Names of sickness.	Number recovered.	Number still sick.	Number died.	REMARKS.
Ramnuggur	80	Unknown, but supposed to be foot and mouth disease.	9	...	71	The mortality amounts to 82 per cent. of attacked.
Allynuggur	5		...	...	5	
Chundowlee	86		...	...	86	
Sydrajah	3		...	...	3	
Sukuldeeha	307		3	...	304	
Chowbepore	340		95	...	245	
Phoolpore	385		77	12	296	
Burrageon	103		26	24	53	
Rohinea	56		2	...	54	
Adumpoora	2		...	...	2	
Cantonment	8		1	...	7	
Dussassonedh	12		...	...	12	
Chetgunge	1		...	...	1	
TOTAL	1,388		213	36	1,139	

A. J. Lawrence Esq. From A. J. LAWRENCE, Esq., Officiating Collector and Magistrate, Benares, to the Commissioner of the 5th Division, Benares,—(No. 48, dated 3rd May 1870).

I have the honor to bring to your notice, with the view of your communicating with Veterinary Surgeon Hallen and the Cattle Commission, the great mortality that is at present destroying the cattle of this district.

Poisoning.

2. The Tehsildar first reported the matter about a month ago. At that time we were more suspicious of poisoning than of disease, and no doubt the chamars were taking advantage of illness being abroad to destroy cattle and secure skins. But our visit to Rughoonathpore, and the orders given to bury all dead cattle, and the convictions that ensued in a few proved cases, put a stop to poisoning; and the many deaths I have now to report are chiefly, if not entirely, the result of disease.

Cattle disease

3. Captain Graham's letter of 13th ultimo, copy of which I enclose, shows that everything has been done that was possible to stem the tide, but with little or no effect. From one village indeed it is reported that of 153 cattle that were attacked, 77 recovered, from their owners paying attention to Veterinary Surgeon Lemon's instructions; but I have not much faith in these returns. From a village on the Chundowlee side of the Ganges a report came that 21 had succumbed to the disease, but on reference to the zemindars, they explained that while 18 died from natural causes, only 3 were victims to disease. I have no reason to believe that the Putwaree's statement is less correct than the zemindars'. The latter are averse to giving statistics that will engender enquiry, and result in their being called upon to give effect to health rules, segregation of cattle, and such like. They also fear collision with the chamars, which often follows observance of Magistrate's instructions in cases as that under report.

Returns,

4. The general abstract now submitted is not absolutely correct; some stations are shown to have escaped altogether. The results disclosed are most sad. The map that accompanies shows where the disease has been most prevalent. It commenced considerably earlier on the Benares side of the river, but the number of deaths in first five stations of statement shows that neither side has much reason to boast of immunity. The Assistant District Superintendent will, now on the spot, test as far as possible the accuracy of the returns.

5. As regards the disease itself, we are quite powerless. The Police, under Captain Graham, have done their best to ensure obedience to directions. To Captain Graham and Veterinary Surgeon Lemon my thanks are specially due. Perhaps you would think fit to bring the latter officer's gratuitous services to the notice of Government. Mr. Lemon had practical acquaintance with the cattle disease in England. He is now willing, if he can obtain his Commanding Officer's permission, again to go out and see what further enquiry may elicit.

Brief opinion by Mr. J. H. LEMON, Veterinary Surgeon, regarding disease among Cattle.

BENARES.

From the few cases which I have seen I have no hesitation in saying the animals affected are likely to have been so from causes principally owing to bad food, uncleanness, and want of care. The symptoms of disease varied, but in every case the digestive organs were affected.

In the one case on which I had an opportunity of making a *post-mortem* examination, death resulted, in my opinion, from impaction of the stomachs, which prevented their proper functions.

That there is a disease of the epizootic character amongst the cattle, I have no doubt; but the cases presented to me (the majority being in a convalescent state) had no symptoms of cattle plague, with one exception. Further investigation is necessary to enable me to examine the animals in different stages.

I have drawn up a few rules for guidance of owners of cattle which may be acted on in the meantime.

OBSERVATIONS BY THE CATTLE PLAGUE COMMISSION.

Secrole, Benares, 30th May 1870, 7-40 A. M.

SECROLE.

A bullock owned by Baboo Doorga Prosau of Secrole, four days ill; five years old; Case No. 1. condition fair; the animal is lying down; discharge from eyes, nose, and mouth; ears drooping; excoriations on the gums, with aphtha, on removing which an ulcerated surface is seen; purging watery stools from yesterday; off feed and very thirsty; no eruption on the skin; reticulated dry muzzle; animal very weak.

Another bullock belonging to the same person, 8 days ill; age 6 years; condition good; Case No. 2. discharge from eyes, nose, and mouth; ears drooping; muzzle dry; has been purging watery stools for the last 3 days; picks a little; gums congested; buccal papillæ slightly congested; no eruptions on the skin; great thirst; coat staring.

Another bullock belonging to the same person, age 6 years; condition good; 15 days ill; Case No. 3. off feed; great thirst; ears drooping; purged before, but the bowels were constipated for 2 or 3 days; it again commenced to have loose stools yesterday; mucous discharge from eyes, nose, and mouth; muzzle reticulated, dry, and fissured; eruptions on the neck, but very minute; mouth healthy; subcutaneous effusion around eyes.

Mordaha, 5 miles north of Secrole.

MORDAHA.

A cow calf; 18 months old; sick 10 days; at present shivering; aphthous ulcer on lower Case No. 4. gum; the rest healthy; profuse discharge from eyes, nose, and mouth; muzzle dry; skin under eyes excoriated from discharge; has commenced picking; did not purge; dung healthy; doing well; eruptions on the shoulders and neck in the form of desquamation of cuticle.

A cow buffalo; 4 teeth; 6 days ill; condition fair; slight discharge from eyes, nose, and Case No. 5. mouth; feeds a little; no purging; mouth healthy; buccal papillæ very slightly congested; congestion of conjunctivæ; œdema all round the eyes; gave birth to a calf 6 days ago; the calf examined and found to be ailing; the mucous membrane of mouth, and papillæ specially, highly congested.

A cow; condition poor; age 6 years; 15 days ill; animal recovering; discharge from eyes, Case No. 6. nose, and mouth; feeding; mild case; bowels improving; slight shivering.

A bullock, aged 10 years; condition poor; 10 days ill; picks a little; bowels relaxed and Case No. 7. mixed with mucus; ears drooping; discharge from eyes, nose, and mouth; no eruption on the skin; purging mucus.

A bullock, 6 years old; condition poor; 10 days ill; profuse discharge from eyes, nose, and Case No. 8. mouth; small aphthous ulcer on lower lips, cicatrizing; angles of mouth congested; no eruptions on the skin; ears drooping; picks a little; bowels relaxed; animal recovering.

A cow, 4 years old; 10 days ill; dung soft; discharge from eyes, nose, and mouth; Case No. 9. muzzle dry; excoriations on the gums; but now animal recovering.

A bullock, 8 years old; reported ill since yesterday; feeds a little; excoriations on the Case No. 10. gum. On examination, the whole of the mucous membrane of the mouth found congested; bowels relaxed.

A male buffalo, 8 years old; 16 days ill; discharge from eyes, nose, and mouth; bowels Case No. 11. all right; feeding.

Cow, 2 years old; 4 days ill; purging watery stools mixed with mucus; vagina congested; Case No. 12. aphthous ulcer; off feed; thirst; ears drooping; discharge from eyes, nose, and mouth.

A bull calf, 4 months old; 2 days ill; excoriations on the gums in the right side; off feed; Case No. 13. discharge from nose.

Eighteen head of sick cattle of this village brought for examination, all of them seem to be mild cases and recovering; seven cattle have died in the village.

BENARES.

Evidence taken by the Commission on the 30th May 1870.

- Prevalence of *matah*.** BOUSSIE CHOWDHRY, JUGGUT SING, JUNGI PATTUCK, RAM LAHAL CHOWDHRY, agriculturists of Mordaha, say:—The disease called *matah* appeared in this village 15 days ago; it is still prevailing; 7 head of cattle have died, and 18 or 19 are still ill; there are about 200 head of cattle in this village. The *beparies* brought a herd of cattle from Oudh in Bysack (April) last.
- Source of outbreak.** There were some sick cattle in that herd, and they have communicated the disease to the cattle of our village. Four or five years ago there was another outbreak of the same disease, and the mortality then was greater than it is now. The disease is contagious, and the sick cattle therefore are kept separate from the healthy; we have observed segregation for a long time. We keep the cattle in separate houses at short distances. Carcasses are thrown away and the skins are eaten by jackals. The chamars take the hides of cattle that die of ordinary disease; but they are not allowed to take *debee* hides, inasmuch as such a custom would spread contagion. There is also an order from the Magistrate to this effect. One of the villagers bought a bullock out of the *beparies'* herd; in 8 days it died of *matah*, and soon after the disease spread in the village, when the *beparies* left; all their cattle were healthy; they lost no cattle in this village; we did not observe any sickness among their cattle, nor did we know, when buying, that this particular animal was ill. It was sold cheap, *i. e.*, for Rs. 4 or 5. The dealers come to this village generally twice every year. One set of *beparies* come from Goruckpore and bring about 200 head of cattle or so, and another set come from towards Oudh. We have not seen any outbreak of *matah* except that which occurred 4 or 5 years ago. The present outbreak has turned out very mild. The price of cattle has increased 25 per cent. during the past 10 years. We have heard that the chamars are in the habit of poisoning cattle, but we have never seen them doing so, nor have we any occasion to suspect poisoning; special bulls are not kept up for breeding, but the Brahminee bulls are allowed to serve cows. This is a Hindoo village. Young bulls are allowed to mix with cows. They are taken to the city of Benares and there allowed to graze and go about. The cattle are allowed *bhoosa*, and the cows only are allowed to graze during the day, but not the bullocks; even the milch cows are allowed to graze; they are also allowed oil-cake at night. The disease has broken out in houses situated close to each other; in fact all the village houses are close together. There is a common pasture ground for our cattle, which consists of 100 or 125 beegahs of land. The animals feed on *doob* grass in this pasture. There is another disease called *khoorah* among cattle. The mouth and feet get sore, the mouth becoming affected first. During the last rains we had *khoorah*, but this distemper does not prove fatal. We make the cattle stand in water and wash their mouths and apply *ghee* and some herbs. There are 60 or 70 houses in this village. The village is healthy as far as human beings are concerned; we have seen *khoorah* often in this village; it comes every year or every two years; cattle do not die of *khoorah*; we never saw a fatal case of *khoorah*; we do not know any other disease among cattle.
- Cattle dealers.**
- Previous outbreak.**
- Price of stock.**
- Cattle poisoning.**
- Breeding.**
- Feeding.**
- Common pasture ground.**
- Foot and mouth disease.**
- Breeds of cattle.** Dherara cattle are best for every kind of work, but the cattle on the other side of the Jumna give more milk. We never tried to get a cross-breed between country and Dherara cattle; the cattle are watered from tanks generally, but well water is also given. We get buffaloes from the other side of the Jumna. We give *konda* bark and *ghee* in *matah* cases. There is no disease in any other villages near this. We never give bhang to diseased cattle; the cattle of Gobany, Pohan, Wandi, and Bampoor and the cattle of our village graze in the same field. There is no disease in any of these villages. The authorities have ordered us to give salt to sick cattle.
- Treatment for *matah*.**

[Here the zemindar's Amla says that he never got any instructions as to the treatment of sick cattle.]

Benares, 30th May 1870, 5-30 A. M.

- Case No. 14.** A bullock owned by Doorga Prosaud; condition fair; age 7 years; 3 days ill; off feed; great thirst; ears drooping; excoriations on roof of mouth; no discharge from eyes, nose, and mouth; purging mucus and little blood; coat rough.
- Case No. 15.** A white bullock of the same party; age 6 or 7 years; condition good; discharge from eyes, nose, and mouth; buccal papillæ congested; ill since yesterday; purging oily matter; off feed; thirst; ears drooping; muzzle dry; no eruption on the skin.
- Outbreak of *matah*.** DOORGA PROSAUD AHEER, 23 years old, says:—I am Cattle Contractor of the Benares Municipality. I own, or rather owned a few days ago 102 head of cattle—all bullocks; but the disease *matah* broke out among my cattle on the 18th of May last, and 14 head of cattle fell ill one after another, and six died; 3 have recovered, and 5 are still ill. My cattle are yoked to the conservancy carts and go about the city; the cattle when sick are off feed and have great thirst; ears drooping; when the affected animal approaches death, eruptions appear on its skin; the cattle (51 in number) were exposed to the sun all day and kept in one place, 2 miles off from the others, and disease appeared among this herd first. My cattle remove all the rubbish and city refuse, but not carcasses. I have always kept sick cattle at a distance of 2 miles from the place where the healthy ones are stalled. I used to administer *ghee* and country spirits
- Mortality.**
- Symptoms.**
- Cattle how employed.**
- Segregation.**
- Treatment.**

to sick cattle. I also mixed up flour and water and gave it to sick animals. I never saw this disease before among cattle. I consider the disease to be contagious, and this accounts for my separating sick from healthy animals.

BENARES.
Disease not before
observed.
Contagiousness.

DISTRICT OF AZIMGURH.

From J. SLADEN, Esq., Officiating Magistrate of Azimgurh, to the President, Cattle Plague Commission,—(No. 245, dated 19th September 1870).

AZIMGURH.
J. Sladen, Esq.

In reply to your letter No. 113 of 18th July last, I have the honor to state that about the months of April, May, June, in the present year, in the Tehseels of Mahaul, Nizamabad, Mohamedabad, and Sugree some cattle were attacked with what the natives call *chechuck*, and died from its effects; the symptoms of the disease being that the animals refuse food, foam from their mouths, don't dung, and that their bodies rather swell. Last year too, between June and August, a few head of cattle are reported to have died from the same cause in the Tehseels of Deogaon and Secunderpore, and at the present moment a few sporadic cases are reported from the former of these two Tehseels.

2. I have no special facts to relate in connection with these outbreaks. My belief is that this form of disease prevails more or less in most districts during some portion of the year.

DISTRICT OF GHAZEEPORE.

From W. OLDHAM, Esq., Officiating Magistrate of Ghazeeapore, to the President of the Cattle Disease Commission, Calcutta,—(No. 350, dated the 18th July 1870).

GHAZEEPORE.
W. Oldham, Esq.

I have the honor to inform you that since you left Ghazeeapore cattle disease has broken out in several villages in the vicinity of the city towards the north and east.

The symptoms of the disease are said to be diarrhoea, swelling, and foaming of the mouth.

From MR. J. BOURKE, Stud Department, to the Officiating Magistrate, Ghazeeapore,—(dated 10th August 1870).

I have the honor to report for your information that I visited Khalispoor village on the 25th ultimo, and examined two sick bullocks, which were the only two animals sick at the time, and also made *post-mortem* examination of a buffalo that had died the previous night, and found that the disease was rinderpest,—a very contagious fever of a fatal character.

I also visited Noorpoor on the 5th instant, and found that the disease had abated there, and there were none sick, with the exception of a few convalescent cases that had had only slight attacks of the plague; and on enquiry I found that the disease terminated fatally in almost every case at the first outbreak, which took place some two or three months ago, but in the decline the mortality was not so great, which is a characteristic of the disease. Even under the best of treatment, the mortality is very high, and it is supposed three-fourths of the cattle attacked by this dreadful fever die.

I think it would be useless laying down any rules for the treatment of the disease by Police Officers out in the villages, as very little good would result from it. The prevention of the disease should be attempted by strict separation of the diseased and infected animals, and when an animal dies, it should be buried deep in the ground, skin and all, at a convenient distance from the village, and not in the centre of the village under the very eaves of the houses, as has been done in the two above-named villages.

ALLAHABAD DIVISION,

COMPRISING THE DISTRICTS OF BANDA, FUTTEHPORE, HUMEERPORE, JOUNPORE, CAWNPORE, AND
ALLAHABAD.

Index of Records.

[N. B.—Those in Italics are not printed.]

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	<i>M. Sandys, Esq., Collector of Banda.</i>	661	18th May 1868 ...	<i>Selections, Government of India, No. 69, p. 205. Forwarding a statement showing the prevalence of cattle disease in the Banda District, and detailing the villages which have suffered.</i>
	<i>Ditto ditto ...</i>	751	16th June 1868 ...	<i>Reporting the outbreak of cattle disease in his district.</i>
	<i>Ditto ditto ...</i>	1006	7th August 1868 ...	<i>Selections, Government of India, No. 69, p. 217. Describing the symptoms of the diseases with which cattle were attacked during the late epidemic at Banda, and forwarding a memorandum of a post-mortem examination.</i>
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	F. Henvey, Esq., Junior Secretary to the Government of North-Western Provinces.	70A	13th January 1870	Forwarding correspondence regarding cattle plague in Humeerpore, p. 378.
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Futtehpore.	A. C. Barnard, Esq., Collector of Futtehpore.	...	5th June 1868	Reporting upon the forms of cattle disease most common in the Banda and Kirwee subdivisions, p. 388.		

Districts.	From whom received.	Number.	Date.	Reference and Purport.
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Futtehpore.	W. C. Turner, Esq., Collector of Futtehpore.	79	27th April 1870 ...	Forwarding the Commission's form No. 1 filled in, p. 393.
	A. C. Tupp, Esq., Officiating Collector of Futtehpore.	304	23rd August 1870...	Forwarding a report from the Tehsildar of Ekdulla, stating that cattle disease had broken out in a few villages, and that 140 cattle had died, p. 393.
Jounpore.	Collector of Jounpore ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 215. States that there was no cattle disease in Jounpore in 1868.</i>
	Collector of Allahabad ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 215. States that cattle disease prevailed in the Allahabad District in the spring of 1868.</i>
Allahabad.	J. C. Robertson, Esq., Officiating Magistrate of Allahabad.	661	23rd August 1870...	Reports the outbreak of cattle disease in Pergunnahs Cheyul and Munjunpore, p. 394.
	Ditto ditto ...	670	26th August 1870...	Forwarding report from a Native Doctor relative to cattle disease.
	Ditto ditto ...	692	1st September 1870..	Reporting disease at Allahabad and Kurrah, p. 394.
	R. Yeatman, Esq., Assistant Superintendent of Police.	...	3rd September 1870	Report regarding cattle disease at Munjunpore, p. 394.
	J. C. Robertson, Esq., Officiating Magistrate of Allahabad.	717	7th September 1870..	Forwarding Native Doctor's 2nd report.
	Ditto ditto ...	787	6th October 1870 ...	Forwarding detailed replies to the Commission's Form No. 1, with reference to the outbreak of disease in Pergunnah Kurrah.

HISTORICAL SKETCH.

The earliest written record of cattle disease in this Division concerns an outbreak in the District of Banda in the year 1868; but the oral testimony of the inhabitants of Humeerpore, Cawnpore, and Futtehpore, obtained by the Commission, is to the same effect here as elsewhere, namely, that murrain has always prevailed from time beyond memory. The Banda disease broke out in February. The Collector, Mr. M. Sandys, reports in May that 1,310 head of cattle had died. The disease broke out in Pergunnah Tirohan, but it spread widely over the district.

In one mouzah of the Banda Pergunnah, 48 recoveries out of 62 cases are reported. In a later communication (16th of June), the mortality is put down at 2,461 out of 5,035 attacked—48·8 per cent. The disease was said to have been imported from Independent States adjoining the district; but the Collector points out that this could not be true of the Tirohan and three other pergunnahs. Strict injunctions had been issued to isolate all diseased animals and prevent communication. The disease was declining.

Mr. Sandys writes again in August. He describes the symptoms of the murrain thus:—"At first languor, refusing to take food or water, prostration and fever; then, on the 3rd or 4th day, liquid and bloody stools, which continue with greater frequency till the death of the animal—generally on or about the seventh day." Sometimes the fatal issue was more rapid. No successful treatment was known, the natives giving split gram soaked in water. Mr. Sandys writes:—"Since the outbreak the disease has appeared in 99 villages in this district. The total number of cattle attacked has been 6,536, and total number of deaths 3,365; nearly 50 per cent. therefore have recovered."

He also describes *khoorah*, foot and mouth disease, which prevailed consensually. A memorandum by Dr. Ringer is appended, in which sulphur fumigation is recommended. Dr. Ringer had performed a *post-mortem* examination, and found the intestinal mucous membranes much congested.

The replies forwarded by Collectors to the Board of Revenue's Circular No. B show that no disease was known to exist in the Districts of Jounpore, Futtehpore, and Cawnpore. From Banda the information above summarised is given. Cattle disease prevailed in Pergunnah Barrali of the Allahabad District and its neighbourhood; up to 29th April 1868, 368 cattle had died. The symptoms described are—"loss of appetite, discharge from mouth and nose, and eruptions." Segregation was recommended. In the Humeerpore District a disease similar to the Hurdai disease had broken out, but the mortality was not great.

The year 1869 was one of great drought and scarcity of fodder in the North-Western Provinces. A very great number of cattle died in the Allahabad Division from this cause alone; but in the Districts of Humeerpore and Jounpore disease also prevailed, and carried off the impoverished cattle in great numbers. The evidence regarding it is stronger in the Humeerpore District than in the other. The Collector, Mr. E. B. Thornhill, gives a good account of the murrain in reply to questions propounded by the Government of the North-Western Provinces. He states that the disease is always present in the district, but more prevalent in some years than others. In 1869 it commenced towards the end of the cold weather and continued into the rains. It spread all over the district. The mortality is put down at 15,598, and the symptoms are well described.

The evidence collected by the Commission on the occasion of their visit to Humeerpore in April 1870 confirms this account of the disease in every particular. The Collector of Humeerpore subsequently forwarded to Government a careful return of mortality, which, with the Commissioner's comment, is printed below.

The mortality among cattle in the Jounpore District was undoubtedly very great, and was mainly attributed to poisoning; but there can be little doubt that both starvation and disease had much to do with it. A good summary of facts concerning loss of cattle in this district is given in Mr. Crosthwaite's letter printed at page 362, and much more will be found in Appendix No. 4. Banda appears to have been free from disease during 1869.

During the year 1870, however, both rinderpest (*chechuck* or *bhowanee*) and foot and mouth disease (*khoorah*) appear to have prevailed throughout the district. These diseases prevailed also in the Sub-division of Kirwee. The mortality is put down in the District of Banda at 583, and in Kirwee at 198. The facts communicated from time to time regarding the prevalence of the disease are summarised at page 375.

The District of Humeerpore was visited by the Commission towards the end of April, and much valuable evidence was obtained regarding the past outbreaks; but, notwithstanding a searching inquiry, no cases of rinderpest could be found in the neighbourhood of the station. Foot and mouth disease prevailed there at the time, and rinderpest was said to exist in the western part of the district. In the town of Cawnpore also, and its vicinity, careful inquiries were made as to the present and past existence of murrains. Foot and mouth disease was found to prevail among the Government cattle. The people were familiar enough with the usual diseases of cattle, but no exact information regarding recent or present disease could be obtained.

From Futtehpore, reports of an outbreak of disease early in March were received in May. The district was visited on the 21st of this month and many cases of rinderpest—*debee*—were seen, and evidence recorded showing that the disease was no new one in the district. Subsequently, a report of a severe outbreak of disease in the Ekdulla Pergunnah of this District was received in September. The disease had broken out in July and lasted till the middle of August; mortality 140. The symptoms recorded are so vague as to leave some doubt as to what the nature of this disease was.

The Commission also visited the Jounpore district early in June, in order to investigate the system of cattle poisoning said to be rife there. Inquiries were also made with regard to disease, and the usual information was obtained—that rinderpest and foot and mouth disease were well known, and visited the district periodically: no case of either was found, though they were carefully sought for.

In August, a report of the prevalence of murrain in the Poor and Munjnpore Mouzals of Pergunnah Cheyul of the Allahabad District was received. A Native Doctor was deputed to investigate the nature of the disease. Subsequently, disease was ascertained to exist in the Kurrah Pergunnah, and on the 1st of September some cases were reported to have occurred in the Station of Allahabad. It appears from the reports received that both foot and mouth disease and rinderpest prevailed simultaneously. The report of the Native Doctor refers unmistakably to the latter, while the Police Officer who investigated the disease describes the former. The last report from this district is dated 6th October. The disease was still going on; but from the fact of no subsequent reports having been received, it is inferred that it died out or continued to prevail mildly.

Summary of Returns received from the Banda District, showing the sickness and mortality among Cattle during the Months of April to December 1870.

PERGUNNAH.	Mouzah or Village.	Date of outbreak.	Date of return.	Village Stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
			I.—From <i>Khoorah</i> or Hoof Disease.						
	Mohunpoora	1st April 1870	18th April 1870	1,425	16	.....	10	6	The symptoms assigned to these diseases are those usually given. The figures give the following results:—
	Hurdullee	"	"	500	1	.....	1		<i>Khoorah</i> .
	Bhowanipoorwa	"	"	1,900	9	.....	9		Attacked per cent. of stock 5.7.
	Sara Kapoorwa	"	"	2,000	30	.....	30		Died per cent. of stock 1.12.
	Tunorah	"	"	800	12	.....	12		Died per cent. of attacked 19.39.
	Sahara	"	"	300	42	.....	42		<i>Bhowanee</i> .
	Mowao	"	"	400	8	.....	4		Attacked per cent. of stock 7.24.
	Kool Khoonaree	"	"	300	16	.....	16		Died per cent. of stock 3.48.
	Bandapoowra	"	"	350	37	.....	37		The number still ill is excluded.
	Samba	"	"	600	42	.....	42		Some of the entries under <i>khoorah</i> are very doubtful, the mortality assigned being excessive.
	Dingbie	"	"	600	85	.....	85		
	Mangawan	5th October	7th November 1870	106	6	.....	6		
	Tiekuria	"	"	552	8	.....	8		
	Markondee	"	"	212	12	.....	12		
	Bherah	"	"	130	7	.....	7		
	Bumbee	"	"	340	15	.....	15		
	Sapatiaha	"	"	60	40	.....	33		
	Rampore Kallyanghur	"	"	450	11	.....	11		
	Kallyanpore	"	"	750	15	.....	8		
	Bugtree	"	"	200	4	.....	4		
	Nagur	"	"	300	3	.....	3		
	Chundermara	"	"	550	75	.....	60		
	Rampoorja	"	"	125	60	.....	44		
	Chodee	"	"	125	50	.....	40		
	Gouhance Kulan	11th December	10th January 1871	279	15	.....	15		
	Durlace	15th November	"	100	20	.....	20		
		15th December	"	523	9	.....	4		
	Surajjan	4th "	"	125	48	.....	24		
	Hunmoa	5th "	"	537	100	.....	25		
	Gurhawara	15th "	"	110	20	.....	16		
	Unayce	16th "	"	110	15	.....	12		
	Bana	"	"	110	15	.....	12		
			TOTAL	14,869	861	167	654	40	

Summary of Returns received from the Banda District, showing the sickness and mortality among Cattle during the Months of April to December 1870,—continued.

PERGUNNAH.	Monsah or Village.	Date of outbreak.	Date of return.	Village Stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
TIROHAN	Kobrah	19th April 1870	...	100	43	18	4	21	
	Kean	28th "	13th May 1870	1,750	203	40	89	74	
	Pursaulie	30th "	...	2,700	20	7	13		
	Puthwa	4th July 1870	...	2,000	35	35	15		
OUGABEE	Anousa	26th "	...	1,200	40	25	15		
	Pudree	"	...	450	15	7	8		
	Bagheta	"	...	700	20	12	8		
	Ragowlee	"	...	750	25	13	12		
SOONDA	Nehalpoore	6th September 1870	24th September 1870	174	100	29	71	5	
	Goojakullian	2nd October	2nd November	161	68	39	24		
	Moorkha	1st "	"	700	90	56	34		
	Olchrey	1st "	"	200	31	21	10		
PYLANEE	Purdawan	15th "	"	500	54	34	10	10	
	Baneepore	14th "	"	200	43	28	15		
	Garountee	15th "	...	342	77	52	25		
	TOTAL			11,927	864	416	338	110	
GRAND TOTAL				26,796	1,725	583	992	150	

Summary of Returns received from the Kirwee Sub-division of the Banda District.

PERGUNNAH.	Village.	Date of outbreak.	Date of return.	Village Stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
DURSENDA	Entowah	7th January 1870	10th February 1870	363	64	43	21	.....	The symptoms assigned are those usually given. The results are as follows:—
	Mhow	25th "	1st March 1870	1,222	120	61	44	15	Debee.
CHILAO	Gurhna	21st February 1870	9th May 1870	365	38	28	10		Attacked per cent. of stock 12.96.
		20th "	"	465	112	59	53		Died per cent. of stock 7.33.
BURGUER		15th June 1870	20th June 1870	125	4	3	1		Died per cent. of attacked 56.57.
	Amanpore	"	"	60	7	3	4		Khoorah.
TIROHAN	Rampore	3rd "	"	100	5	1	4		Attacked per cent. of stock 5.
TOTAL				2,700	350	198	137	15	
II.—Khoorah, or Foot and Mouth Disease.									
KHORD		16th April 1870	5th May 1870	400	20	.....	12	8	
			TOTAL	400	20	.....	12	8	
			GRAND TOTAL	3,100	370	198	149	23	

DISTRICT OF HUMEERPORE.

HUMEERPORE. From F. HENVEY, Esq., *Officiating Secretary to the Government of the North-Western Provinces*, to J. H. B. HALLEN, Esq., *Staff Veterinary Surgeon, Bombay Army, and President of the Commission of Inquiry into Cattle Diseases in India*,—(No. 70 A., dated Camp Bhudrolee, the 13th January 1870).

In continuation of this office letter No. 35 A, dated the 7th ultimo, I am directed to forward, for the information of the Commission, copies of the documents, as noted in the margin, regarding recent outbreaks of disease among cattle in the District of Humeerpore.

E. B. Thornhill, Esq. From E. B. THORNHILL, Esq., *Officiating Collector, Humeerpore, to the Secretary to Government, North-Western Provinces*,—(No. 240, dated Humeerpore, 23rd July 1869).

CONFIDENTIAL REPORT.

Has the honor to submit the above for the week ending 23rd July 1869.

General condition and prospects of the season.

*The people seem to be in good heart, notwithstanding prices not having fallen. There has been great mortality among the cattle from small-pox, and also apparently from gripes and surfeit. The cattle were feeding on leaves before the rain fell, and were in many places in a starving and weak condition, and the change in the weather, and the change of food as soon as the grass began to spring up, seem to have been very disastrous to them.

F. Henvey, Esq. From F. HENVEY, Esq., *Officiating Junior Secretary to the Government of the North-Western Provinces*, to E. B. THORNHILL, Esq., *Officiating Collector of Humeerpore*,—(No. 453 A, dated Nynee Tal, the 3rd August 1869).

With reference to your confidential report for the week ending the 23rd ultimo, I am directed to request that you will submit information on the following points in connection with the mortality among the cattle from small-pox, viz.—

- 1st.—Where the disease came from.
- 2nd.—Where it first made its appearance.
- 3rd.—Where it extended to.
- 4th.—How long it lasted.
- 5th.—The mortality.
- 6th.—The symptoms observed and remedies tried.

E. B. Thornhill, Esq. From E. B. THORNHILL, Esq., *Officiating Collector of Humeerpore*, to F. HENVEY, Esq., *Officiating Junior Secretary to the Government of the North-Western Provinces*,—(No. 459, dated the 26th December 1869).

In reply to your letter No. 453 A, dated 3rd August 1869, I have the honor to report as follows:—

1st.—The disease is always present in the district. In some years very few cattle are attacked, and very few fatal cases occur; in others it spreads widely.

2nd.—Being, as said before, present always to a small extent in various parts of the district, it appears to have increased and become virulent in the cold weather, as the fodder became scarce.

3rd.—It was present, to a greater or less extent, in every pergunnah of the district.

4th.—It lasted in the south of the district until the rains set in, but in the northern pergunnahs, viz., Humeerpore, Mondha, Jellalpoore, and part of Rath, it did not cease entirely.

5th.—The mortality was as follows:—

Humeerpore	...	...	...	...	1,188
Soomairpore	...	...	...	...	2,247
Mondha	...	...	...	...	4,962
Jelalpore	...	...	...	...	5,620
Rath	...	...	...	...	607
Mohoba	...	...	...	...	643
Punwaree	...	...	...	...	24
Jeitpore	...	...	...	...	7
TOTAL					15,598

6th.—The symptoms are,—the passing of red, apparently bloody, faeces, the absence of appetite for solid food, with a strong craving for drink, and in some cases pustules appear on the lips. After death, sores are found on the inner surface of the skin, but the pustules do not appear on its outer surface. The treatment is simply seclusion of the affected animal, with a plentiful supply of water, and if it desires solid food, gram soaked in water is given. The disease usually terminates either fatally or by recovery within a week. Usually, the great majority of animals recover, but this year, being weakened by insufficient food, the majority attacked died.

Office Memorandum by F. HENVEY, Esq., *Secretary to the Government, North-Western Provinces*, F. Henvey, Esq.,—(No. 145 A, dated Camp Muttra, the 31st January 1870).

The undersigned is directed to forward to the President of the Cattle Commission copy of a letter, with its enclosures, from the Commissioner of Allahabad, No. 6, dated 17th instant, regarding recent mortality amongst cattle in the Humeerpore District.

From M. H. COURT, Esq., *Commissioner of Allahabad Division*, to R. SIMPSON, Esq., *Secretary to the Government, North-Western Provinces*,—(No. 6, dated 17th January 1870).

I have the honor to acknowledge the receipt of your letter No. 634 A (Revenue Department), dated 23rd August, and to submit, in original, docket from Collector, Humeerpore, No. 12, dated 7th instant, with a statement showing actual mortality amongst cattle in the District of Humeerpore during the season of distress, which is from May to September inclusive.

2. It will be seen that the mortality has been chiefly owing to "starvation:" by this word it is not to be taken that the cattle died from real starvation. They were reduced to great debility and exhaustion for want of food, and on the first heavy fall of rain, they floundered in the black cotton soil and were physically unable to recover themselves. Small-pox was most prevalent in the northern pergunnahs, where (Jualpore excepted) there was less distress amongst the human population.

3. Throughout Bundelkhund there was want of fodder for cattle in the best pergunnahs, but in those where there was only partial failure, there was debility, which undoubtedly encouraged disease.

4. Jualpore and Momdhah Pergunnahs adjoin, and are in the same geographical latitude. The former pergunnah is dry, and distress prevailed in the western portions. The latter pergunnah is composed almost entirely of black soil, and famine was less felt than in any other pergunnah.

5. It will be seen that deaths from small-pox are nearly in same proportion, but in mortality "from starvation" there is great disproportion, viz.—

PERGUNNAHS.	Total number of cattle, plough and others.	DEATHS.	
		Starvation.	Small-pox.
Jualpore	1,00,739	11,437	5,620
Momdhah	68,563	798	4,962

Taking, as I am informed, the average life of horned cattle to extend to sixteen years, the mortality in Humeerpore has been nearly treble the ordinary rates, and it can be reasonably assumed that amongst those returned under "starvation" will be nearly all those which under any circumstances would have dropped away from age.

From G. ADAMS, Esq., *Officiating Deputy Collector, in charge of the Collector's Office, Humeerpore, Revenue Department, to the Commissioner, 4th Division, Allahabad*,—(No. 12, dated 7th January 1870).

In answer to his docket No. 184, dated 8th September last, has the honor to submit a statement showing the entire loss of cattle from various causes in the Humeerpore District during the season of distress.

HUMEERPORE.
G. Adams, Esq.

Statement showing the mortality among Cattle during the scarcity in the District of Humeerpore.

Area of the Pergunnah in square British statute miles.	No. of Villages.			No. of Cattle in Existence before the Scarcity.		Mortality during the Scarcity.		Number Survived.		Percentage of Cattle that Died to Head of Cattle alive before the Scarcity.		Causes of Mortality.										
	Inhabited.	Uninhabited.	Total.	Cattle of all kinds.	Plough cattle.	Cattle of all kinds.	Plough cattle.	Cattle of all kinds.	Plough cattle.	Cattle of all kinds.	Plough cattle.	Starvation.	Small-pox.	Sore hoof.	Lurba.	Putra.	Moorie.	Bhowra.	Ghaut.	Eyebac.	Bilaree.	Other causes.
Humeerpore ...	47	6	53	27,975	8,289	3,275	870	24,700	7,419	11.75	10.49	1,449	1,188	262	8	..	20	..	2	2	..	346
Soonairpore ...	69	10	79	54,477	19,092	5,291	1,641	49,186	17,451	9.75	8.50	3,044	2,247	..	..	257	..	..	..	..	..	1
Mondha ...	81	14	95	50,049	18,514	6,040	2,052	44,009	16,462	13.86	11.08	798	4,962	22	..	..	..	..	..	..	..	93
Jelalpore ...	90	40	130	74,374	26,365	17,057	4,193	57,317	22,172	22.93	15.90	11,437	5,620	..	195	..	1	..	..	..	..	78
Reat ...	134	33	167	59,954	27,423	14,077	4,115	45,877	23,308	23.46	15.00	12,851	907	8	..	22	..	..	..	..	..	1
Mahoba ...	92	7	99	66,242	19,017	13,812	1,917	52,430	17,100	20.83	10.09	12,682	643	487	..	..	2	..	..	..	..	..
Punwarce ...	183	48	231	75,369	28,210	16,931	4,940	58,438	23,270	22.46	17.51	16,819	24	4	..	..	..	3	..	..	..	..
Jeitpore ...	48	6	54	27,378	7,606	8,852	1,398	18,526	6,208	32.32	18.38	8,832	7	2	..	..	..	..	..	..	..	11
TOTAL	744	164	908	4,35,818	1,54,516	85,395	21,126	3,50,483	1,33,390	19.56	13.67	7,912	15,598	785	203	279	23	3	2	2	1	529

Evidence of GOBRA THAKOOR, inhabitant of the village of Rameree, Station Humeerpore, distant from Humeerpore Station $\frac{1}{4}$ mile in a south-easterly direction,—dated Humeerpore, the 27th April 1870. HUMEERPORE. Gobra Thakoor.

The village contains about 800 houses and about 2,000 head of cattle; these cattle are Stock. used for ploughing, taking home the corn and threshing. There are about an equal number of bullocks and cows, of which 400 or 500 are milch cattle. Cattle are generally bought at the Cattle trade. Gujner hat in the Cawnpore District, and at Burwa Bazaar, about $\frac{1}{4}$ miles hence in the Humeerpore District. No *beparies* ever come to purchase our cattle.

The disease called *bhawanee* has been raging in my village and the surrounding *Bhawanee* villages for the last 2 years. There was an attack of this disease about 10 years ago. The History. disease has appeared in my village about 5 times during my lifetime. I am about 60 years old. The disease is carried by the wind from village to village. I can't say where it breaks out originally. It broke out in my village on one occasion about 10 years ago, and afterwards affected surrounding villages. Last year it broke out in the village of Kurara, and then 1869. affected Seloka and other villages.

It generally comes from the west. I lost four head of cattle last year, namely, one Source. buffalo, two bullocks, and one cow. About 200 or 250 died in the village. I had 10 bullocks, Mortality. 4 cows, and 2 buffaloes before the disease broke out; 4 bullocks had the disease and recovered. The symptoms of *bhawanee* are as follows:—off feed, thirst, discharge of blood from the Symptoms. rectum, and sometimes mouth. The animal can't swallow; breath offensive; discharge from nose and eyes, sometimes blood from nose; ears droop; hair standing; has not observed any eruptions on the body. The disease is also called *debee*, *matah*, and *sitlah*. Duration of the disease $2\frac{1}{2}$ to 3 days, in fatal cases. The bloody purging comes on at the same time that the animal begins to lie down; but it has been off feed for two or three days previously. The mouth gets very hot and full of sores ("gets rotten"); the blood from the mouth comes away with the saliva. When the animal is very ill, it lies down on its side, and then the discharge of blood is worse. Has seen some animals much weakened by the disease; have their eyes affected, they become white. Among 20 animals affected, in some years 10 will die, in some 5, and so on.

The disease varies in virulence in different years. This disease is no new disease; I have Varying type. heard of its existence from my forefathers. The price of cattle has increased from Rs. 15 or Price of cattle. 20 a head to Rs. 30 or 40; the cause of this is that the number of animals has been diminished by deaths from disease. Land has never lain fallow in my village, because the quantity Effect on cultivation. of land attached to it is so small; but in many neighbouring large villages, such as Kanota, Patara, Talokur, Kusmura, &c., land has remained uncultivated on account of deaths from cattle disease.

When a man loses all his cattle he is obliged to borrow money from the Bhowras to purchase cattle, or gives his land to sub-tenants for tillage (underlets it): this system is called *kutkonedar*.

When an animal dies the chamars take possession of the carcass for the hide. They Disposal of carcasses. give two pairs of shoes for each bullock and buffalo, and one pair for a cow, to the owner; they make shoes, well buckets (*pur*), covers for *bahils*, *ruts* and *gharries*. [Note.—*Bahils* are native Hides. carriages; *rut* is another kind of native carriage.] They also make *ropes* of hides. There is no export of hides to Cawnpore, but they are sold in the neighbouring hats; sometimes men come from the neighbouring villages to purchase hides. There are sheep and goats in our Sheep and goats. village. This disease was very destructive among these animals. There has been no death from *bhawanee* for the last 6 months; the disease is infectious. If one animal gets ill, Infectiousness. all the cattle in the homestead take the disease. Cattle don't have the disease a second Second attack. time, as a rule; one of my own cattle had a second attack 8 or 10 months after the first. The first attack was the more severe; in the second attack it was fit for work again in three days.

Foot and mouth disease (*khurphutta*) is prevailing in my village now, and has prevailed Foot & mouth disease. for the last 2 months; deaths from this disease are very rare. In this disease maggots are very prone to form in the hoofs, and the best treatment is to make cattle stand in soft mud.

The disease (*bhawanee*) prevails in May, June, and July. Season.

No poisoning of cattle occurs in my village, and I have not heard of this practice. Poisoning.

Evidence of DULEEP SINGH, an inhabitant of Rameree, aged 70 years, landholder,—dated Humeerpore, the 27th April 1870. Duleep Singh.

Is owner of little less than half the village, containing 9,000 beegals of land, being the proprietor of three-eighth part of the village. There are about 1,000 houses in the village Stock. and nearly 2,000 head of cattle, of which about 250 are bullocks, the same number of buffaloes, and the rest are cows. Has seen the disease *bhawanee* 12 or 13 times in his life. The *Bhawanee*.

HUMEERPORE.
History. 1869.
Mortality. disease varies in severity, sometimes sweeping away all the cattle of the village, and sometimes causing a slight mortality. The disease prevailed last year and killed 5 to 800 head of cattle. I lost 20 out of 40. The disease appeared in my village when I was only 12 years old. I heard it spoken of by my father, that it was an old disease; *bhawanee* is the most fatal of all diseases that attack cattle, and is not amenable to any treatment; we give no medicines, but we do *ponjah* and give the water in which gram had been soaked. People consider the disease to be infectious, and that it comes from the west, travelling from one village to another. The symptoms of *bhawanee* are,—off feed, purging blood, discharge from eyes and nose; the animal salivates from the mouth at the time of death, and inside of the mouth there are sores, as if the skin had been taken off. No eruptions have been observed; there is difficulty of breathing in the last stage and slight cough. The animal dies in from 5 to 15 days.

Chundee. Evidence of CHUNDEE, 45 years old, milkman, an inhabitant of Humeerpore,—dated Humeerpore, the 27th April 1870.

Debee in 1869. Is a milkman by profession, and owns 13 cows and 1 buffalo. I lost 7 of *debee* last year in the month of April. Of the number I now have, 3 had the disease, but they recovered; the rest of the flock had not the disease. During the outbreak last year, the village lost about 80 out of 250 head of cattle. The disease is called *bhawanee*, *debee*, *matah*, and *sillah* by the Hindoos, and *chechuck* by the Mahomedans. The symptoms of the disease are,—running from eyes and nose, but not from mouth, purging blood and mucus, shivering; the gums and inside the cheeks become abraded; the purging commencing from the 2nd or 3rd day of the disease. There are no eruptions on the skin. This is the most severe malady that attacks cattle; sheep, goats, and buffaloes also got *debee*.

Muthura Nauth Pursaud. Evidence of MUTHURA NAUTH PURSAUD, a Brahmin, Zemindar of village Rameree, Station and District Humeerpore,—dated Humeerpore, the 28th April 1870.

Situation. My village is situated on the banks of the river Betwunti, through which the high road of this station passes. Cattle and conveyances pass along this road from Cawnpore town and district on the north, and from Nowgong, Chutturpore Raj, Raat, Punwali, Mahowba, &c., on the south and south-west. Thus I believe, if any of the cattle, bullocks, or buffaloes in carts or carrying packs happen to be sick, the disease (*matah*) is imported into my village.

History. This disease has occurred 7 or 8 times in my lifetime, recurring every third or fourth year. The disease is not constantly present. When it comes, it continues from 1½ to 2 or 3 months. After it has prevailed for some time, the villagers perform *poojah*, which drives off the disease and sends it to another village. The disease varies in virulence in different years. The last attack was a very severe one, and few cattle attacked recovered. When the disease is very mild, 10 to 15 per cent. of attacked only die. During the last attack there was a great scarcity of provender, and the animals were very weak from starvation, and readily succumbed to the disease. This disease is called *debee*, *matah*, *sillah*, and *bhawanee*. I lost one buffalo. The symptoms which I observed were as follows:—

Mortality.

Scarcity.

Names.

Symptoms. The first indication of disease was that the animal did not graze. Next day there was offensive purging. Next day water in which gram had been soaked was offered, but the animal did not swallow it, and it came back through the nostrils. There were discharges from the mouth and nostrils, and watering of the eyes. Blood used to fall in drops from the rectum after the purging. It died on the fourth day. Cattle used for agricultural purposes are worked from morning till noon. They are then turned out to graze if there is grass on the fields; if not, they are fed on castor-oil leaves and *boossee*. They are housed at night in sheds in the cold weather, and in the hot weather they are tied up in yards. In the cold weather they are fed on cotton seeds and get half a seer each, and in the hot weather they get about the same quantity of gram or oil-cake. Agriculture commences in July and continues till August for the *khureef* crops, namely, *oorud*, *urhur*, *moongh*, *moat*, flax, *jowar*, *bajra*, and *tiz*. The cultivation of the *rubbee* crops, namely, wheat, gram, peas, barley, linseed, oats, &c., commences in October and continues for about a month. The system of agriculture and treatment of cattle which I have described is that which generally prevails all over this district. During the rest of the year some of the cattle do no work, but many of the cattle are used for gharry and pack work.

Treatment of cattle.

Housing.

Feeding.

Agriculture.

Cattle driven to a distance. When provender is very scarce in this district cattle are sent to graze on the lands of relatives at a distance, where provender may be more abundant. They are sent to Gurdaha, about 30 miles hence, Waltara 21 miles, Deogong 6 miles, and other places. The cattle of adjoining villages meet and associate on grazing grounds. There are three bulls in my village. Cattle are taken to the best bulls in the village to be served, but other bulls may get loose and serve cows. The bulls belong to this district (of the district breed).

Bulls.

I possessed 11 head of cattle and 6 buffaloes at the time that I lost the buffaloes of *matah*. Only one calf besides had the disease; this animal died. When I found that the buffalo and calf were sick, I did not allow the rest of my cattle to be brought home, and kept them away for a month and three quarters in the fields.

Evidence of GOYARAM THAKOOR, of Moniejar, 15 miles to the south of Humeerpore, aged 65 years, and a landholder by profession,—dated Humeerpore, the 28th April 1870.

There are 265 houses in this village and about 1,000 head of cattle, of which about 600 are bullocks and the rest cows and buffaloes. Last year during the summer months there was disease, called *matah* or *bhawanee*, in the village, and it killed somewhere about 400 or 500 head of cattle. During deponent's life there was the same disease 5 times. The first outbreak was observed 30 years ago. It was as severe as the outbreak last year. Last year the disease at first appeared in the village of Bijookhur, 3 miles to the east of Moniejar. It then travelled to Bunday, 1½ mile to the south, whence it came to this village. From the deponent's village it went to a place called Nadpara, 3 miles to the north-east. Deponent did not lose any cattle during the last outbreak, but he had opportunities of seeing the disease. The symptoms are,—discharge from eyes, mouth, and nose, no eruptions on the skin, and purging blood and mucus. When discharge from the mouth, is very great, the animal does not eat and drink, and when it tries to drink the water returns by the nostrils. Considers the disease to be contagious. The village is not situated near the high road. The cattle of witness's village and those of other neighbouring villages graze together in the fields. There is a pasture containing 250 to 300 beegahs belonging to the village. The names of the different sorts of grass on the grazing field are *mosail*, *bhore*, and *tigra* (*mosail* being another name of *dhoob*). The number of cattle in the village has diminished from before, inasmuch as a large number of them died last year. Witness had 4 bullocks, 2 cows, and 1 buffalo at the time the disease appeared last year. Did not let the cattle out of the house for fear of their catching the disease by contagion; did not even take them out for watering. No other men adopted the same precaution, and consequently they lost all or nearly all their cattle.

Evidence of GUNGA CHAMAR, a resident of Hingota,—dated Humeerpore, the 28th April 1870.

I know the disease called *matah*; and I have had opportunities of opening the carcasses of cattle that have died of this disease, and I found that in the stomach, which looks like a network, there are blisters here and there, about the size of an oat or barleycorn, and that the bowels are gone bad; they look dark-red and black, and in some cases fatty-like deposits are found in the inner surface of the bowels.

[Nine other chamars, deposed to the same effect.]

Evidence of LALJEE CHAMAR of Rameree, aged 50,—dated Humeerpore, the 28th April 1870.

I skin the cattle which die in this village for the sake of the flesh, the owner taking the hide. We eat the flesh, and the owner gives us the hide to tan, and gets two pairs of shoes made of it. The hides of animals which die of *matah* disease are weaker than others, and often have very small holes in them. We find this after they are prepared and cleaned. When a man loses a great number of cattle, he takes as many shoes as he requires, and considers himself entitled to more when he wants them. When we have an excess of hides, we sell them to chamars from the other side of the river Jumna. Have never seen any chamar coming from Cawnpore to purchase hides. Our method of preparing hides is as follows:—The hide is soaked for 8 or 9 days in lime-water; three seers of lime are put in the water; we then take *babool* bark and put it in water with the hide: 20 seers of bark are used for one hide. The skin is made into a bag, filled with water and bark and hung up. It is left hung up for 3 days, and the water is changed daily. When I open animals that have died of *matah*, I find the intestines red, the inside of the intestines bloody, and patches of fatty-looking stuff on it. I have seen bubbles in the lungs. The *halali* hides (hides of slaughtered animals) are bought by *beparies* from Cawnpore and elsewhere. Under the term *bepari* I include chamars who purchase hides.

Evidence of NUND LALL of Pathara, distance 9 miles south-west of Humeerpore, aged 52 years,—dated Humeerpore, the 29th April 1870.

There are about 200 families in my village and 900 or 1,000 head of cattle. Last year there was *matah* in my village; it came from the west; there are about 300 bullocks, 200 buffaloes, and the rest cows. We lost from 60 to 80 head of cattle in the village from *matah*; 5 or 6 died out of 20 attacked. I have seen the disease in my village somewhere about 5 times; it appears after an interval of 5 or 6 years. About 37 years ago

HUMEERPORE. 1869. the attack was more severe than on other occasions. On that occasion the disease travelled from Loobeepore, Nowada, and Devar, villages situated to the south of Patbara. Last year most of the animals died from starvation. The animals that died of starvation gradually became very weak, and at last could not rise, and died; they showed no symptoms of disease. Those which died from *matak* had discharge from nose and mouth, offensive purging, more or less blood, no eruptions on the skin, blisters and sores inside the mouth, and no sores about the feet. There is a different disease in which the feet are sore and in which they suffer much pain, but do not die. This malady is called *khoorfoota*. I have had experience of *matak* and *khoorfoota*, but of no other sickness; 30 or 40 died of starvation. Those who had lost all their cattle either relinquished their lands or purchased fresh bullocks with borrowed capital. A man named Huth lost 15 head of cattle, and has only 2 calves left. Another man, named Bhowanie, had only 4 left out of 15. These were the principal sufferers. Others lost 2 and 4 head of cattle each. One Luchman Thakoor's cattle, four in number, entirely escaped the disease. They were not kept separate in any way, but it was the man's good fortune that they were not attacked.

[Note.—Bhowanie, the man referred to by the deponent, being present, was asked to state the number of cattle he lost. He said in reply that he lost 15, some from starvation, and some from *matak*; he has only 5 head of cattle left out of 20.]

Humeerpore, dated 28th April 1870, 7 A. M.

Case. Saw on the roadside a cow, 8 years old; slight discharge from eyes, worms in the eyes, hair falling off, and scabs all along the spine, ribs, hip, and haunch bones. Worms are in the inner canthus and inside the eye. The entire skin is patchy in appearance, from desquamation of cuticle and falling off of hair.

Calf healthy, except being a little pot-bellied.

Coocher village visited 29th April 1870, 6 A. M.

Visit to village. **Case.** BRINDA SING, MOHEPAL SING, THAKOOR SING, of Coocher, showed a bullock that had been affected this time last year with *matak*. The animal exhibits no trace of the disease and seems to be in perfect health, except that the dung is rather soft. This animal was ill for a month last year and had discharges from eyes, nose, and mouth; watery stools, no blood. The animal is seen out of condition, and has not recovered its former condition. **Evidence of village.** The owner (Issur Paul) had 8 bullocks and 2 buffaloes, and that was the only one affected. The rest were tied up separately from this animal (a few yards). Last year Bhowanee lost 2 head of cattle, Issoria 4, Thakoor 3, Chowkeder 1, Hurran 4, Gunga 5, Canye 3: in short, all in the villages lost more or less from *bhawanee*. The cultivation, however, had gone on as usual, the people having borrowed money from the Bhowrahs on interest varying from Rs. 12 to 24 per cent. per annum. There was considerable suffering among people who lost cattle from cattle plague. Cattle are served by young bulls that have not been castrated, or bulls brought from other places.

Bulls. There was no scarcity of fodder in the village last year. This disease appears in the village every 3, 4, or 5 years. The village stands on the side of the high road leading to Banda. Herds of cattle are seen to be occasionally passing by this road; these are brought by *beparies* for sale. This, however, is very rarely done. Carts are constantly passing over this road. The price of cattle has increased from Rs. 10 to 15, and even Rs. 20. There is one family of chamars in this village who skin all the dead cattle. Half the hide is given to the owner of the cattle and half kept by the charmar. There is foot and mouth disease in the village at present; no carts have been seen to come to the village from Bengal. The disease prevailed in Soojpora last year before it came to this village. The cattle of both villages sometimes graze together.

Case. [Note.—The Commission saw a bullock with sorefeet—the result of the foot and mouth disease; and in the off-hind cleft there are maggots. The animal is in poor condition and great pain, and unfit for work.]

Chundowkie Village.

Visit to Chundowkie. Visited a part (*purwa*) of the Chundowkie village; had the disease *bhawanee* in the year before last, when 5 animals died. The symptoms described by the villagers showed that the disease was rinderpest. They informed the Commission that they had observed eruptions on the shoulders, ribs, and dewlap; during the attack all the cattle of the village were not attacked. The sick and the healthy cattle were kept in the same place.

Rinderpest in 1869. In another part of the same village (Chundowkie) there was *bhawanee* last year about this time. There are nearly 200 families here and 300 herd of cattle, of which number 150 are bullocks and the rest cows and buffaloes. The latter

number 25 or 30. About 25 or 30 died last year; may be more, but certainly not less. Somewhere about 75 head of cattle were attacked. The death-rate was 2 to 4 in each score that were attacked. The disease comes on after an interval of 3 or 4 years. Two bullocks belonging to the deponent, Sheek Mohamed Ariff, farmer, were produced before the Commission, and one of them has recently recovered from an attack of foot and mouth disease. They are still out of condition and only able to do light work. The symptoms of the disease are,—purging blood, off feed, ears drooping, coat staring, running from eyes, mouth, and nose; inside of the mouth hot, but not sore. The animal dies from the 6th to the 16th day of the disease. There was a great want of fodder last year, but no cattle died of hunger; the owners fed them somehow or other; nearly 15 buffaloes died of *chechuck*; no goats or sheep were attacked; they never get *chechuck*. They get some sort of disease and die, but the deponent does not know the name of the disease. In the month of Jyeth (May) there is a cattle fair at Gugneer, 36 miles distant from this village, and there the people go and buy cattle; 15 or 20,000 head of cattle are annually sold in that fair. The *pykars* occasionally bring cattle for sale, but if any villager wants to buy a bullock at a time when the *pykars* are not here, he goes about the village and buys it from some fellow villager.

The people graze their cattle on both sides of the high road to a distance of three-quarters of a mile; there is no actual pasture ground belonging to this and neighbouring villages, as the land is arable. The number of cattle kept by the people has not been reduced, the people keeping only so many cattle as are absolutely necessary for agricultural work. The people send their grains to Cawnpore for sale. They suffered great loss owing to the death of their cattle, but they borrowed money and sold their jewels for purchasing cattle, and those who could do neither failed to cultivate their land. The rates of interest vary from $\frac{1}{2}$ an anna to 2 annas on a rupee per mensem. On the occasions of former outbreaks some of the people who lost had to borrow money for carrying on the cultivation. The disease is considered to be infectious, for a healthy animal coming to an affected village catches the disease; the sick are separated from the healthy and are altogether kept in separate houses when there are means of adopting the measure; when there is only one house the sick and healthy animals are, as a matter of course, kept together. The disease does not attack the entire herd in the same house; a few generally escape. Has seen an animal get *chechuck* a second time, after the interval of 2 or 3 years. The deponent himself lost two bullocks last year from a second attack of *bhawanee*, the first attack having come on 4 years before, but in man *chechuck* also comes on sometimes more than once. The cattle are not inoculated as men are. Cattle poisoning has not been heard of. The village charmar states that he got 33 hides last year (25 of cattle and 8 of buffaloes). The meat of animals that had died of *chechuck* is eaten by the chamars. Small red spots are seen in the bowels as are observed on the skin.

DISTRICT OF CAWNPORE.

Village of Rampore, east of Humeerpore, visited 30th April 1870.

MULWA CHAMAR and HUKUM CHAMAR of Rampore say,—that there were 250 head of cattle in the village, of which 100 died last year of *matak*. The village of Ameerpore, on the Cawnpore road, 3 miles distant, had the disease first; it subsequently came to Rampore. The disease commenced in May and lasted for about a month. The symptoms of the disease were,—discharge from eyes, nose, and mouth (sometimes blood issued from the nose); purging offensive matter and blood; mouth hot, but no excoriations were observed. The diseased cattle died in 4 or 5 days; they were off feed and drink. The animals which recovered remained weak and out of condition for a long time. There was no want of provender. Had seen the disease in the village 10 times. It comes on every 4 or 5 years. Last year it affected all the surrounding villages, viz., Lowri, Bugoria, Sidhowl Bandh, Unnoopore, Bebeepore, and Mohota. We consider the disease to be infectious. There were about 100 houses in the village. Never heard of any cattle poisoning in this part of the country. The hides vary in price from 8 annas to 1 rupee, and are taken by the *beparies* to Cawnpore. The hides are not cured or prepared before being taken away. There is *khoorfutta* in the village. Get their cattle from the fair of Gugneer. The *beparies* also bring herds of cattle for sale. The price of cattle has doubled. The reason of this is the reduction in number by deaths.

Lahoreemow village.

THAKOOR MULLA, 70 years old, and an inhabitant of the village, says that there was *matak* last year in this village about this time. It came from the east from the villages of Apmarmow, Sallia, Shahabazpore, Pusser, and Dubsoowria. Lost 20 head of cattle out of 100. Out of this number 10 died of hunger and 10 of *matak*. There is no disease at present of any sort; animal affected with *matak* leaves off feeding, is thirsty, has discharges from eyes, nose, and mouth. If the case turns out to be *debee*, purging comes on with blood; if to *khoorfutta*, the feet become sore and maggots form in them. This last malady is not fatal, but

At some distance another Goalaparah was visited. It was a small one, and Bhoonjoo Aheer, a man not less than 65 years old said that they generally got their supply of cattle from Muckimpore fair and sometimes the *beparees* brought them to their places from Lahore, Agra, and Gwalior. The price of cattle has increased 25 per cent.; of late there has been no *matah*; 7 years ago his cattle and the cattle of the locality had the disease, but he cannot say how many died. He described the usual symptoms. There were other milkmen with him, but they would not give any information. The deponent had seen eruptions on the skin in some cases.

Kakoorie village visited 3rd May 1870, 6 A. M.

Visited the village of Kakoorie, 4 miles to the west of Cawnpore. It contains 40 or 50 families, mostly boatmen; a Hindoo village; they have only 3 or 4 buffaloes and about 40 head of cattle, mostly bullocks; they however follow the profession of agriculturists; there are also 5 or 6 carts; they work at Cawnpore. The people go for cattle to Muckimpore fair and Sain village: *beparees* with herds of cattle and buffaloes pass by the Grand Trunk Road often; they come from the western districts. There is no disease of any sort at present; 3 years ago there was *khoorfutta*. There has been no *debee* in this village within the remembrance of men 40 years old. The village stands on the side of the Grand Trunk Road. (The deponents are Khoob Lall and Thakoor Proshad). The chamars skin the carcasses, but pay nothing. Never heard of *debee* attacking cattle; can't say whether the price of cattle has increased or not. In *khoorfutta* the cleft of the foot gets sore and the mouth salivates; no casualties from this disease.

Sudoolapore, 200 yards from the Grand Trunk Road, contains 20 or 25 houses and 20 head of cattle and 2 yards of buffaloes. There are 6 families of chamars, who do not keep cattle. They work and skin the carcasses of cattle. There is no disease of any sort at present. Last year in the month of Jyth (May) there was the sickness called *debee* among cattle in the village of *Tutee*. There has been no *matak* in this village for the last 20 years; cannot say how many died in the attack 20 years ago. When the cattle become old and unfit for work, they are sold to the butchers of Cawnpore. The people go about and make private bargains. They go also to Sain Bazaar, eight miles to the north side, and get cattle there. The Sain Bazaar meets only once weekly on Sundays. *Beparees* are often seen driving herds of cattle and buffaloes along the Grand Trunk Road; they come from Muckimpore and other western places which they cannot detail. The moochees take the hides and sell them at Cawnpore, and 8 annas, 12 annas, and sometimes 1 rupee are taken by the owner.

Tatee village, 1,200 yards distant from the Grand Trunk Road.

CHOPA AHEER, BHODYE TELEE, LOCHUN AHEER, SUBSHOOK AHEER, and others say there are Evidence of villagers.
nearly 40 or 50 houses and 40 bullocks, 7 cows, and 20 buffaloes. There are also 12 goats; no Village stock.
sheep; a Hindoo village; last year by this time 40 or 50 head of cattle died of starvation. Losses from star-
vation.
There was no disease of any sort. There is no disease of any sort at present; get their supply Supply of cattle.
of cattle from Sain Bazaar, Hurchandpore near Etawah, and Gugneer.

Sain Bazaar meets on Wednesdays and Saturdays. Hundreds of cattle are bought and sold. It is eight miles distant from Cawnpore; carriages go there easily; chamars take the skins and hides. pay 8 annas for a cow skin, and 1 rupee for a buffalo hide.

The deponents (50 to 55 years old) never saw any *matah* in their village. The cattle graze in the fields. The cattle of the city of Cawnpore and the village cattle graze together. *Beparees* never come here; they generally take herds of cattle with them on the Grand Trunk Road. Cannot say whence the *beparees* come. (The *chamroara* or *thagar* is covered with bones, and is close to the village. The cattle are in pretty good condition.)

Baragow Tatea.

Baragow Tatea.		Visit to Baragow Tatea.
BUNDEE CHOWDHRY says that this village has 20 houses and somewhere about 30 head of cattle, of which some are buffaloes. Last year about this time 22 head of cattle died of starvation. No disease here at present; the men had small-pox last year, but not the cattle. There has been no <i>debee</i> among cattle here. Seven or 8 years ago cattle died of foot and mouth disease. (The cattle here looked nice and healthy). Cattle graze in the fields. The villagers go for cattle to Bellour, 18 coss to the west. They also go to Muckimpore. <i>Beparees</i> do not come to this village, but they pass the Grand Trunk Road with herds of cattle and buffaloes. Disease is called <i>gowthonsillah</i> here: (<i>gow</i> means cow, and <i>thon</i> means udder).		Village stock.
		Deaths from starvation.
		Foot and mouth disease.

Saw a bullock with running from eyes, nose, and mouth; bowels a little relaxed and slimy. The owner, Gurree, says that it eats, blood comes out from the nose, but it may be that this is produced by rough handling. Did not see any excoriation inside the mouth. The coat did not appear to be smooth.

A young man, apparently a Railway chaprassee, came up at this time and joined the conversation, and he said that *debee* was called *gowthonsillah*, and that the people did not know the disease and could not recognize it.

CAWNPORE.

2nd May 1870, 11 A. M.

Supply of hides.

Visited the Cawnpore Government Tannery, and met Captain Stewart, R. A, the officer in charge. Were informed by him that only slaughtered hides (*halali*), and that of the best quality (cows and cow buffaloes), were brought for Government use, obtained through a contractor, Mr. Jones, from Delhi, Agra, Cawnpore, and other places at Rs. 100 to 120 a score, the Calcutta market price being from Rs. 75 to 80 per score. The hides purchased are the very best obtainable; were told that hides obtained from the neighbourhood of Meerut were very often found to be affected with *luka*, which is said to be a worm which burrows under the skin of the back and perforates the hide in several places. *Murdari* hides (hides removed from animals which have died) or hides marked by *debee* (small-pox or rinderpest) are not bought for this establishment, and as only the best hides are taken, hides of this sort are never offered. Saw and examined several employes of the establishment (chamars), who informed us that a trade in *murdari* hides is extensively carried on in Cawnpore, and has increased within the last six months. Among those *murdari* hides *debee* hides are said to be common, and easily recognizable as such by experts. One man stated that all *debee* hides are affected by small spots, unless the animal is killed at a very early stage of the disease. One man said that *debee* had been very prevalent on the other side of the Ganges in Oude last year about this time.

Meerut hides.

Murdari hides.

Trade in dead hides.

Debee hides.

Peculiarities

Debee hides.

Source.

Disease in Baraich and Seetapore.

Proceeded to the village in which the chamars who deal in *murdari* hides live and carry on their business. There saw a heap of one thousand *murdari* hides which had been sold two days before to a Calcutta merchant, price Rs. 32 a score. These men informed us that hides of cattle which have died of *debee* are easily recognized by small scabby spots about the size of a split pea (size shown by informant by a piece of gravel), which occur all over the hide.

All the *murdari* hides are brought from Oude, and come in thousands.

The number has increased greatly within the last year. They said that this time last year great numbers of *debee* hides came from beyond the Ganges, and that now a few were brought. Said that the disease was prevailing at Baraich and Seetapore.

Visit to Commissariat Shed at 6 P. M.

Foot and mouth disease.

Saw the Commissariat bullocks, 116 in number, in the Commissariat yard. The Sergeant in charge, who had been three years in charge of 250 Commissariat animals at Lucknow, stated that he had only seen hoof and mouth disease among the bullocks under his charge during that time. He showed us three cases of foot and mouth disease almost recovered.

The Sergeant stated that if affected animals were kept apart from the rest, the disease did not spread, and that if the animals were muzzled when their feet became affected, their mouth did not become sore. He had always found that the feet became sore first.

3rd May.

Visited the Government Tannery at 7 A. M. Were kindly shown over the establishment by Captain Stewart. Saw some *luka* hides, but did not ascertain anything in addition to what was yesterday recorded.

Were told that the salt used in curing hides had much to do with their value. Those cured at Patna, Dacca, and Derbungah with salt, fetching a higher price in the home market than those cured with the coarse salt of the North-West. Captain Stewart kindly promised to obtain through his subordinates some *debee* hides for the Commission.

FUTTEHPORE.

DISTRICT OF FUTTEHPORE.

A. C. Barnard, Esq. Report on the Cattle Plague by A. C. BARNARD, Esq., Officiating Collector,—dated 5th June 1868.

From such inquiries as I have been able to make, it appears that there are at present three different diseases prevalent among cattle in the Banda District, all of which are more or less fatal, and two of which are certainly contagious and infectious. Of these three diseases two are very widely spread; the other seems to be confined almost entirely to the Kirwee Sub-division.

Two forms are not uncommon in this country. The one is a disease in which the hoof dries up, the mouth becomes dry, and a discharge takes place from the nostrils. This is prevalent all over the district; the other, which is small-pox in cattle, is confined to the Kirwee Sub-division, and was known in this country as early as 1837, when children were inoculated by Mr. Brown, a Surgeon in Assam, from cattle labouring under a very severe epizootic of *matak* (small-pox), and was further mentioned by the Committee of the Provincial Medical and Surgical Association at Liverpool in 1839. (*Vide* Murchison's report in the *Lancet* of January 13th, 1866.)

The third form of disease is apparently an unknown one, the chief symptoms of which are that the cattle refuse food; they are then attacked with diarrhoea, ending in a discharge of

blood, under which they become enfeebled, sink and die. Great numbers of cattle have died of this form of disease, though some of them have been cured by the exhibition of salt and *mash-ka-roti*, which I am given to understand is a cake made of a pulse called *urudh* mixed with oil. In the Sekoondah Pergunnah of Banda this disease first appeared among the cattle on their return from the hilly country, whilst in the Pupendha Pergunnah it is most prevalent in the villages along the banks of the Jumna.

Neither of these three diseases is the rinderpest that was so destructive to cattle in England a few years ago. After long discussion, the conclusion was come to by Professor Gamgee, that the rinderpest was not small-pox in cattle, as it was at one time supposed to be. The reasons on which this conclusion was based were:—

1st.—The difference of texture and nature of the pustules in the two diseases;

2nd.—That vaccination of cattle proved of no use towards checking the advance of rinderpest, the only means of coping with which was "stamping it out" by entire sequestration of the diseased animals; and

3rd.—That a cow that had recovered from an attack of rinderpest took small-pox from vaccination in an experiment made by Dr. McCall of Glasgow.

The third form of disease alluded to above is also wanting in many of the essential symptoms of rinderpest, although in some cases of rinderpest there was no cutaneous eruption. It was only absent in those cases when death ensued within 3 or 4 days of the seizure, whereas in the disease under notice I find no mention of any eruption; and again, rinderpest was always accompanied by a very offensive smell from the whole body, and more especially from the abdomen, which seems to be entirely wanting in the present disease. These, however, are points which could only be cleared up by a local inquiry, such as I have not the means of instituting.

I am happy to say that no disease has been imported into this district, nor is there any truth in the statement made by the *Pioneer*, that cattle are being exported from Banda, as far as this district is concerned.

I have had careful enquiries made both through the Tehsildars and through the Police, and have also had some opportunities of questioning the Zemindars on the subject, of whose answers I have availed myself, and with the exception of a few cases of the disease first mentioned in this report in Ghazeepore Pergunnah, the district is at present quite free from disease of any sort.

I have ordered the ferries at Ekdullah, Vashenpore, Moorkar, Chillaturah, and Valianpore to be watched, and any unusual ingress of cattle to be immediately reported to me.

Soobedarpore, five miles north-east of Futtehpore,—21st May 1870, 6 P. M.

SOOBEDARPORE.

A cow three years old; gave birth to a calf six months ago; condition rather poor; six days ill; off feed; excessive thirst; ears drooping; profuse discharge from eyes, nose, and mouth; a few eruptions on the skin; coat staring; purging blood and mucus; excoriations on the gums; red spots on the tongue, which is furred; muzzle dry; the owner says that he gives cold water to drink, but nothing to eat; milk entirely suppressed; does not allow her calf to approach her; animal very weak; vagina very slightly congested; breath offensive. On 24th May 1870 animal again seen, and found to be improving.

GOFAUL AHEER, BUDLOO AHEER, BHUGWA AHEER, CHURUNGEE AHEER of Soobeydarpoora, Evidence of villagers. from 27 to 60 years old, say.—Our village has 57 houses owning upwards of 250 head of cattle, of which 100 are cows, 100 bullocks, and about 50 buffaloes. There are no sheep nor goats; Village stock. the cattle of our village have been suffering from *bhawane* for the last month, and somewhere about 12 animals have fallen victims; six or seven are still ill. The symptoms are,—off feed, Disease *bhawane* prevails. salivation and running from eyes and nose, costiveness for the first two days, then purging Mortality. blood and mucus; great thirst. The ears of the animal droop, and it looks stupid and stands Symptoms. aloof; sore mouth; very offensive breath; and death ensues from the 3rd to the 8th day.

There are recoveries, but they are few. Four or five animals recover out of 20 attacked. Death and recovery rate. The disease is communicated from one animal to another; the village of Illisramow, half a mile to the north-east of our village, had the disease. The cattle of this place and the cattle of our place graze on the same pasture and are watered in the same place. We do not keep the sick separate from the healthy; there is no place for that. The cattle graze during day and are tied up at night at home. They get *bhoosa* and *suttoo* or chaff. The price of a cow has increased from 10 to 15 rupees. The cause of this increase is, that every other necessary article has increased in value. There is no cattle fair in the neighbourhood, but we get our supply of cattle from Futtehpore and Hossengunge, where the *baparees* bring cattle for sale. Our village is fully two miles off the high road. Ten or 12 years ago there was *bhawane* in our village, when the mortality was greater than now. The disease as yet is not so bad as the former attack. Our cattle get *khoorah*, but that is generally not fatal; in that disease the clefts of the hoofs get sore, the mouth is not affected; the hides of bullocks not yet yoked to plough, and cows which have not given birth to calves, are taken by chamars. The hides of plough bullocks and mother cows are taken by the owner; the hides of *bhawane* cases are sold to chamars, and by them sold to *pykars* at Futtehpore. There are no carts; this is a Hindoo village.

FUTTEHPORE.
Case.

A bullock, four years old; condition fair; ten days ill; has commenced picking a little for the last two days; did not eat at all for the last eight days; had great thirst; still has slight discharge from eyes and nose, but the marks show that there was profuse discharge previously. The muzzle is still somewhat dry; ears drooping; the animal looks stupid and purges a little; the stool is clay, coloured; did purge watery stools mixed with mucus; coat not very rough; slight excoriations on the gums; the buccal papillæ are, however, all right. A few eruptions exist on the skin of the shoulders and neck; animal evidently recovering. Seen again on the 24th; better; the animal continues to recover.

Village of Narainpoor, 11 miles north-east of Futtehpore, visited 23rd May 1870, 5-45 A. M.

Case No. 1.

A bullock, 9 years old; condition poor; coat staring; profuse discharge from eyes, nose, and mouth; muzzle dry and reticulated; ears drooping; laboured breathing, moaning, congestion, and excoriation of gums; furred tongue; offensive breath; purging pure mucus with streaks of blood; 4 days ill; off feed; conjunctiva much congested; thirst; lying down; evidently slightly delirious; no eruption on the skin; prepuce slightly congested, with slight discharge.

Case No. 2.

An entire bull, 3 or 4 years old; condition good; 4 or 5 days ill; discharge from eyes, nose, and mouth; ears drooping; muzzle dry; congestion, excoriation, and aphthous deposit on gums and buccal papillæ, and extensive patches of excoriation with aphthous deposit on the palate; very weak; dysenteric purging; no eruption on the skin; off feed; thirst; prepuce congested, discharge therefrom.

Case No. 3.

(From Goneshpore).—A bullock, recovering; has been ill a month; condition very low; lost one of the eyes from maggots depositing in it during disease; desquamation of cuticle on shoulders and neck. On manipulating the skin, the eruption feels like a series of scabby elevations; coat falling off; bowels loose.

Case No. 4.

A male buffalo, recovering from rinderpest; on loins and back the skin is coming off in the same way as the buffalo seen at Dowlutdear and Agra.

Case No. 5.

(From Narainpoor).—A cow, 3 years old; 4 days ill; congestion of gums; no excoriation; discharge from eyes, nose, and mouth; no eruption on the skin; ears drooping; off feed; coat staring; condition fair; vagina slightly congested.

Case No. 6.

Another cow, 5 years old; condition fair; 4 days ill; picking a little; presents the same symptoms as the preceding one.

Case No. 7.

Another cow of the same village, 10 years old; condition very poor; recovering, but showing well-marked shallow pits on shoulders and withers.

Case No. 8.

Another bullock of the same village with like pits of eruption on the skin, and likewise recovering.

Case No. 9.

Another black bullock shows the same signs.

[Note.—The cows and bullocks show the eruptions most on the withers and the back and shoulders; buffaloes on back and loins. The Commission saw 20 head of cattle and buffaloes suffering or recovering from rinderpest.]

Evidence of villagers. Evidence of HURPAUL SINGH, Zemindar; MATHADEEN, PATWARI; HAZZARI, AHEER; CULOO, AHEER; BHOWANY DEEN, Aheer, of Narainpoor.

Village stock.
Rinderpest in April.
Treatment.
Disease about 1860.

Narainpoor is one of the hamlets of Motheepoor. There are 25 families residing in our village, owning as they did nearly 60 head of cattle, of which five have died of *bhawanee*, which made its appearance in Bysack last (April and May); the disease is now on the decrease and only 4 or 5 are ill. We do not generally administer any medicines in *bhawanee* cases, but a few get ghee to drink; seven or eight are convalescent 10 or 12 years ago; there was a mild attack of *bhawanee*; we are not aware of any other attacks.

Symptoms.

The symptoms of the distemper are,—off feed; thirst; constipation of bowels for the first 2 days; then purging of blood and mucus, ears drooping, hair standing on end. There are eruptions in some cases, and not in others. The previous attack came on at this season. There are no sheep in the village; there are goats, but they have not had an attack. The carcasses in *bhawanee* cases are generally buried. This is done of our own free will, as we are satisfied that burial of carcasses will check spread of disease; but those who cannot afford to bury throw them away.

Season.

Sheep and goats.

Burial.

The deponents here correct themselves and say,—we do not invariably bury the carcasses, but we buried the animal that had died of *bhawanee* the first; we have a notion that if the animal which dies first is buried, the disease would be checked.

Hides.

Cattle markets.

Cattle driving.

The chamars take the hides and sell them, and give a part of the price to the owners. The chamars sell the hides in markets and fairs to petty dealers. We purchase cattle from Futtehpore, Chulaha, and Bencee, where there are bi-weekly hâts. The beparies bring the

cattle from the western districts (Banda and south of the Jumna). Gradually the number of cattle is being apparently reduced and the price is being raised daily. The cow that fetched 10 years ago Rs. 10, costs now from Rs. 12 to 15, or even more. We have a few carts, but they are used in the village in removing the corn and in conveying manure (ashes). There is another sort of disease among cattle; it is *kheorah*; it is not very fatal. In *kheorah* the clefts of the hoof alone are affected, but not the mouth. Our village stands at a distance of 3 miles from the high road. The cattle graze in the fields during day and are housed at night, where they get *bhoosa* and grass. Before the disease appeared in our village it had attacked the village of Motheepoor. The cattle of both these places come in contact daily on the pasture. We do not consider the malady to be infectious, for the disease does not attack every animal in the house or herd. One attack protects against the second; we are, however, not quite certain of this.

The Zemindar positively asserts that the first attack gives immunity from the second, but another man (an agriculturist) declares that he does not know.

We have seen calves get ill with their mothers, and we have also seen them escape, while their mothers caught the disease; we have known of an instance in which a man lost 4 out of his 5 head of cattle. Another man, named Govindo, lost the only two he had.

[Here followed a statement of the losses of individuals, showing from 1 to 14 deaths, the usual loss being 2 or 3.]

The loss among cattle will not interfere with the cultivation of the land. People will however borrow and buy cattle and then till their lands. The people with carts and pack bullocks pass through near Motheepoor, which is $\frac{1}{4}$ mile distant from the high road. There is a road which passes to Cassempoor and Hutgow. There is a well near our village, but there are no inns or regular places for rest; but a few do stop under peculiar circumstances. We are not aware of any sick cattle stopping there, or dying there or in the vicinity; the health of men is excellent. The bullocks work in the field for 3 or 4 hours in the forenoon and 3 or 4 hours in the afternoon. We have not got any regular bulls kept up, but our entire bullocks serve the cows. In our villages 10 or 15 calves are born yearly; the bullocks form the majority of our cattle.

Visit to Satraonpore.

Satraonpore is 11 or 12 miles from Futtehpore, 4 miles off the main road; a *purwa* of Guneshpore; contains 11 houses. There were 80 head of cattle before the murrain; half of these have died; the disease commenced 1½ month ago; there is no disease now; it disappeared about 8 or 10 days ago; all that got the disease died with a few exceptions. In Guneshpore only 2 died out of 70; these two belonged to different owners, and no precautions were used to prevent the spread of the cattle disease among the cattle of the village; the Putwaree of the village, who has been the Putwaree for 17 years, says that no disease existed there in former years; not even when Moteapore and Narainpoor were affected 10 years ago.

24th May 1870, 6 A. M.

Soobeydarka Poorwa.—The cow seen ailing on the 21st has a few eruptions on the skin; the other affected cow seen has also eruptions on shoulders and neck.

A buffalo bullock 6 years old; condition poor; 5 days ill; discharge from eyes, nose, and mouth; lower lids œdematous; conjunctivæ very much congested; buccal membrane also congested and tumid; gums still congested; breath very offensive; had purging, watery stools; tongue a little furred; on back 5 or 6 shallow pits, evidently the effect of eruption; feeds now; emaciated and very weak; appetite good; animal apparently recovering.

The villagers state that when a cow with a sucking calf becomes affected with disease, very often the calf becomes affected by drinking the milk; but this is not always the case.

BEPOTEA CHAMAR of Soobeydarka Poorwa states—I have been living in this village for the last two generations; I am 55 years old; I deal in hides and cultivate land; I skin the carcasses of animals that die in the village and make them over to the owner; I get an anna or so for each skin; I sell the skins on account of the owners at Futtehpore market. The owners get the hides of those cattle which have given birth to calves and of bullocks not yet worked; I myself only getting an anna or so; but the skins of calves and of bullocks not yet worked are my property; the diseased skins sell at much less price than the hides of animals that died otherwise. I cannot distinguish a *debee* hide from a skin of an animal that died of other disease, or was slaughtered; I have never seen any pits or marks on *debee* hides; I eat the flesh of *debee* animals; I have found much blood under the skin in *debee* cases; we do examine intestines, but we do not eat them. Eight or 10 head of cattle died of *bhawanee* on this occasion. It has appeared in the village for the last 5 years; 5 years ago there was *bhawanee*, and it killed many more cattle than it is killing now. Hides are weighed and sold. An uncured skin of an animal dying, not of *debee*, sells for 6 annas, whereas a *debee* hide sells for 4 annas; the *beparees* at Futtehpore take hides; they dress them and sell them to dealers who take them to different countries for sale: the present attack is the third we have had in the village

FUTTEHPORE. during my lifetime; the cattle also get *khoorah* and the hoof becomes sore; the cattle also now and then die of a disease called *borelie*; they eat rank grass, get hoven, ears droop; they purge, and die in one or two days. This disease comes on in August and other months; these cattle eat too much of standing grass which has been spoilt by rain, and die.

Evidence recorded 25th May 1870.

Evidence of villagers of Cheet Isapore. **ABOOR RUHEEM and FUREED BUX** of Cheet Isapore, 14 miles north-east of Futtehpore, say,—The disease appeared in our village about 12 or 13 days ago, and it killed 26 head of cattle; the duration of attack was 4 or 5 days; there have been no fresh cases; we do not know the name of this distemper, nor whence it came; never saw any such disease before; we own 27 head of cattle, but more were attacked; our cattle and the other cattle of the village graze together on the pasture; our cattle are on the common pasture during the day, but they are stalled during night; we do not consider the disease to be infectious, for had such been the case, other cattle of the village would have been attacked; the tract of the village visited last year by cholera among human beings has been this time visited by murrain among cattle; not that the very houses attacked by cholera last year had murrain this year, but other houses got the distemper.

[These two men give hearsay evidence.]

Evidence of Shittaram Aheer, &c. **SHITTARAM AHEER, BOROOD MORYE, SHOODINOWA AHEER, GHUNNIE MORYE, CHITOOA, NOONIA,** of Cheet, say,—There is cattle disease in our village, but there have been no fresh cases for the last 4 days. Two that had been ill began to eat yesterday; the last died 4 days ago. The first 4 informants lost 9 head of cattle. The cattle were off feed, purged watery stools, salivated from mouth, and died in 3 or 4 days; we call the disease *hija*. Never saw the like disease at any other time; we call the disease *hija* because the cattle purge and die; the hides of the animals that died of *hija* have been taken by village chamars; our cattle get *khoorah* now and then, but that has not at any season proved fatal. The first case occurred 10 or 11 days ago, and one after another died day after day; the last case occurred 4 days ago.

[Here the Putwaree presented his account of the casualties among the cattle of his village, but neither the Tehsildar nor any of the members could understand it; the Tehsildar said that he had directed all the Putwarees to keep a list of all the casualties among cattle and the dates of their deaths, but the list kept up by this Putwaree contained no information on any of these points.]

Tabular Statement of Cattle Murrain which prevailed in the Futtehpore District in March and April 1870, dated 27th April. **FUTTEHPORE.** W. C. Turner, Esq.

Pergunnah.	Village.	Date of out-break.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
I.—From Murrain.								
Futtehpore	Muthyapore	20th March 1870	1,200	352	150	200	2	The symptoms assigned to the murrain which furnishes the major portion of the figures of this table are, fever, discharges from eyes and mouth, and dysentery.
	Lukri	28th ditto	450	100	25	75	...	
	Rampore Mujra	14th April 1870	150	17	5	10	2	
	Goura Kulah	1st ditto	312	72	63	...	9	The number attacked is,—per cent. of stock 18·85, and the deaths 10·8 per cent. of stock and 58·76 per cent. of attacked, excluding number still ill.
	Beedanpore	19th ditto	300	49	46	...	3	
	Poreah Subadar	18th ditto	150	3	1	...	2	
	Narainpore Majra of Methyapore.	21st ditto	60	5	5	...	...	
Husure	Guneshpore	10th ditto	300	46	46	...	...	The death-rate from <i>khoorah</i> is very small, being only 25 per cent. of stock and 4·402 per cent. of attacked.
	Suthrobanpore	15th ditto	80	8	8	...	...	
	Misrumow	14th ditto	272	81	81	...	...	
	Teni	25th March 1870	900	235	125	50	60	
Hatgaon	Buroulie	Ditto	250	75	15	45	15	
	Ramipore	28th March 1870	250	38	30	...	8	
	Bhukurna	Ditto	500	26	10	...	16	
	Sungrampore	Ditto	150	25	17	8	...	
Ghazeepore	Moari	10th April 1870	500	8	4	...	4	
	Husunpore	1st ditto	550	70	60	...	10	
	Sooketi	1st March 1870	561	88	61	5	22	
	Chuck Pyumburpore	15th ditto	502	84	60	14	10	
Total			7,437	1,382	812	407	163	
II.—From Khoorah.								
Futtehpore	Soofa	21st April 1870	400	2	...	...	2	
Ghazeepore	Lulauli	5th March 1870	1,935	45	7	36	2	
Kurrah	Dubsowra	9th April 1870	87	87	...	77	10	
Ditto	Deomye	10th ditto	425	25	...	10	15	
Total			2,847	159	7	123	29	
GRAND TOTAL			10,284	1,541	819	530	192	

From A. C. TUPP, Esq., Officiating Collector of Futtehpore, to the Commissioner of the 4th or Allahabad Division,—(No. 304, dated Futtehpore, the 23rd August 1870). **A. C. Tupp, Esq.**

I have the honor to report to you that a severe, but short, epidemic of cattle disease broke out in the Ekdulla Pergunnah during July, and lasted till the 16th August.

2. It will be seen from the enclosed statement that 140 cattle died in 5 villages within the month. It ceased about the 15th of August, and the Tehsildar did not report

FUTTEHPORE.
A. C. Tupp, Esq.

its occurrence till after its cessation; for this he has been reprimanded. He now reports that disease exists in those villages.

Report of the Tehsildar of Ekdulla, dated 16th August 1870.

VILLAGES.	Number of cattle which have died in the month ending the 16th August.	Symptoms of disease.
Jehangirnuggur ...	50	Do not chew the cud, water flows from mouth neither eat nor drink, evacuations in some cases mixed with blood, and in others of black colour; some died in 4 or 5 hours, others in 3 or 4 days. Cattle seldom recover from the disease. Disease is called by the natives <i>ralia</i> , from <i>ral</i> , the Hindee word for water flowing from the mouth. It is supposed to have originated from feeding on green grass.
Bhadawan ...	31	
Saidpore ...	29	
Pachmai ...	16	
Pauli ...	14	
Anjna Kabir ...	140	

ALLAHABAD.

DISTRICT OF ALLAHABAD.

J. C. Robertson, Esq. *From J. C. ROBERTSON, Esq., Officiating Magistrate of Allahabad, to the President of the Commission deputed to enquire into Cattle Disease,—(No. 661, dated the 23rd August 1870).*

I have the honor to inform you that cattle disease is reported to have broken out at Poor in Pergunnah Chayul and in the Munjunpore Pergunnah; the Police have stupidly not mentioned the village, but it cannot be far from Munjunpore, which is about 8 miles from Bhurwarie Station.

2. On receipt of further details and replies to the questions which have been called for from the Native Doctor deputed to those parts, I will communicate further with you, meanwhile I lose no time in informing you of the outbreak of the disease, as from *post-mortem* examinations of other cattle in this district which have died under similar circumstances, there is no reason to believe that the animals have been poisoned.

From J. C. ROBERTSON, Esq., Officiating Magistrate of Allahabad, to the President of the Commission deputed to enquire into Cattle Disease,—(No. 670, dated the 26th August 1870).

In continuation of my No. 661, dated 23rd instant, I have the honor to forward replies sent by the Native Doctor regarding the cattle disease at Poor and Usmanpore in Pergunnah Chayul; that regarding Munjunpore will follow.

2. Poor and Usmanpore are about 20 miles from Allahabad in the direction of Serai Akil, viz., on left bank of Jumna; they are difficult of access at the present season, and there is no accommodation obtainable.

From J. C. ROBERTSON, Esq., Officiating Magistrate of Allahabad, to the President of the Commission deputed to enquire into Cattle Disease,—(No. 692, dated the 1st September 1870).

In continuation of my No. 670, dated 26th ultimo, I have the honor to inform you that disease has broken out amongst some cattle in this station. It is also reported as being in the Kurra Pergunnah in the neighbourhood of Serathoo Railway Station, where there is accommodation in the Tehseelee.

2. Detailed replies to the printed questions circulated by you will follow. I will also submit in a few days further report regarding cattle disease near Munjunpore, mentioned in my No. 661, dated 23rd August 1870.

R. Yeatman, Esq.

From R. YEATMAN, Esq., Assistant Superintendent of Police, to the Officiating Magistrate and Collector, Allahabad,—(dated 3rd September 1870).

In accordance with your request, I proceeded on the 26th ultimo to Munjunpore to inquire into the subject of cattle disease, and have the honor to report as follows the result of my inquiries.

Up to the present my inquiries have only extended to the Munjunpore Police Station circle, but I am informed that the disease has been and is still prevalent, more or less, in the Serai Akil, Kuralee, Puchim Surreera, and Koh Khuraj circles.

The disease in the Munjunpore circle is of one kind, called by the natives *khoorah*; it in every instance attacks the feet, where sores gather. In no other way nor on any other part of the body does the disease show itself; 10 or 12 days is its average duration, when the animal either dies or recovers. In none of the villages, when I made personal inquiries, could I ascertain the cause of the disease; the villagers were utterly ignorant and could give no information whatever on the subject, but were rather of opinion that it was a visitation of Providence; prayers are offered up daily by the Hindoo community, but without, to my knowledge, any beneficial results. They adopt no remedial measures for the arrest of the disease.

From local as well as private inquiries, I think I have succeeded in obtaining an accurate account of the disease as it has lately and at present prevails in the Munjunpore circle. This circle comprises 70 villages; of these the cattle of 29 villages have more or less suffered. In the following 14 villages the disease still exists, viz., 1, north of Munjunpore—Bussanee; 2, south—Bhelka and Osa; 11, west of Munjunpore—Pata, Domapore, Seya Nowgirwa, Ockapore, Putnana, Futtehpore, Mohuddehpore, Mugraie, Koraye, and Murokee.

It will be at once seen that the disease is almost entirely confined to the villages situated west of Munjunpore. Of 3,472 head of cattle attached to these villages, 551 have been attacked, 105 have died, 336 recovered, and 110 are still ill. In 3 villages—Ockapore, Nowgirwa, and Bussanee—the disease has been, and is still, very prevalent. Ockapore contains 125 head of cattle, and of these 100 have been attacked, 95 recovered, and 5 are still ill.

In Nowgirwa there are 268 head of cattle, 83 have been attacked, 4 have died, 47 recovered, and 34 are still ill.

Bussanee contains 150 head of cattle; of these 39 have been attacked, 25 died, 10 recovered, and 4 are still ill. It seems strange that at this latter village, the only one north of Munjunpore, the cattle should have suffered so severely, the disease here being of a far more virulent type than that of any other village in the circle. The disease is evidently now on the decline, as the fact of its having completely left the following villages sufficiently attests:—4 north of Munjunpore—Koron, Bheerasa, Fyzeepore, and Itchowlee; 2, east—Bisara and Kazeepore; 9, west—Bagapore, Doobea, Jeapore, Kaynie, Sootia Konda, Toolseepore, Kora, and Mullakia.

Of 1,982 cattle belonging to these villages, 172 were attacked, 49 died, and 123 recovered. Of these 49 cases which ended fatally, the comparatively large number of 25 to 30 attacked occurred at Itchowlee, a village situated close to Bussanee, and where the disease proved to be of the same virulent type.

Results of future inquiries will follow.

Tabular Summary of Reports received from the Allahabad District regarding the prevalence of Murrain during the months of July to October 1870.

Pergunnah.	Village.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
Allahabad	Poorkhasa ...	25th July 1870 ...	1st September 1870	300	94	40	39	15	These figures were collected by a Native Doctor specially deputed. The disease is not named, except in two cases, where, it is called <i>harza</i> —cholera. The symptoms assigned are,—fever, discharge from eyes and mouth, bloody evacuations, and spots upon the body.
	Usmanpore ...	2nd August 1870	.....	100	34	12	19	3	
	Rusulpore Girsia ...	July 1870 ...	7th September 1870	394	135	52	26	27	
	Jellalpore Tingree ...	August 1870	6th October 1870...	225	25	8	17	...	
	Muttiara ...	July 1870 ...	Ditto ...	52	20	7	14	8	
Kurrah	Putty Purbanaara ...	Ditto ...	Ditto ...	491	162	110	27	17	The number attacked is 33 per cent. of stock, and the deaths 15 per cent. of stock and 55 per cent. of attacked, excluding number still ill.
	Putty Rupnarainpore	Ditto ...	Ditto ...	361	169	40	88	41	
TOTAL ...				1,923	648	299	238	111	

AGRA DIVISION,

COMPRISING THE DISTRICTS OF AGRA, MUTTRA, MYNPOOREE, ETAWAH, ETAH, AND FURRUCKABAD.

Index of Records.

[N. B. —Those in Italics are not printed.]

Districts.	From whom received.	No.	Date.	Reference and Purport.
Etawah.	Historical Sketch ...	...	.....	Page 399.
	Collector of Etawah ...	...	22nd July 1868 ...	<i>Selections, Government of India, No. 69, p. 213. Reports that no epidemic appeared among the cattle in the Etawah District in 1868.</i>
	Magistrate of Etawah ...	159	22nd April 1870 ...	Forwarding the Commission's Form No. 1 duly filled in, with reference to the village of Gowrie, where cattle disease had broken out, p. 400.
	Villagers of Gowrie, Tajpore, Fuckeerpore, Nundpore.	...	15th May 1870 ...	Evidence recorded by the Cattle Plague Commission. { p. 400. p. 401. p. 401.
	Villagers of Terriah and Bankipoorah.	...	16th ditto ...	
	Evidence of Shew Churn, Zemindar of Siannugger.	...	Ditto ..	
	Collector of Agra ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 213. States that there was no cattle disease in his district during the year 1868.</i>
	F. M. Lind, Esq., Commissioner, Agra Division.	15D.	28th February 1870	<i>Reports no cattle disease in his division in the year 1870.</i>
	Evidence of Mohasooklall.	...	18th May 1870 ...	Recorded by the Cattle Plague Commission, p. 402.
	Do. of villagers of Pathalee, &c.	...	20th ditto ...	
Furruckabad.	Collector of Furruckabad...	...	23rd July 1868 ..	<i>Selections, Government of India, No. 69, p. 213. Stating that there was no cattle disease in this district in 1868.</i>
	C. Daniell, Esq., Collector of Furruckabad.	72	21st February 1870	Forwarding the Commission's Form No. 1 duly filled in, with reference to the Kunnouje and Mohamedabad Tehsils, p. 403.
Etah.	Collector of Etah ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 213. Reports great mortality from cattle disease in this district during the end of 1867 and the beginning of 1868.</i>

Districts.	From whom received.	No.	Date.	Reference and Purport.
Etah—cont'd.	R. T. Hobart, Esq., Deputy Collector, Etah.	227	26th August 1870...	States that diarrhoea and <i>bedun</i> are the only diseases prevalent in his district at present, p. 403.
	Ditto ditto ...	247	10th September 1870	Reports a fatal outbreak of disease among the cattle in the district, p. 403.
	Ditto ditto ...	289	18th October 1870	Forwarding the Commission's Form No. 1 duly filled in, with reference to the epizootic of cattle disease prevailing in the Kasgunge Tehsil, p. 403.
Muttra.	Collector of Muttra ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 213. Stating that no cattle disease of an epizootic nature had appeared in Muttra during the year 1868.</i>
	B. Hardinge Esq., Magistrate of Muttra.	...	17th November 1870	Reporting the diseases which ordinarily prevail among the cattle of his district, and describing symptoms, p. 404.
Mynpooree.	Collector of Mynpooree ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 213. Reporting the existence of cattle disease in Mynpooree in 1868.</i>
	Ditto ditto ...	237	18th August 1868 ...	<i>Reports that no cattle disease exists in the district.</i>

HISTORICAL SKETCH.

The information regarding cattle diseases in this Division is meagre. No written record exists prior to 1868, though the oral evidence obtained by the Commission tells the usual tale of periodical prevalence for very many years. HISTORICAL SKETCH.

The replies to the Board's Circular B contain the earliest information on the subject. Both in Mynpooree and Etah, cattle disease, similar to that observed in Hurdui, in Oudh, is reported to have prevailed in the cold weather of 1867-68. In Mynpooree the disease broke out in October, and its symptoms were,—refusal to eat, followed by much diarrhoea and fever, apparently with great thirst, exhaustion, and death about the third or fourth day. This is what the experience of the Commission has taught them to call rinderpest. Goats and sheep are also said to have suffered much. In Etah the disease broke out about the close of the rains. It was considered contagious. The loss was roughly estimated in the Etah Tehseel at five head per village. Sheep and goats also died in numbers. In Agra, Etawah, Furruckabad, and Muttra no cattle disease had been observed.

The next official record of cattle disease is a report from the Furruckabad District, dated 21st February 1870. From this paper it appears that murrain had been prevalent in the district during the two previous years. The symptoms are vaguely stated, and the mortality noted was probably owing to more than one form of disease.

In the month of March 1870 murrain broke out in some parts of the Etawah District. It was called *rog*—plague, and the symptoms were those of rinderpest. On the 15th May the village in which disease was reported to exist was visited by the Commission. Disease was found to exist there and in many neighbouring villages, and to have prevailed in other adjoining parts of the district. The people spoke of it as a familiar and frequent visitant.

The District of Agra had been declared free of disease. The city was, however, visited on the 17th May, and careful inquiry and inspection of cattle resulted in the discovery of three cases of rinderpest, and this disease was also found to be prevailing in some of the villages in the vicinity. The sickness and mortality had not been so severe as to attract the attention of the Civil authorities. The same tale of periodical prevalence was told here as elsewhere.

A report from the District of Etah, dated 20th August 1870, showed that *bedun* (rinderpest) was prevailing at that time. Other diseases of cattle—among them, foot and mouth disease—were said to be of yearly prevalence.

On the 16th of September the existence of a plague “of a virulent kind” was reported. The symptoms assigned to it point to a severe form of rinderpest.

On the 18th of October the disease was abating. The mortality is put down at 1,384.

No further report was received from this district.

The Collector of Mynpooree reported in August that there was no disease in his district.

From Muttra a report was received in November to the effect that cattle murrain occurred in the district every year, but no specific information as to locality and mortality was given. Foot and mouth disease and *matah* are mentioned as well known diseases.

Information regarding cattle murrain in the District of Etawah, furnished by the Collector,
—dated 22nd April 1870.

A disease called *rog*—plague, has prevailed in the village Gowrie, Police Station Kunchousee, District Etawah, since the 31st of March 1870. In a stock of 92, 37 cattle have been attacked (40 per cent.), 16 have died (17 per cent. of stock and 43 per cent. of attacked), 17 recovered, and 4 are still ill. The disease is considered infectious. Its origin is not known. Its symptoms are,—rough coat; no eruptions; eyes and mouth water; body becomes hot; there is cough at the beginning of the attack, and then laboured breathing; faecal evacuations are thin and mixed with blood. The disease lasts 6 days. No preventive or remedial measures have been used.

Village Gowrie visited 15th May 1870, 7-30 A. M.

Case.	Gowrie is 3 or 4 miles north-east of the Railway Station. A bullock owned by Rutton Aheer, 6 years old; 10 days ill; off feed; profuse discharge from eyes and mouth and much sticky discharge, mixed with blood, from nostrils; coat staring and the animal is very stupid and weak, and ears drooping; purging yellow oily matter mixed with lumps of blood and mucus; excoriations on the gums and buccal papillæ, with aphtha, on removing which a very raw surface is observed; tongue much furred; breath very offensive; the animal gives a click now and then; coat very rough about the neck and dewlap; skin reticulated and pimply; thirst; not offensive; medicines are being given; prepuce somewhat swollen; the mucous membrane of the nostril much swollen; muzzle seems dry and reticulated.
Village stock.	HURIPROSAD THAKOOR of Gowrie says that there are about 30 families in the village. There were about 85 cattle in the village, but 22 died of <i>debee</i> ; the disease appeared in the village a month ago; there is still disease in this place, though it is on the decrease; the plague first appeared in this village; there was no disease in any of the neighbouring places when murrain broke out here. Can't say how the disease broke out. [Deponent 50 years old.] I have been here 23 years. I have seen <i>khoorah</i> and <i>gowan</i> , but I never before saw the distemper called <i>debee</i> . It is very fatal. It is infectious. The cattle of this village and those of Tazpore graze together; 4 or 5 recovered. From this place the murrain has gone to Tazpore, distant about half a mile. We give no medicine, but worship the deity <i>Sitolah</i> . We give no food, and the affected animals do not eat anything; the chamars take the skins and sell the same to agriculturists, who take them for shoes, &c.; the chamars also send hides to Cawnpore for sale to the <i>beparies</i> ; the people have suffered much loss in cattle, but they will find means of buying cattle and tilling their lands. The people have generally 1 to 4 head of cattle each; the people go to Hurichandpoor, Lahorapoor and Sheogunge markets for their supply of cattle. The animal that cost 10 years ago Rs. 20, costs now Rs. 30 or 35.
Disease <i>debee</i> prevailing.	
Origin unknown.	
Infectiousness.	
Course of murrain.	
Hides.	
Agriculture.	
Markets.	
Price.	

Village Tazpore, 4 miles north-east of Paphoond Railway Station.

History.	DEEPCHUND ISSURY CHOWDRY, 55 to 75 years old, says,—We have seen the disease several times before, and almost always there is disease in some village or other. The distemper comes in a much severer shape every 3 years, and we know that an animal recovering from one attack has got it a second time; do not consider it to be infectious, since several head of cattle in the same herd and house escape, while a few get the attack, during the time the murrain rages; 50 per cent. of the number attacked die.
Second attack.	
Mortality.	
Source of disease.	The distemper is called <i>checkuck</i> , and has been in the village for the last month. The sickness appeared first at Gowrie, and then came here. Our cattle graze and mix together. There are 70 or 80 families in this place owning 500 head of cattle, of which 50 have died of <i>checkuck</i> ; the disease is still prevailing here, and 20 or 25 head of cattle are to this day ill. The day before yesterday a buffalo died. Three years ago there was like disease. There are a few goats and sheep in our village; they too get the distemper, but this time not one got the attack; when goats get ill they too have excoriations in the mouth. The chamars take the skins and make <i>mosucks</i> for water, <i>poors</i> and shoes; the chamars sell hides at Sheogunge, Hurichandpoor and Lahora. The disease has never been so bad here as to suspend all agricultural work and keep the land uncultivated. The price of bullocks has increased. The cause of this is that last year in the western districts a large number of cattle died of starvation. The number has thus been reduced. We buy our cattle in the markets of Hurichandpoor and Sheogunge. The village is healthy, as far as human beings are concerned. Never saw or heard of cattle poisoning.
Village stock.	
Disease in 1867.	
Goats and sheep.	
Hides.	
Agriculture.	
Price of cattle.	
Cattle poisoning.	

Village Fuckeerpore, four miles south of Railway Station.

Saw an old cow recovering from disease; had running from the eyes and nose; Case. excoriations of gums and buccal papillæ; having eruptions over neck and ears.

A male buffalo had discharge from nose, eyes, and mouth; mucous membrane of gums and Case. buccal papillæ congested; tied under a tree for the sake of shade; ill for 4 days; purging not set in; feeding.

Village Nundpore, four miles north-east of Paphoond Railway Station.

It is an out-village of Tazpore; contains 10 houses and 128 head of cattle. One hundred were attacked (almost all had disease), 4 died, and 2 are ill. Saw a bullock 7 days ill, very much wasted, offensive discharge from eyes, nose, and mouth; aphtha and excoriation of gums; Case. purging apthous-looking matter and fleshy masses with streaks of blood; conjunctivæ congested; off feed; no cough; disease has been here for 6 weeks; 2 other bullocks which have recovered are seen, and present, all over the body, a slight scabby eruption. An inhabitant said that all the cattle showed this symptom after recovering; the cattle of Gowrie were first Source of disease. attacked, and then this village. People say that it is spreading westward. Cattle of this Progress. village graze with the cattle of Gowrie; disease has gone to Tazpore and Fuckeerpore; the people say that the disease has never been in the village before within their recollection; one Foot and mouth disease. man is aged 60. The village has always had foot and mouth disease among cattle.

Terriah Village visited 16th May 1870, 7-20 A. M.

This village is 4 miles south-east of Paphoond Railway Station.

SHEODYAL, 60 years old, says—The disease called *debee* made its appearance in March last, Disease in March. continued for one month, killed 30 to 40 head of cattle, and then left, travelling to a place Mortality. called Seraiah, half a mile to the north side of Terriah. The usual symptoms were seen. About 100 head of cattle are kept in the village. The cow of the wife of a chamar was attacked first. The Village stock. woman was examined as to whether she had taken her cow anywhere before it had the attack, or whether she had received any hides of dead animals. Her reply was that she had not taken her cow anywhere, nor had she received any hides, nor allowed any communication with other cattle before her cow was taken ill. Ten or 15 years ago the village was visited by the same Disease in 1860. disease, and then 20 or 25 animals died. The recent attack has been severer than the former attack. Have got a couple of carts in the village. Have got one family of Aheers. The carts don't frequent markets. The Bunniah of Paphoond bring their cattle here and take away the crops.

[N. B.—En route to this village, the Commission visited the villages of Patha and Burorah, and found that there was no disease there.]

Village Bankipoorah.

This village is 3 miles from Paphoond, on the road from Paphoond Railway Station to Terriah.

Rinderpest has been in the village for 2½ months. The people had 80 head of cattle—lost Rinderpest prevails. 40; one villager, Gume Goorga, had 7, out of which he lost 4. The disease attacked the cattle Mortality. of this village first, and then went to village of Sianuggur. Within 200 yards of the village a carcass of a buffalo, partially eaten by vultures, was found. The villagers say that the Case of rinderpest. animal belonged to a cartman proceeding to Paphoond, and the animal became very ill, was there left to die, and died yesterday afternoon. The mouth is found entire, also the greater portion of the windpipe; excoriation and apthous deposits on the buccal membrane, but not on the gums, are found. The lining membrane of trachea was deeply congested, and the upper portion covered within an apthous pellicle.

Evidence of SHEWCHURN, Zemindar of Sianuggur.

This village is 4 miles distant from Paphoond Railway Station. The village contains Village stock. 12 or 13 families owning nearly 50 head of cattle and buffaloes, of which 20 (5 bullocks, 6 buffaloes, 9 cows) died of *sillah* or *debee* in this month. The disease has been in this village Loss. for the last 15 or 20 days. The symptoms are,—off feed, thirst, no eruptions, coat staring, Symptoms. purging watery stools mixed with blood and mucus, ears drooping, salivation from the mouth, and running from eyes and nose. The affected cattle die from the third to the fifteenth day. The disease at first broke out at Terriah, then it came to Khanpoor; it then travelled to Buncepoor Source of disease. and to our village. The cattle of these villages graze together and otherwise mix together. Progress. The disease is considered to be infectious. Deponent is 30 years old, and says that he Infectiousness. has never seen a like disease in the village before; but the village gets almost every year in

ETAWAH.	the months of July and August a disease among cattle in which the animal froths from the mouth, gets giddy, and dies in 12 or 24 hours: this malady attacks cattle in good and bad condition alike. At that time the grass in the pasture is abundant, the cattle are daily improving in condition. This disease too travels from one house to another, but the deaths are few, being 4 to 6 on each occasion; no name is given to this disease. It stops in the village from 4 to 10 days. No recoveries from this distemper take place. The animals which are yoked to the plough often do not, as a rule, get the disease; generally, those that are not made to work and are kept tied at home get it. The affected animals keep their nose extended, their neck straight out, have a difficulty in breathing, their eyes bulge out of their sockets, and they belch a good deal. The animals get swelled belly. The disease called <i>khoorpacca</i> appears in the village now and then, but it is not fatal. The clefts of the hoof are affected first, and then the mouth. The chamars take the skins and make shoes and <i>poors</i> . There are no sheep or goats in the village. Heard from his father that there was disease in his village formerly, but he did not see it; but the present outbreak is said to be more severe than that in his father's time. There are no carts in the village; the cattle dealers come to this village yearly and sell their cattle; the village is close to the high road; the people never sell to the <i>beparies</i> . The bullocks are more in number than cows, the proportion being 2 to 1. If people do not buy cattle from the dealers every year or every 2 years, the number of animals kept up in the village would be reduced, for the cows are few and the breeding does not keep up the number. There are no regular bulls kept in the village, but the entire bullocks (<i>nulcole</i>) serve the cows. No small-pox nor cholera has appeared in the village this year; last year also the village had not these diseases.
Another disease.	
Symptoms.	
Foot and mouth disease.	
Hides.	
Previous disease.	
Breeding.	

AGRA DISTRICT.

Statement of MOHASOOK LALL, dated Agra, 18th May 1870.

AGRA.	MOHASOOK LALL, of Tehseelee Agra, states,—I have visited the villages of Madakoor, &c., and there I learnt that the disease called <i>matah</i> was prevailing amongst the cattle. The symptoms are,—that the cattle throw <i>ral</i> from mouth, nose, and eyes; purge; off feed; breath offensive; blisters are seen all over the cheeks and mouth and throat. The disease is contagious; as a general rule, the cattle that lie together or close by the sick, particularly those that eat the remnants of the food of the sick, always get the disease. The disease is not a new one; it has always been seen in the country; slight attacks are seen here and there throughout the year, but the severe attacks occur after three or four years. Baloo and Mokuunda Aheers depose as above.
Mohasook Lall.	
Symptoms of prevailing murrain.	
History.	

The skins are taken away by the sweepers, who sell them to the chamars, who after preparing them take them to the Railway Station, and thence forward them on to their own country.

Evidence obtained in some villages in the neighbourhood of Agra, dated 20th May 1870.

Village Pathalee.	HURCHUND, PROLAD, and KIRATRAM, &c., of the village of Pathalee, 4 miles from Agra, and 100 yards from the high road, state that they have seen disease called <i>seetlah</i> in their village during the last three months: one man had lost 4 bullocks, and altogether 12 head of cattle had died. The symptoms were,—off feed, blisters in the mouth, great thirst, purging blood, discharge from eyes and nose, and difficulty in breathing. The cattle died within 10 days after seizure. The first animal that died belonged to Subha Kumur. The chamars of this village clean the hides, which we take back from them after paying for their labor. We use the hides for taking water out of wells. About 30 or 35 years ago this village was attacked with a similar disease, which was severer than this; that year some land remained fallow. This year as yet there is no fear; but should the disease continue, we are apprehensive that the same may happen again.
Disease prevailing.	
Symptoms.	
Hides.	
Disease 30 years ago.	
Agriculture.	The price of cattle has risen to four times what it was, because cattle have become scarce and the press of cultivation great; great numbers of cows are also slaughtered. We sometimes buy our cattle from Agra, Mugton, and Bellora. We consider the disease contagious. This disease <i>seetlah</i> generally attacks the young and well-conditioned cattle; all the cattle which we have lost have been young and fat, while the old cattle were not attacked. Before the disease appeared in the village the cattle used to go and graze with others, but since the disease has broken out, none of the neighbouring village cattle are turned out with our cattle, nor are our cattle permitted to go to other villages. Our neighbours are displeased if we allow our cattle to mix with theirs. There is no disease in the neighbouring villages at present. We cannot say from what direction the disease came.
Price of cattle.	
Cause of increase.	
Contagiousness.	
Segregation.	

All sick cattle that are attacked with blisters in the mouth and blood purging generally die. In this village all those cattle that had the disease (*seetlah*) died.

Case.	A buffalo was shown just recovering from the disease. It was very weak and the hair and cuticle could be removed by hand. There was a blistered condition of the mouth, tongue, and cheeks; the buffalo was in calf when first attacked, but subsequently aborted. The teeth are loose in their sockets.
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AGRA. MOHUN, GONESH, HITA, BHOOBUN, SEETARAM, AND BIDHEE, of Madakur, depose that the disease *matah* has visited their village three times previous to this, and was always very severe; it is contagious; the symptoms as usual. At Ungothee, the bullock of Tata is sick with small-pox for the last four days. At Rampore, the bullock of Ramchund is sick with *seetlah* for last three days; the disease has just broken out. The above villages are situated in the Maunpoor road.

FURRUCKABAD DISTRICT.

From C. J. DANIELL, Esq., Collector of Furruckabad, to the President of the Cattle Disease Commission,—(No. 72, dated the 21st February 1870).

With reference to Circular No. 55A of 1869, from Government, North-Western Provinces, dated 28th December 1869, I have the honor to forward a set of questions and answers relating to what the natives of the place believe to be an outbreak of murrain among the cattle in some parts of this district.

Statement (abridged).

A disease called *gardooa* or *palia* has prevailed in the Tehseelee Kunnage since September 1868. Of 5,125 cattle attacked, 2,830 have died, or 55 per cent., and 2,295 recovered. It is considered infectious; the cause is not known. The symptoms are:—the eyes and mouth water, the body is cold, there is cough and laboured breathing, the throat swells. Animals died in 8 or 9 days. Diseases called *pacca* and *jurra* prevailed also in the Mohumadabad Tehseelee in 1869. Of 259 attacked, 250 died, or 96 per cent., and 9 recovered. The symptoms assigned are the same as those given above. Fumigation with the smoke of burning straw was practised, and in *pacca* (foot and mouth disease) the feet were fomented with the fermented juice of the sugarcane or *mowah* flowers.

ETAH DISTRICT.

From R. T. HOBART, Esq., Deputy Collector, Etah, to the President, Cattle Plague Commission,—(No. 227, dated 26th August 1870).

In reply to your No. 435, dated August 1870, I have the honor to inform you that none of the species of disease mentioned in your letter seem to be prevalent here.

There is but little sickness at present among cattle. Diarrhoea and *bedun*, a bleeding at nose and anus, seem to be the only diseases prevalent at present; but there are several diseases which are prevalent yearly more or less, viz., *munh pukka* or sore mouth; *jurra*, a sort of cold with flowing from the nose; *rog*, or swelling of the belly, accompanied with foul-smelling dung; *khoorpacca*, or foot rot; and *ghoorova*, or swelling of neck and belly. *Rog* is the most fatal of these diseases.

From R. T. HOBART, Esq., Deputy Collector, Etah, to the President, Cattle Plague Commission, Calcutta,—(No. 217, dated 16th September 1870).

I have the honor to inform you that a plague of a virulent kind has broken out in this district. It is said that diarrhoea first takes place; then the cattle give up eating, the mouth gets watery, swollen, and offensive, and maggots attack the anus and private parts. No specific name has been given. The disease has hitherto been fatal.

From R. T. HOBART, Esq., Deputy Collector, Etah, to the President, Cattle Plague Commission, Calcutta,—(No. 289, dated 18th October 1870).

I have the honor, in reply to your No. 478, dated 21st September, to state that I shall be able in a few days to furnish you with a clear answer to that letter, as the Civil Surgeon of the Station will have an opportunity of diagnosing the disease. You will be happy to hear that the malady is fast abating. It seems to have begun in May last, but to have attained no dimensions till September. It originated in a village on the banks of the Ganges and spread west, but confined itself to one-third of this district.

Owing to the season of the year, the enforcement of segregation by officials was impracticable; efforts are being now made with this view.

Appended statement (abridged.)

The disease *bedun* has prevailed in the Kasgunge Tehseel since May 1870. The stock is estimated at 134,000; of 1,900 cattle attacked (1·3 per cent. of stock) 1,388 died (1 per cent.

ETAH. of stock and 77 per cent. of attacked), 251 recovered, and 165 are still ill. The disease is infectious; origin unknown. The symptoms are,—coat mangy, eyes and mouth water, body hot, ears droop, breathing laboured, shivering, blood mixed with evacuations, duration 3 days. No successful remedy has been found.

MUTTRA.

MUTTRA DISTRICT.

R. T. Hardinge, Esq. From B. HARDINGE, Esq., *Magistrate, Muttra, to the President of the Cattle Plague Commission, Calcutta,—(No. 354, dated 17th November 1870).*

I have the honor to acknowledge your letter No. 441, dated 15th August last, calling for recent information on the subject of the prevalence of cattle disease in this district.

2. From inquiries made in the different parts of the district, it appears that the diseases noted in the margin are those that are common among cattle, and it has been ascertained that some of them, *viz.*, *tupca* or staggers, and diarrhoea, attended with *koren* or *blown*, recur annually during the months of August and September; but they are generally confined to a few localities only.
1. Moopacca.
 2. Khoorpacca.
 3. Matta.
 4. Diarrhoea.
 5. Tupca.
 6. Ghurka.

3. The principal of these diseases are *moopacca* or sore-mouth, and *khoorpacca* or bad hoofs. In the former case the mouth gets inflamed and ulcerated, and the cattle are unable to graze; large quantities of saliva pour from the mouth, and the animal speedily sinks from want of nourishment. *Khoorpacca* or bad hoofs is the next most common disease. *Matta* or cow-pox appears seldom, and unless developed in an epidemic form, which it rarely takes, causes but little loss. *Ghurka* or inflammation of the throat is a disease of the ordinary type, and appears to be easily curable.

MEERUT DIVISION,

COMPRISING THE DISTRICTS OF MEERUT, BOOLUND SHAHAR, SAHARUNPORE, MOZUFFERNUGGUR, ALLYPURH, AND DEHRA DOON.

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[N. B.—Those in Italics are not printed.]

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	H. D. Willock, Esq., Officiating Collector of Boolundshahar.	271	28th April 1870 ...	Reports that cattle disease has lately broken out in a few villages of his district; and applies for instructions for treatment, p. 409.
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Districts.	From whom received.	No.	Date.	Reference and Purport.
Saharunpore.	Collector of Saharunpore...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 209. Stating that the common cattle disease called "seer" or "rorah" or "rorh" was unusually virulent in his district during the latter part of last rainy season.</i>
	E. G. Jenkinson, Esq., Collector of Saharunpore.	206	21st May 1870 ...	Forwarding the Commission's Forms duly filled in, with regard to the villages of Tataheri, Jhurdhera, and Dhorala, p. 412.
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	H. M. Chase, Esq., Magistrate of Allyghur.	482	11th July 1870 ...	Forwarding the Commission's Form No. 1 duly filled in, with reference to Pergunnahs Khyr and Chundous where cattle disease prevailed.
	Ditto ditto ...	210	14th July 1870 ...	In continuation of the above, reports the disappearance of cattle disease, p. 413.
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Mozuffernuggur.	Collector of Mozuffernuggur	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 209. States that cattle disease generally occurs to a certain extent at the close of the rains, but that there has been no complaint of extraordinary sickness during the past year.</i>
	G. Palmer, Esq., Officiating Magistrate of Mozuffernuggur.	398	10th November 1870	Forwarding Mr. Halkett's report on cattle disease.
	D. C. Halkett, Esq. Joint Magt., Mozuffernuggur.	...	9th November 1870	Submitting a report on the subject of cattle disease in the District of Mozuffernuggur, p. 414.
Dehra Doon.	R. Manderson, Esq., Superintendent, Dehra Doon.	53	9th March 1864 ...	<i>Reports that burra rog (rinderpest) and rorah (foot and mouth disease) occasionally attack the cattle of his district, and records symptoms and treatment.</i>
	Ditto ditto ...	...	...	<i>Selections, Government of India, No. 69, p. 208. States that cattle disease does not exist in his district at present, but that it occasionally breaks out, chiefly in the hot and rainy seasons.</i>
	H. G. Ross, Esq., Superintendent of Dehra Doon.	301	25th November 1870	Describes the diseases of cattle prevalent in his district, p. 414.

HISTORICAL SKETCH.

The earliest account of cattle murrain in this Division is that furnished by F. Williams, Esq., Superintendent of Dehra Doon, who writes in March 1861. After describing the disease called *burra rog*, which, he says, resembles the Madras disease, and detailing the symptoms, which are those usually referred to rinderpest in this country, he states that the disease appeared in the Doon and Jounsar Bowur in 1862. In the same year a similar disease broke out among the elephants in

Dehra and proved very fatal. Another disease called *rorah* is also described, to which the symptoms known to belong to foot and mouth disease are assigned. Both diseases are considered contagious, and the natives thought that they had got worse of recent years, owing to crowding and massing cattle together; accordingly, when disease appeared, they drove their cattle as far into the jungle as possible. Information of more recent date is contained in the replies of the several Collectors to the Board of Revenue's Circular B.

The Superintendent of Dehra Doon reports that the disease prevailed in 1867 in two villages, one in Eastern and one in Western Doon. The same symptoms are assigned and the name *waha* given. Well-conditioned cattle are said to be more liable to attack. He states again that the people practise segregation.

The Collector of Saharunpore reports that the cattle disease called *seer*, *rorah*, or *rorh* had been "unusually virulent" in his district during the latter part of the rainy season. The mortality as given by the Tehsildars is marginally quoted, but the Collector does not place much reliance upon their statements. The disease had spread all over the district, and the

Collector was aware of its existence for years past.

The Collector of Mozuffernuggur states that disease generally occurs towards the close of the rains. The symptoms described are those of rinderpest. In October 1867 about 10 per cent. of the cattle of the district died.

The Collector of Meerut states that *rorah*—foot and mouth disease—is the only form known in his district. He, however, gives under this name some of the symptoms belonging to rinderpest. The disease, he says, is infectious, and prevails from August to the end of September. In 1867, in one village of Burnawa Pergunnah, 200 cattle died in two months. He also mentions that in 1866 large numbers of sheep had died of a distemper, the nature of which he did not know.

The Collector of Boolundshahar states that from November to January cattle suffer from "a species of influenza accompanied by diarrhoea." The Collector of Allyghur states that there has been no cattle disease in his district.

The next series of reports regarding cattle diseases in this Division was elicited by the circulars and queries of the Commission. The districts of Meerut, Boolundshahar, and Saharunpore were also visited by the Commission and much valuable information thus obtained.

In May 1870 the Collector of Meerut reported that foot and mouth disease had prevailed in March. In June the Tehsildar of Haupper reported that disease had broken out a month before in the village of Dhanowra; the symptoms described are those of rinderpest: 10 cattle had died in the village. This village was visited on the 28th of July, and satisfactory evidence was obtained regarding the present and past prevalence of rinderpest. In August another report was received from this district regarding a village, Pirnuggur, in the Gurmooktessur Pergunnah, in which rinderpest had prevailed for 15 days. On the 28th of April the Collector of Boolundshahar forwarded a return showing that cattle disease was very prevalent in the district.

HISTORICAL SKETCH.

This disease was called *khurpucca*, but the description of it and the mortality attributed to it showed that many of the cases must have been cases of rinderpest. This surmise was verified by the Commission on the occasion of their visit to the district in July. Fortnightly returns of the prevalence of both diseases have been regularly received since then up to the 15th December 1870; both these diseases appear to have been prevalent throughout the district, and the Collector has attached greater credit to the later than the earlier figures furnished by his subordinates in the Revenue Department.

Disease was also widely prevalent in the Saharunpore District during this year. It appears to have commenced as early as December 1869 in some villages, and a return furnished by the Collector on the 3rd of August shows its prevalence in 22 villages of the Pergunnahs of Roorkee, Jowalapoor, and Nulloor. Two forms of disease are specified—*maind* or rinderpest and *sedh* or foot and mouth disease; but in the returns the two forms are evidently mixed up together, and their value is accordingly much impaired. They show a mortality of 1,184 in a stock of 10,746, or 11 per cent. The principal symptom assigned is dysentery. This district was visited by the Commission on the 2nd August, and the disease *maind* or *rorah* identified as rinderpest. Several cases were examined and animals examined *post mortem*.

The Collector of Allygurh reported (11th July 1870) that the diseases *khurpucca* and *moopucca*—foot and mouth disease—prevailed in the Pergunnahs of Chundous (9 villages) and Khyr (11 villages) in the Khyr Tehseeldari, in the north-west of the Allygurh District, since the end of May 1870. In a stock of 2,075, 1,535 cattle had been attacked (74 per cent.); 369 had died (17 per cent. of stock and 24 per cent. of attacked); 1,166 had recovered.

The disease was considered infectious, and the symptoms assigned are a mixture of those of rinderpest and foot and mouth disease, showing that both forms prevailed simultaneously.

The disease was reported to have disappeared on the 22nd of July.

A careful report on the subject of cattle diseases in the District of Mozuffernuggur is printed in the sequel, showing that both rinderpest and foot and mouth disease are well known in the district and frequently prevail.

The Superintendent of Dehra Doon, in a letter, dated 25th November 1870, describes *burradook*—rinderpest—and sore feet as the diseases of cattle known in that district.

DISTRICT OF MEERUT.

MEERUT.

From W. C. PLOWDEN, Esq., Officiating Collector, Meerut, to the President, Cattle Plague Committee, W. C. Plowden, Esq.
Cawnpore,—(No. 178, dated 9th May 1870).

I have the honor to inform you, in reply to your No. 241, dated 25th ultimo, that there is not any cattle epidemic prevalent in this district.

2. In March, however, it is stated by the Tesheel Officers that there was a slight amount of mouth and foot disease, which has now ceased.

From W. C. PLOWDEN, Esq., Officiating Collector, Meerut, to the President, Cattle Plague Committee,
Cawnpore,—(No. 246, dated 4th July 1870).

Cattle Plague in Mouzah Dhunowra, Pergunnah Haupper.

With advertence to No. 241, dated 25th April last, forwards for his information copy of a petition from the Tehseeldar of Haupper reporting on the outbreak of the above.

Translation of the petition of the Tehseeldar of Haupper, Zillah Meerut, dated 17th June 1870.

To-day Khooshal, shareholder of Mouzah Dhunowra, Pergunnah Haupper, appeared and stated that about a month since the cattle disease has broken out in his village, the nature of the sickness being that for the first five days the animal takes no food nor water, and after suffering for five days more from blood purging it dies; that about 10 cattle have died of this disease and about as many more are suffering from it in his village.

Village Dhunowra, 3 miles north of Haupper, visited 28th July 1870.

Disease first appeared in Baisakh (May). The last death occurred last night. About 70 cattle have died during the outbreak, of the value of about Rs. 2,000. The disease is called *redun* or *bedun* (rinderpest) prevailing. Deaths.

Twin-brothers HAR SAHAI and GUNGA SAHAI, age 35 years, belonging to Dhunowra, had about 40 or 42 head of cattle, of which 4 were attacked (1 bullock and 3 buffaloes) with *bedun*; all attacked died within two to five days. Symptoms:—the sick animal begins to walk round and round, as if drunk; we did not notice whether they walked to the right or to the left. After walking about for an hour or two the animal lies down, and after a time gets up and walks about again, and again lies down, selecting a cool place to lie in. This continues for about 4 days, while the eyes become bloodshot and a slight discharge comes from them. Little or no discharge comes from the mouth, but the gums become sore and raw, and the breath becomes very offensive. Purging commences about the second or third day, is very violent and watery, and mixed with blood, with a very great stench, even at the distance of 5 or 6 yards. There is a mixture of yellowish-white matter with the blood of the stools.

Ghee mixed with *maindi* was tried as a remedy, but with no success.

The witnesses volunteered the following statement:—Had we not separated the healthy animals from the diseased, the disease would have spread still further. Instances occurred in which healthy cattle got loose and went among sick cattle, and so caught the disease and died. Every animal attacked with the disease in our village died, without exception. The disease was brought to our village in Phalgun (February) by a cattle dealer who brought five bullocks for sale; he stayed two hours. Lukhoo, a man of this village, purchased one bullock for Rs. 45; this bullock was observed to be ill the next day, and remained ill for 7 or 8 days, and then recovered. A bullock which was put to work as a pair to this sick one, and was tied alongside of it in the cow-house, got ill, and in two or three days died. After this, Lachoomun Dass's bullock got ill and died; his house is close to Lukhoo's; we have never before had this disease in our village, nor heard of its being here.

We have had foot and mouth disease, but the cattle do not die of this disease, with very rare exceptions.

MUNNA, age 60 years, states that about 30 years ago a disease similar to this appeared in this village Dhunowra, and about 10 to 12 cattle died; still other villagers state that they have not heard of the disease before.

The disease has spread to the village of Mullickpore, about 4 miles north-east of Dhunowra.

Medicine given without success.

Segregation practised.

All attacked have died.

Disease was brought by a cattle dealer in February.

He sold one bullock to a villager; this became ill the next day.

Mode of spread.

Bedun never occurred in this village before.

A disease similar to *bedun* occurred here about 1840.

Disease has now spread to a village four miles off.

DISTRICT OF BOOLUND SHAHAR.

From H. D. WILLOCK, Esq., Officiating Collector of Boolundshahar, to the President of the Commission deputed to inquire into the subject of Cattle Disease,—(No. 271, dated 25th April 1870).

BOOLUND SHAHAR.

H. D. Willock, Esq.

I have the honor to report, with reference to a circular letter received from the Government of the North-Western Provinces, enclosing a copy of your letter No. 101 of the 6th December 1869, regarding future outbreaks of cattle disease, that an epidemic has lately appeared among

BOOLUND SHAHAR.
H. D. Willock, Esq.

the cattle of a few towns of this district, which appears to me to be akin to that of the disease which has lately been raging in Bengal. Very few cattle appear to have been carried off, and the disease does not appear to have assumed a malignant form. The peasantry do not seem to have been alarmed by its appearance, and no official reports of its having broken out reached this office. I became aware of its existence by accidentally coming across a dead bullock in a morning ride, and on inquiring the cause of death, was told that an illness for which the people had no name had lately appeared and had attacked several of the cattle of the village. Inquiries showed that such a sickness as was described had passed through a few villages in the neighbourhood, but that few cattle had been carried off.

2. The Tehseeldars were directed to call upon Village Putwarees for reports of outbreaks. They had previously been furnished with translations of your questions.

3. The accompanying return shows the result up to date.

4. I place no faith in it, as I feel sure that the disease has spread now generally through the district, and I believe that the Putwarees having paid no attention to the instructions received in the first instance, have concealed facts which have come to their knowledge, though few. At the same time, as before stated, the disease has not made much way and has not alarmed the people.

Segregation.

5. My chief object in writing is to apply for instructions for treatment which I would make known to the people; I presume the first direction would be to have sickly cattle placed apart from others and to be detained in their sheds. I am afraid this advice would not readily be acted upon. The whole cattle of a village are made over to the care of a few lads who graze them together, no attention being paid to any disease from which any of the cattle are suffering. On one occasion I found a bullock apparently suffering from the complaint herded with others, while no dissatisfaction was expressed by the owners of the rest of the cattle on the score of the danger of infection. A few simple instructions and remedies would be gladly received. I find that the people use the extract juice of the *babool* tree (*acacia arabica*) which is used by tanners in preparing skins. It is given as a drink; the eyes, nostrils, mouth, and swollen hoof are also watered with it.

6. The disease is supposed to be infectious.

7. I can get no intelligent opinion on the question of how the disease originated. The people ascribe it to the prevalence of "bad wind," and this is the only reply I can get.

8. The descriptions I have received of symptoms are not satisfactory. Fever, discharges from the eyes and mouth, and swelling of the throat are those usually noted. The average duration of the disease is 11 to 15 days.

9. I may add that the disease is spoken of as *khoorpucca*, i. e., foot swelling.

Summary of Return of Cattle Disease from Boolundshahar.

DATE OF REPORTS.	RINDERPEST OR BEDUN.		FOOT AND MOUTH DISEASE, OR KHOORPUCCA AND MOOPUCCA.		Total mortality.	No. of cattle in affected villages.
	No. attacked.	No. died.	No. attacked.	No. died.		
1st to 15th May ...	...	...	...	...	62	8,801
16th to 31st " ...	...	...	...	...	155	6,318
1st to 15th June ...	...	...	...	...	93	12,294
16th to 30th " ...	...	...	...	...	42	18,272
1st to 15th July ...	459	165	245	10	175	19,309
16th to 31st " ...	781	421	255	17	438	27,997
1st to 15th Aug. ...	744	384	267	12	396	22,755
16th to 31st " ...	804	525	214	57	582	31,069
1st to 15th Sept. ...	704	362	323	58	420	27,354
16th to 30th " ...	572	283	244	13	296	20,236
1st to 15th Oct. ...	553	317	119	35	352	17,831
16th to 31st " ...	564	382	94	30	412	16,558
1st to 15th Nov. ...	413	177	30	12	189	6,974
16th to 30th " ...	479	237	99	32	269	7,559
1st to 15th Dec. ...	379	145	81	32	177	8,023
16th to 31st " ...	620	380	127	49	429	15,141
TOTAL ...	...	...	...	...	4,477	265,491
TOTAL FROM 1ST JUNE...	7,072	3,778	2,098	357	4,135	219,806

REMARKS.—This table has been constructed from the fortnightly returns obtained by the Collector from the several tehsils of the district. In the earlier returns the two diseases were not shown separately; in late returns, after the Commission had visited the district, they are carefully kept apart. The result as regards mortality is as follows:—

Rinderpest gives 53· deaths per cent. of attacked, and foot and mouth disease 12·. The percentage of stock lost by both diseases is little more than one; but the figures representing stock are probably fanciful and unreliable, and this result cannot be accepted as of much value.

Village Chundpore, visited 12th July 1870.

BOOLUND SHAHAR.

Saw three cases of *khoorah* and one case of *gootee*, known by the name here *vedun*; both diseases have been known from time immemorial by the villagers. Cattle affected with *khoorah* do not die, those affected with *vedun* often die. Two out of five attacked in this village have died.

The symptoms of *vedun* in one case now seen by the Commission are those of rinderpest. *Vedun* shows itself in this village every third or fourth year; sometimes is mild in form, other times very malignant; when mild, not more than 10 per cent. die; when severe, about 30 per cent. die: cattle seldom die from *khoorah*. They never purge when they have *khoorah*; but they sometimes become very weak from their mouth and feet becoming flyblown and having maggots, and they then die from pain and want of food from not being able to eat. The villagers do not believe the disease *vedun* is contagious. For instance, a man, by caste *Tulee*, named Ramjan, has 4 head of cattle in his shed, and only one of them has been affected. Again, in another man's house there are 3 head of cattle, and all three became affected; two have got well and one died. They do not know whence the disease comes, but a high road passes by the village. When it breaks out every third or fourth year, it sometimes breaks out in a neighbouring village, and when that village gets rid of the disease, then it breaks out in this village or another neighbouring village. When our village cattle are affected, and cattle from a neighbouring village mix with them at pasture, the disease sometimes breaks out among the cattle of the neighbouring village.

The disease appears more frequently in May, June, July, and August, especially during the two latter months. The disease *vedun* is known to attack the animal more than once, say after a lapse of several years; but *khoorah* may attack the same animal annually. The *chamars* take off the skins of the dead animals, and the skins are taken to Meerut and other places to be tanned. They have heard of another disease called *chuckee*, and remember that a man, by name Kaisree, lost two bullocks ten years ago from this disease. The villagers think there are 400 houses and 300 head of cattle in their village. They never give medicine to sick cattle.

Village Yakobpoor, visited 13th July 1870, 6 A. M.

This village is 5 miles south of Boolundshahar. JHUNDA SING states,—The disease called *vedun* first attacked the cattle of this place 20 days ago, but the disease appeared before in the village of Dhatora, 2 miles south-east of this, and it is believed 20 or 25 died there. Our cattle when at pasture mix with those of Dhatora. We believe *vedun* to be contagious. The villagers have seen an animal attacked once get the disease once or twice again. Two cases of *vedun* are seen by the Commission.

No. 1, a buffalo, age 10 years, having a cow calf of 8 months. The symptoms are well marked. The buffalo cow has a sticky discharge from nose, eyes, and mouth; eyelids much swelled from subcutaneous effusion; the gums and buccal membrane are deeply congested, and there are several aphthous ulcers; the breath is very offensive; the animal experiences great difficulty in swallowing; is very weak; has been purging for 5 days; the stools are watery and dysenteric. She stands with her head depressed and nose poked out; her eyelids are semi-closed, and she is troubled with flies about the eyes and nose. She has no thirst at present, but three days ago she drank the usual amount of water; no eruptions on the skin. The villagers state that they have never seen or noticed eruptions on the skin of animals affected with *vedun*.

No. 2. The calf has been 3 days ill; head turned to the right flank; in pain; lying down; mucous membrane of the mouth deeply congested; discharge from the eyes and nose, but no ulceration. Purging has not set in, but the owner states that she will surely have it the day after to-morrow.

No. 3. Another buffalo cow, 12 years old, affected 8 days; showing well marked symptoms of rinderpest (*vedun*), especially the aphthous ulceration of the gums and buccal membrane. The nose is covered with viscid discharge and many flies. The owner, named Mahtab, states that he owns 5 head of buffaloes, of which one is now seen by the Commission, and two others have recovered, and the remaining two are still sick. The first cattle-sheds of the village attacked were that of Nehal and Kulna, and then the disease spread to the adjoining houses of Tulla and Quiren. No remedial measures are adopted, except catching and killing jackals and burying them on the pasture lands; tiger's flesh is burnt and the smoke is made to enter the nostrils of the sick animals. They give also barley and rice gruel. The villagers state that this disease attacked their cattle formerly every third or fourth year. The price of cattle is now increased. For the last three years the disease has prevailed more or less all the year round, but most cases are seen during the rains.

Village Jawlinghur, visited 13th July 1870, 6 P. M.

This village is 7 miles south-east of Boolundshahar. The disease first appeared in this village a month ago. It had affected cattle in all the neighbouring villages, but it first appeared in the Derah village, about half a mile east. About 40 of the cattle have been taken ill, out of which 25 have died. Four now sick are brought before the Commission.

Disease first appeared a month ago in this village; prior to that in Derah village, half a mile off. Statistics.

Case. **BOOLUND SHAHAR.** No. 1, bullock; condition fair; age 9 years. The symptoms are,—water from the eyes, mouth, and nose; slight excoriations of the gums and buccal membrane. Has been sick for the last 6 days; passes dysenteric stools; aphthous deposit around the openings of sublingual ducts; tongue very much furred; breath and purging very offensive.

Case. No. 2, six years old bullock; condition fair; six days ill: extensive aphthous ulceration of the gums and buccal membrane, and the floor of the mouth around the mouths of the sublingual ducts; dysenteric purging; slight eruptions on the shoulders and ribs.

Eruptions. **Case.** No. 3, bull, 18 months old: recovering, but still purges and is very weak; has been eight days sick; aphthous ulcers on the gums, cicatrizing; is feeding.

Case. No. 4, bullock, seven years, five days ill: intense congestion of the gums; off feed; has been purging for the last two days; there is a slight excoriation of the near corner of the mouth.

Vedun prevailed in this village in 1845. **MUNGLEE**, a cattle owner, states that he saw this disease *vedun* in this village 25 years ago, when he lost himself 20 head of cattle. *Khoorah* disease is frequently met with, but cattle do not die of it. The chamars take the skins and make shoes and buckets, &c., &c. I know of no medicine for particular medicine for *vedun*.

DISTRICT OF SAHARUNPORE.

SAHARUNPORE. E. G. Jenkinson, Esq. From E. G. JENKINSON, Esq., Collector, Saharunpore, to the President, Indian Cattle Plague Commission,—(No. 206, dated 21st May 1870).

With reference to Government Circular No. 55 A of 28th December last, begs to forward three copies of a form containing questions regarding cattle murrain duly filled up.

Appended statement (abridged).

Cattle murrain, called *maind*, has prevailed since the middle of December 1869 in Tataheri and Jhundhera, Pergunnah Gungoh, and since the 10th of March 1870 in Mouzah Dhorala, of Pergunnah Nukoor. The disease is called *sedh* in the latter. The statistics are as follows:—

Locality.	Village stock.	Number attacked.	Number died.	Number recovered.	Number still ill.
Tataheri ...	180	60	35	19	6
Jhundhera ...	94	51	36	15	...
Dhorala ...	554	200	25	52	123
TOTAL ...	828	311	96	86	129

The percentage of stock attacked is,—*maind* 40 and *sedh* 56; deaths among stock,—*maind* 26 and *sedh* 4.5; and among attacked, *maind* 64 and *sedh* 12.5. The disease is considered infectious. *Maind* appears from the symptoms assigned to it to be rinderpest, and *sedh* foot and mouth disease.

Village of Reeree, 4 miles north-east of Saharunpore, visited 2nd August 1870.

Case of rinderpest. Saw a buffalo cow calf, 13 months old, 15 days ill. Mucous membranes healthy, but pallid; **Symptoms.** Eruption *pustular* eruption on belly, udder, inside of thigh, armpits, especially on near side—the side on which she has evidently been lying; pustules also on the fetlocks; muzzle dry and fissured. **Pustules.** The skin all over the body is, as the natives say, peeling off. There are several pustules, and inside the off-thigh is a very well marked pit. The cuticle is in a state of desquamation all over the body. Here and there are pieces of scab-like cuticle, and of such a size and shape as to lead one to expect that on removing it a pit will be found. These are pretty firmly attached, and when removed, expose a pale surface of skin. Purging slightly, but no blood is passed. Vagina not congested. Five more cases of buffaloes were examined, and well marked symptoms of rinderpest were found,—excoriation of the gums with aphthous deposit; buccal membrane excoriated, and in one or two cases offensive breath; tongue very much furred; dry muzzle; discharge from eyes and nose; dysenteric purging in one or two cases; large clots of aphtha, of the size of a half-crown piece, were found in the stools; the mucous membrane of the vagina deeply congested, and in one or two cases thinly covered with a film of aphtha. All were in very weak condition; three hardly able to move.

Case. Eruptions, but not pustular, as in the former case. A bullock was also inspected, showing the eruptive form of the disease, with eruptions all over the body; but these were simply desquamation of the cuticle; slight purging, but no blood or mucous discharge from the eyes; six days sick. The contrast between this case, which is simply desquamation of cuticle, without vesicle, pustule, or pit, and the very well marked case of vesicular and pustular eruption, with here and there pits, in the buffalo above

described, is very striking; also the difference between the “external” eruptive rinderpest and the “internal” type of the disease is well shown in these cases.

Mr. G. Oliphant, V. S., of the Stud Department at Saharunpore, accompanied the Commission on the occasion.

Evidence of DOWLAT RAM, age 28, a Lumberdar of the village of Reeree.

The disease which has appeared among the cattle in this village is called *rora* or *maind*; *Rora* or *maind* (rinderpest) appeared about 15 days ago. The first animal attacked belonged to Moonga Goojur; it was a buffalo; it died. 15 days ago. First animal attacked.

Evidence of MOONGA GOOJUR, a resident of Reeree, age 45 or 50.

The people here call the disease which has appeared among cattle *rorah*. Never heard of or *Rorah* (rinderpest) saw this disease before; my father and grandfather lived in this village before me, but they never told me of this disease; my buffalo was the first to get ill in the village. It got ill 15 days ago, and died after four or five days' illness. My buffalo got sores in its mouth and discharge from its eyes; it had also dysenteric purging. It first showed signs of illness by refusing food and remaining standing. I had altogether seven buffaloes—all got sick and died within about 5 days of the first. I have also 2 bullocks; they were tied in the same shed with the sick buffaloes at night, but were out all day ploughing. They are perfectly well and have shown no symptoms of the disease. Of the four buffaloes which have died, two were in calf and two were giving milk, the other three were calves. Besides mine, only one man, named Gobind, lost a buffalo; this died last night. About 25 animals in this village are now ill with disease. Only 4 or 5 cows have got ill. The disease has only commenced among the cows about 5 or 6 days ago; no cows have yet died. There are three *paths* or divisions in this village. Only the animals in the western division have been attacked with the disease. Hitherto the cattle of one division of the village have been kept separate from those of the other; but we have never heard of the disease being contagious; we know no reason why they should be kept separate. My buffaloes which died had no eruptions on the skin like some of these now produced for the inspection of the Commission. I know of no remedy whatever for this disease, nor do the villagers. I cannot say whether the disease has appeared in the neighbouring villages or not. I don't know at all where this disease came from. The village chamars take the skins of the cattle. The division in which the disease has appeared is west of the canal; the other two divisions of the village are east of the canal; no man in my division has bought any cattle lately. Last May was the last time when cattle were brought for sale to the village. Two months ago a man named Hurmat bought a bullock for Rs. 40 from this dealer, but it has not been ill. Never appeared before here. Commencement of outbreak. First case followed by others in the same house. Symptoms. Duration of attack. Two bullocks of the same house were not attacked. Only the buffaloes were at first attacked. Now cows are being attacked. Disease as yet confined to the western division of village. Never heard of the disease being contagious. No remedy known. Hides. The canal separates the western from the other two divisions. A bullock was purchased last May, but this bullock has not been ill.

DISTRICT OF ALLYGHUR.

From H. M. CHASE, Esq., Magistrate of Allyghur, to the Commissioner, Meerut,—(No. 210, H. M. Chase, Esq., dated 14th July 1870).

With reference to Circulars No. 53A, December 20th, and No. 55A, December 28th, 1869, from the Junior Secretary to Government, North-Western Provinces, to your address, on the subject of prevalence of cattle disease of an epizootic nature, I have the honor to inform you that in the latter part of May this year a disease of the above kind broke out among cattle in the Pergunnahs Chundous and Khyr, to the north-west of this district.

2. The first indication of the disease appears to be a swelling of the mouth and hoofs, on which account it is known among the natives as *moopuccah* or *khurpuccah*.

3. The chief symptoms are a dulness of the coat, the hairs erect, and body trembling; shivering fits; no eruptions of any kind; a watery matter oozes from the mouth; the faecal evacuations very thin and offensive; urine yellow and thick.

4. The attack lasts 10 days, after which the animal recovers or dies. The natives attribute it to excessive heat and some peculiarity of the atmosphere; but I must remark that the hot season this year has been a remarkably mild one, whereas last year was one of the hottest on record, and no disease of this nature prevailed; so the present outbreak cannot be attributed to heat.

5. The remedies used by the villagers are very simple, and in many instances have proved efficacious. The feet are bathed in water in which the bark of the *babool* tree has been steeped. The grain of *oord* (*phaseolus roxburgii*), mixed with mustard oil, is first given to eat; but if the evacuations are very frequent and thin, water mixed with barley-meal or leaves of the common hedge shrub, known as *maindi* (*lawsonia inermis*), are given; sometimes also *sheeshum* leaves (*dalbergia sissoo*), with the object of cooling the heated intestines.

6. In all, 1,535 head of cattle have been attacked, out of which 332 have died and 848 have quite recovered. The rest are in a fair way towards recovery, and the disease is disappearing, and has not shown itself in any other pergunnahs.

MOZUFFERNUGGUR.

DISTRICT OF MOZUFFERNUGGUR.

D. C. Halkett, Esq. From D. C. HALKETT, Esq., Joint Magistrate, Mozuffernuggur, to the Officiating Magistrate, Mozuffernuggur,—(dated Mozuffernuggur, 9th November 1870).

In submitting the following short notes on the nature and extent of the cattle disease in this district, I must premise that I have myself no knowledge of the veterinary science, and that I have had no opportunities of personally examining any of the cattle which have suffered or have died of disease. Hence it will be seen that the only matter I have had at my disposal consists of information which I have been able to obtain from others.

2. I will proceed tehseel by tehseel.

Mozuffernuggur.—Disease has not prevailed to any great extent this year, or to any greater extent than in former years. There has been no disease assimilating to small-pox. A disease called *rorah* is said to have appeared in some places, but not in a dangerous form. It prevails during the rains, when the feet of the cattle swell and are sore.

Jansuth.—The disease among cattle was rather moderate, as compared with former years. Jansuth suffered most, losing 150 or 200 cattle during the month of June. The symptoms were,—eruption of the mouth, followed by diarrhoea and loss of appetite. This disease is called by the native *mahamāee*. In Pergunnah Bhokurheree several cattle died of a disease they call *biswee*. The symptoms in *biswee* are,—appearance of boils on the skin, hard breathing, ulceration of feet (in some instances eruption of the mouth), and a tendency to tumble down. The upland tracts were rather healthy, but there were cases of feet and face being swelled and stomachs dilated. The Khadus people call this *ukrao* and *uphara*. The disease known as *ukrao*, and another *chera*, appeared in Pergunnah Bhooma Sumbulhera. Hard breathing, excessive thirst, watery stools (occasionally mixed with blood), a tendency on the part of the skin to become of a reddish hue—these were the characteristics of *chera*. A good many cattle were lost from this disease. In Pergunnah Khatoulee *rorah* only attacked a few animals; and in this disease the symptoms are,—loss of appetite, thirst, swelling of the mouth, diarrhoea, and sores in the feet.

Boorhana.—In this tehseel the disease prevailed more extensively this year than in former years. As in other tehseels, so in this, the natives can assign no reason for the appearance of cattle disease. Some say, indeed, that there may be some herb or herbs which spring up in the rains which may be productive of the disease, but nothing certain is known on this head. And here, as in other tehseels, they say that it is frequently in unirrigated tracts that the disease is most severe and most prevalent.

Shamlee.—The disease has not been so prevalent in this tehseel as in former years. Cows and bullocks did not suffer, but some buffaloes died of *rorah*, death ensuing in two or three days after the animal was seized with the complaint. The flesh of the dead animals was found to be a good deal perforated.

DEHRA DOON.

DISTRICT OF DEHRA DOON.

H. G. Ross, Esq. From H. G. ROSS, Esq., Superintendent of Dehra Doon, to the President, Cattle Plague Commission,—(No. 301, dated 25th November 1870).

In reply to your No. 111, dated 18th July last, I have the honor to state—

2. The diseases named in your letter are not known by those names in this district. The two diseases among cattle that are known here are :—

- (1).—*Burradoo*.
- (2).—*Sore feet*.

Cattle suffering from the first disease pass green dung. The evacuations are watery at first, subsequently they are mixed with blood and mucus. The animal attacked refuses all food, has violent thirst and a rough coat, does not chew the cud. Death ensues between three and eight days. The disease spreads amongst village cattle on one animal being affected.

No particular mode of treatment of the disease is known. Ghee and black pepper or mint, onions and *sisso* tree leaves, pounded and mixed in *oorud* atta, made into a cake and fried in oil, are administered.

In the other disease the feet get sore and the animal froths at the mouth. Death does not result in all cases. The treatment followed is :—scarification and application of *chunam* (lime) to sores. The animal is also made to stand in a pool of water and mud. Worms are often found in the sores.

3. Sometimes a peculiar disease makes its appearance. The animal attacked pants; is unable to stand; the stomach swells. It is the belief of the people that inflammation occurs in the stomach and liver. No treatment is known to combat this disease; death ensues after two or three hours' illness. It is apparently infectious, but is not very common. People in these cases always resort to prayers and incantations. They have no special name for this except *rorah*.

ROHILCUND DIVISION,

COMPRISING THE DISTRICTS OF BIJNOUR, SHAHJEHANPORE, BAREILLY, MORADABAD, AND BUDAON.

Index of Records.*

[N. B.—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
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	Collector of Bijnour ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 211. Reporting that bedun (rinderpest) prevailed in his district in 1867-68, and describing symptoms and treatment.</i>
	The Hon'ble R. Drummond, Commissioner, Rohilcund.	184	21st December 1868	Reporting that cattle disease of a severe type broke out at Amsote in his district, and that he had sanctioned the employment of an establishment for the purpose of segregating the sick from healthy, p. 419.
	Secretary to Government, North-Western Provinces.	167A	11th January 1869	Sanctioning the employment of a segregating establishment at Amsote, in Bijnour, and calling for further report, p. 419.
Shahjehanpore.	C. Planck, Esq., Sanitary Commissioner, North-Western Provinces.	20	26th February 1869	States that during his tour of inspection in the Bijnour District, he learnt, by inquiry, that the cattle disease which existed at Amsote in December 1869 ceased in January 1870, p. 419.
	B. Colvin, Esq., Officiating Magistrate of Bijnour.	336	15th Sept. 1869 ...	States that <i>pukka</i> and <i>chupka</i> caused great mortality among the cattle last year, p. 419.
	Collector of Shahjehanpore	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 212. Stating that no cattle disease existed in his district, except in Pergunnah Jellalabad.</i>
	J. Powell, Esq. ...	...	13th May 1870 ...	Forwarding the Commission's Form No. 4, p. 420.
	R. Sanders, Esq., Magistrate of Shahjehanpore.	489	27th September 1870	Describing the diseases from which cattle generally die in his district, p. 421.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Bareilly.	Collector of Bareilly ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 212. Stating that no cattle disease existed in his district in the year 1868.</i>
	W. Kaye, Esq., Collector of Bareilly.	1025	16th August 1870...	Reporting the outbreak of <i>bedun</i> (rinderpest) in his district, and submitting the Commission's Form No. 1 duly filled in, p. 421.
	Lieutenant Colonel H. Mills, Deputy Assistant Commissary General, Bareilly.	236	23rd ditto ...	Reporting to the Deputy Commissary General the outbreak of cattle disease among the Commissariat cattle at Bareilly, p. 422.
	Enclosure—Major H. R. Wroughton, Executive Commissariat Officer, Gwalior.	...	.....	Describing the symptoms of the cattle epizootic at Morar, in Gwalior, and the remedies which were found efficacious, p. 422.
	Lieutenant Colonel H. Mills, Deputy Assistant Commissary General, Bareilly.	1279	8th October 1870...	Reporting that an epidemic had broken out amongst the slaughter cattle at Bareilly, and detailing the measures adopted in order to check the disease, p. 423.
	<i>Ditto ditto</i> ...	...	8th October 1870 ...	<i>Commission's Form No. 1 duly filled in.</i>
	Dr. Corbyn, Civil Surgeon of Bareilly.	...	13th Sept. 1870 ...	Memo. of symptoms and treatment of the disease which occurred among the Commissariat cattle, p. 424.
Moradabad.	Collector of Moradabad...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 211. Reports that cattle disease prevailed to some extent in the Moradabad District in September and October 1867.</i>
	C. A. Daniell, Esq., Collector, Moradabad.	482	24th August 1870...	Stating that foot and mouth disease had attacked the cattle of his district, p. 425.
	<i>Ditto ditto</i> ...	497	2nd September 1870	In continuation, gives a description of the most common cattle diseases in his district, p. 425.
	<i>Ditto ditto</i> ...	593	21st October 1870 ...	Mentioning the localities in his district where cattle disease chiefly prevailed during the past season, and ascribing the virulence of the outbreak to the heavy rains, p. 426.
	<i>Ditto ditto</i> ...	593A	<i>Ditto ditto</i> ...	Forwarding the Commission's Form No. 1 duly filled in with regard to his district, p. 427.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Budaon.	Collector of Budaon ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 212. Stating that bedun or rinderpest is a very common disease in Budaon, and that the disease prevailed for two months in 1867.</i>
	S. S. Melville, Esq., Officiating Collector of Budaon.	232	2nd September 1870	Stating that in June last foot and mouth disease and <i>bedun</i> (rinderpest) had shown themselves among the cattle of his district, p. 428.

HISTORICAL SKETCH.

The earliest information from this Division is that contained in the replies HISTORICAL SKETCH
 1867-68. to the Circular of the Board of Revenue (No. B, dated
 27th March 1868). These represent more prevailing cattle
 murrain than the replies from any other Division.

The Collector of Bijnour describes a virulent murrain which raged in his district during the cold weather of 1867-68. It was most common in the Forest Pergunnahs of Burrapoora and Afzulgurh, and along the Ganges Kadir, but was not confined solely to these localities. It was known by the names *bedun* or *chera*, and was believed to be contagious.

The mortality was stated from different places to have been one-half, two-thirds, and three-fourths. The symptoms assigned are a mixture of those of rinderpest and foot and mouth disease. The treatment, also, is partly that employed in foot and mouth cases—poultices of the leaves of *keekur*, *kuchnar*, and *ag*, and in rinderpest—cakes of peas or rice flour soaked in oil.

The Collector of Moradabad reports that in September and October (1867) there was some mortality among bullocks and cows. The disease was similar to that which had occurred in the Hurdui District, in Oudh—rinderpest. The mortality was great, and it prevailed mainly among the herds of the Terai and Ganges Kadir.

A special report from the Superintendent of the Terai Pergunnahs tells a tale of great mortality. Disease commenced after the rains, and continued till the latter end of January 1868. The returns collected showed that in a stock of 46,880 head of cattle, 12,221, or 26 per cent., were attacked; and 8,912 died, or 19 per cent. of stock and 73 per cent. of attacked. The symptoms are described briefly as intense thirst followed by bloody stools. The animal generally died on the third or fourth day after its attack. The disease is stated to be *no new one*, and is called *chera*. Isolation was practised, and the cattle of the Tharoo population, who take better care of their cattle, were not attacked.

The Collector of Budaon states that the disease described in the Hurdui District is a very common one, and called *bedun*.

The Collector of Shahjehanpore states that the disease appeared in some villages of the Pergunnah Jellalabad from August 1867 to January 1868.

The Collector of Bareilly reports that no such disease had appeared in his district. Murrain was at this period, therefore, well known and very rife in this Division; and it is interesting to find that here, as elsewhere, its ravages are most marked among the herds upon the grazing grounds of the Terai.

In December 1868 a severe outbreak of disease occurred at Amsote, in the Bijnour District, among the herds which were driven to graze there, owing to the drought elsewhere. An establishment was entertained for the purpose of preventing the spread of the disease by segregation, and the result appears to have been favorable, the disease having disappeared in January.

Disease was again reported to exist in the same grazing grounds at 1870. Nujeebabad, towards the north-west of the district, in September 1870. The form on this occasion was *pukka* and *chupka*. Other diseases had also prevailed in the jungles, and deaths had been numerous: rinderpest—*bedun*—was no doubt the chief cause of them.

In the District of Shahjehanpore cattle disease prevailed during the first half of the year “in almost all the pergunnahs and villages of the district.”

No precise account of this prevalence has been received, but the names and features of the diseases given show that both rinderpest and foot and mouth disease were among them.

In August 1870 the Collector of Bareilly reported that disease—violent diarrhoea and great thirst—had broken out in and around Mouzah Ukka,

HISTORICAL SKETCH. Pergunnah Asuld. The disease was *bedun*, and had broken out two months previously. In Ukka alone, in a stock of about 1,000 cattle, 225 are said to have been attacked (22.5 per cent.), and 206 to have died (20.6 per cent. of stock and 91 per cent. of attacked). The disease was considered infectious.

On the 15th of August this disease broke out among the Commissariat slaughter cattle in the town of Bareilly. Measures of segregation were immediately adopted. The affected cattle were removed and the unaffected divided into five lots, and kept apart at convenient distances; 55 were attacked and 32 died (58 per cent.), the disease dying out on the 25th August. Hitherto the symptoms had been those usually observed, violent purging, &c., but on the 26th the type changed: 27 cattle were attacked with a breaking out over the body, accompanied with constipation of the bowels. This change in symptoms is ascribed to the cattle being fed with dry *bhoosa* instead of green grass; of the latter disease, 4 died; the remainder were treated by Dr. Corbyn, and with apparent success, with laxatives, and sulphur ointment externally.

Colonel Mills attributed the outbreak among the Commissariat cattle to infection by the sick cattle of the town of Bareilly, which were in the habit of grazing within cantonment bounds. No subsequent report was received from this district or station.

The Collector of Moradabad reported in August that foot and mouth disease had prevailed in the district since March, more particularly on the borders of the Terai. He subsequently reported that in 60 villages of one pergunnah, among 24,036 head of cattle, 811, or 3.3 per cent., had died during the previous 6 months; among 15 attacked, 8 recovered and 7 died. This looks an enormous mortality from foot and mouth disease; but the Collector explains that more probably only severe cases of illness were entered among the sick.

A subsequent letter, dated 21st October 1870, shows that, as a result of a careful local inquiry, disease was found to be widespread in the district. Mr. Daniell appends to this letter a return embracing statistics of 29 out of 250 villages in which disease had been found to exist, and where it had been most severely manifested.

A report from the Collector of Budaon, dated 2nd September 1870, stated that in June the cattle of that district had been affected with both *pukka*—foot and mouth disease—and *bedun*—rinderpest. The evidence above summarised is thus conclusive as to both these forms of disease prevailing frequently, and sometimes with great severity, in all the districts of this Division.

DISTRICT OF BIJNOUR.

BIJNOUR.

From the HON'BLE R. DRUMMOND, Commissioner of the Rohilcund Division, to the Secretary to Hon'ble R. Drummond, Government, North-Western Provinces,—(No. 184, dated 21st December 1868).

I beg to report for the information of His Honor the Lieutenant Governor that a severe type of cattle disease appears to have broken out amongst the cattle at Amsote, in the Bijnour District.

2. The jungles are so very full of cattle this year, owing to the drought, that any spread of the disease will be attended with the most disastrous results.

3. I have, at the instance of the Collector of Bijnour, sanctioned the employment of the establishment noted in the margin at a monthly cost of Rs. 26. These men have been ordered to the spot to prevent the cattle from infected herds mixing with healthy herds, and the Peshkar of Nujeebabad has been ordered to make a tour of the jungle and report on the state of the cattle in different localities.

1 Jemadar	...	Rs. 6
5 Peons, at Rs. 4 each	...	" 20
Total	...	Rs. 26

Establishment for segregation entertained;

4. It is certified that the pay of the establishment entertained can be met out of the Forest collections of the district, and I request you will be good enough to obtain His Honor's sanction to its disbursement from the receipts on account of grazing dues.

From R. SIMSON, Esq., Secretary to Government, North-Western Provinces, to the Commissioner of Rohilcund,—(No. 167A, dated 11th January 1869).

R. Simson, Esq.

I am directed to acknowledge the receipt of your letter No. 184, dated the 21st ultimo, reporting the outbreak of a severe type of cattle disease among the cattle at Amsote, in the Bijnour District, and the entertainment of the establishment noted in the margin for the purpose of taking measures to prevent the spread of infection.

1 Jemadar, at	...	Rs. 6
5 Peons, at Rs. 4 each	...	" 20
Total	...	Rs. 26

2. In reply, I am desired to communicate the sanction of the Hon'ble the Lieutenant Governor to the entertainment of the establishment for three months, the cost being disbursed from the receipts on account of grazing dues in the district.

3. The Sanitary Commissioner will be requested to proceed to Bijnour, as soon as he conveniently can, to inquire into and report upon the disease, suggesting any remedial measures which may occur to him.

4. I am to request that you will from time to time submit reports on the subject, for the information of His Honor the Lieutenant Governor.

From C. PLANCK, Esq., Sanitary Commissioner, North-Western Provinces, to the Secretary to Government, North-Western Provinces,—(No. 20, dated 26th February 1869).

C. Planck, Esq.

With reference to paragraph 3 of letter No. 167A of 1869, I beg to report for the information of Government that, during my tour of inspection to the towns of the Bijnour District, I made careful inquiry both from the Collector of the District and from many native officials concerning the prevalence of disease amongst the cattle at Amsote, which lies to the northward of Nujeebabad, and was informed on all hands, and especially at Nujeebabad itself, that the disease which existed in December ceased to trouble the cattle in January, and that no cases of it could now be found.

2. Under these circumstances, I was not able to find an animal suffering from the disease; but I have no doubt from the descriptions of the complaint I received it was a contagious form of disease, the proper management of which was either to kill off all the cattle attacked, which could not be expected from the people of India, or to isolate the cattle affected with the disease; and considerable endeavours were made in this direction, attended, I have no doubt, with good results.

From B. COLVIN, Esq., Officiating Magistrate of Bijnour, to the President, Cattle Plague Commission,—(No. 336, dated 15th September 1869).

B. Colvin, Esq.

I have the honor, in reply to your letter No. 438 of the 15th ultimo, to give you the result of what I have ascertained regarding cattle sickness in this district for the past few months. As the information is derived entirely from natives, and as I have not seen any of the diseased cattle, the description of sicknesses, &c., does not pretend to be correct.

BIJNOUR.
B. Colvin, Esq.

2. Last April, the cattle in the grazing grounds* under the hills towards the north-west of the district suffered considerably from what is called *pukka* and also *chupka*. This did not continue long. I ordered sick cattle to be separated as much as possible from the rest of the herds.

In August, and also up till now, cattle have suffered in the jungles towards the north,† in the eastern portion,‡ and some 14 miles in an easterly direction|| of the station, from diseases called *ghorey*, *rorey* or *bedun*, and *chera*. Deaths have not been very excessive, though numerous.

3. The symptoms of the diseases and remedies, as far as ascertainable, are noted below:—

<i>Pukka</i>	...	The feet swell, fester, abscesses form, and the animal dies. Infusion of <i>sheeshum</i> or <i>babool</i> or <i>mendhee</i> leaves given the animal; feet kept in refuse of distilleries where available.
<i>Chupka</i>	...	The mouth swells as above, hair falls off. Oord bread is given, and the animal smeared with mud on the diseased part to prevent insects settling and laying eggs.
<i>Chera</i>	...	Slime falls from mouth, which gets spotted.
<i>Ghorey</i>	...	Slime from mouth; cattle die very quickly.
<i>Rorey</i> or <i>Bedun</i>		Blood is passed. Infusion of <i>sheeshum</i> leaves and the earth of white-ants' nests given.

SHAHJEHANPORE.

DISTRICT OF SHAHJEHANPORE.

J. Powell, Esq. Information regarding Cattle Murrain in the Shahjehanpore District, furnished by JOHN POWELL, Esq.,—(dated 13th May 1870).

Locality. Shahjehanpore is a district of the Rohilcund Division. The soil is good, known as *domatya*; produces sugarcane in abundance and rich cereal crops; water from 16 feet to 24 feet from the surface.

Number of cattle. Cattle are numerous, but I cannot state number per square mile.

Breed. There is only one breed of cattle in the district.

Value. Ordinary cattle cost Rs. 12 to 16; they are, say Rs. 2 dearer now than ten years ago.

Uses for which cattle are employed. Cattle are employed for agricultural purposes when the land requires their services; at other times in drawing carts let on hire.

September, October, June, and July are the months for ploughing; January, February, March for pressing sugarcane. Bullocks only are used in agriculture. Twenty-five bazaar maunds is a load for an ordinary four-bullock cart. Cattle so employed are kept in fair condition, but I cannot state in good condition. The owners will not work hard enough to make money, and therefore cannot afford to feed on grain or oil-cake.

The quantity of milk given by milch cows is very small, generally from 1½ to 2½ seers only.

Housing. Cattle are housed in sheds or tied up under trees; during the cold season some sort of covering is placed over the loins. The sheds consist of thatch supported by mud walls.

Feeding and watering. When at home cattle are fed out of *nands* or from *bins* formed of clay, and they are watered from wells, unless there happens to be a river near.

The common kinds of grass are called *dhoop*, *junka*, *surwalla*, *mutmoor*; *bhoosa* (broken wheat straw) and *kurbee* (broken *jowar* stalk) are also given.

Herding. Cattle are not herded excepting where there are waste lands or forests; there are forests north and east of the district.

Where there are waste lands or forests, the herds are kept for breeding purposes, but these herds, as a rule, remain the whole year through. During the rainy season it is a custom throughout the district for individuals to send their bullocks to graze in such waste lands, as it is an idle season, and they are sent so that they may pick up flesh.

General condition. Cattle are lively and hardy, but not large or good workers.

Where there are herds, sometimes there is a master bull, but he roams at his pleasure. As a rule, cows are served by the first bull procurable, without any reference to quality. No special bulls are kept. SHAHJEHANPORE.
J. Powell, Esq.
Breeding.

There is no importation of cattle, nor local markets. There is also no export worth recording.

Hides of cattle which have died a natural death, as well as those killed for food, are exported. I cannot give any information regarding hide dealers. Hides are cured by chamars and sold to traders.

The district is free from disease generally. This year there have been many deaths from a disease which looks like a plague.

I am not sufficiently acquainted with this part to give any history. There has been no plague within the last ten years; but about ten years since animals were carried off with the same affection; at least so the natives report, but that it was not so virulent as it has been this season. The present disease has existed during the last four months.

I cannot say what the mortality generally is. Out of sixty head I have lost two. Of about eighty Hissar bullocks which were standing in the Factory Parahs six weeks since, fifteen died within a fortnight.

The percentage of recoveries of those attacked is large; cannot say precisely, but would say one-half. All kinds of cattle are equally liable to attack.

The plague is a disease of the stomach. There is prostration; after a while offensive evacuations, thin and yellow; shivering occurs on the first and second days; appetite and rumination are lost; the tongue cracks and throat becomes inflamed; there is great difficulty in breathing, sometimes cough; looseness of bowels—with blood or mucus—is the character of the disease; the secretion of milk is suppressed.

No measures are taken to disinfect; a few persons keep the diseased animals separate. Sick cattle should be separated entirely, but natives, being fatalists, pay but little attention to such matters.

The chamars take the skins and cure them and these find their way to Cawnpore or Calcutta; the carcasses the vultures devour.

There is another disease in the district, but which is always prevalent more or less, and is shown by a mucous discharge from the nostrils and swelling of the feet; though troublesome, it kills but a small percentage of the animals so affected. Foot and mouth disease.

From R. SANDERS, Esq., Collector of Shahjehanpore, to the President, Cattle Plague Commission, Calcutta,—(No. 489, dated 27th September 1870).

R. Sanders, Esq.

In reply to No. 436, dated August last, calling for certain information regarding cattle diseases, has the honor to state, after careful inquiry, that the diseases named in the letter under reply do not generally prevail in this district. Those from which the cattle generally die in this country are the following:—

- 1.—Disease of the hoofs, *khooarak*.
- 2.—Fever or *jora*.
- 3.—A sort of small-pox or *chitka*.
- 4.—Purging blood, or *bedun*.
- 5.—Disease of the skin, *pukka*.

2. The above are the principal diseases of the cattle, and they occur in almost all the pergunnahs and villages of this district.

DISTRICT OF BAREILLY.

BAREILLY.

From WILLIAM KAYE, Esq., Officiating Collector of Bareilly, to the President of the Indian Cattle Plague Commission,—(No. 1025, dated Bareilly, the 16th August 1870).

I have the honor to inform you that a cattle murrain is reported to have broken out in Mouzah Ukka and places adjacent in this district; and, adverting to your letter No. 112 of 15th December 1869, to the Secretary to Government, North-Western Provinces, to enclose replies to the series of questions forwarded therewith.

2. The information given in the enclosed refers only to the village of Ukka.

BAREILLY.
W. Kaye, Esq.

3. Violent diarrhoea and great thirst seem to be the most prominent symptoms of the disease. Up to date some 300 or 400 animals have died of it.
4. This is the first time the disease is alleged to have broken out at the place.
5. Ukka is some seven miles from the Sudder Station.

Lieut. Col. H. Mills. *From* LIEUT. COLONEL H. MILLS, *Deputy Assistant Commissary General, to the Deputy Commissary General, Lucknow,—(No. 236, dated Bareilly, the 23rd August 1870).*

I beg to report that an epidemic has broken out amongst the slaughter cattle at this station, similar to that described by Major Wroughton,—*vide* Commissary General's Circular No. 43, dated 8th April 1870.

The epidemic first broke out on the 15th instant, when there were on the rolls 315 horned cattle.

The cattle which appeared to be in the most hopeless state were sent out to a place about four miles from the cantonment, kindly lent by Lalla Lutchmee Narain, banker of this place. The remainder were divided into five lots, and kept apart from each other on the borders of the cantonment, at convenient distances from each other, to admit of supervision. None are allowed to enter the slaughter cattle lines.

Of the above five lots, one lot was composed of 28 cattle, which were in low condition and had slight signs of sickness.

The sick animals were not allowed green fodder, but were given as much *bhoosa* and water as they liked.

As the symptoms of the disease are exactly the same as referred to by Major Wroughton, the medicines recommended by him have been administered, and have proved of use in the milder cases.

The following is the number of deaths out of 48 attacked with the disease :—

15th August 1870	...	...	...	...	1
17th "	...	...	...	...	6
18th "	...	...	...	...	4
21st "	...	...	...	...	6
22nd "	...	...	...	...	2
TOTAL					19

It is likely that there will be eight or ten more fatal cases amongst those now under treatment.

There has been only one fresh case, and that of a mild form, within the last three days.

I am informed that this disease has been very fatal within the last few days in the villages near this.

I have addressed the Collector asking for information on this point, and a further report shall be submitted shortly.

There was a change of weather on the 21st instant, to which may be attributed, perhaps, the check in the epidemic.

There had been hardly any rain for the previous ten days, and the weather was very oppressive, when a heavy fall of rain cooled the air.

A copy of this letter has been sent to the Commissary General's Office at Simla.

GWALIOR.
Major H. R.
Wroughton.

Memorandum by MAJOR H. R. WROUGHTON, *Executive Commissariat Officer, Gwalior, of the symptoms of a disease which broke out among the horned cattle at that station, and of the remedies which were found efficacious.*

Symptoms.

The animal refuses to eat, not being able to open the mouth, as in lock-jaw; the ears droop, the urine becomes of a very dark color, and the animal is much purged.

GWALIOR.
Major Wroughton.
Remedies.

In the first instance the following were given twice a day for three or four days :—
2 chittacks ghee; half a chittack black pepper (pounded).

This caused the following effect :—

1st, eyes to water; 2nd, nose to run; 3rd, the animal by degrees was able to open its mouth with greater ease, and to pick up a little fodder. As it improved, the purging became less and less daily. On the third or fourth day the following were administered :—

Katila, $\frac{1}{4}$ oz. ... } Of each, once in the evening daily, for three or four
Mendee leaves, $\frac{1}{4}$ oz. ... } days. The *katila* to be soaked all night in water. The
mendee leaves ground on a sill-stone.

The sick animals had dry fodder and water always at hand, and were allowed to eat and drink whenever they felt inclined.

Out of a herd of 100 horned cattle 26 were attacked, and of this number seven only died, and most of them on the first onset. The above treatment has, however, cured the rest; and as it has been found to be efficacious, I have given it in detail, as it may be of use at other stations.

From LIEUT.-COLONEL H. MILLS, *Deputy Assistant Commissary General, Bareilly, to the President, Cattle Plague Commission,—(No. 1279, dated Bareilly, 8th October 1870).*

BAREILLY.
Lieut.-Col. H. Mills.

In reply to your No. 477, dated 21st ultimo, I beg to report as follows regarding the late outbreak of epidemic amongst the slaughter cattle at Bareilly.

The epidemic first broke out on the 15th August 1870, when the herd of slaughter cattle numbered 315.

Symptoms of the disease :—

Coat staring, ears drooping, mouth closed and very difficult to open, urine very dark, and violent purging.

Symptoms.

The cattle which appeared in the most hopeless state were sent out to a place about 4 miles from the cantonment. The remainder were divided into five lots and kept about a mile apart from each other. Of the above five lots, four lots were composed of sound cattle, and one lot of cattle in low condition, and had slight signs of sickness. The sick animals were not allowed green fodder, but were given as much *bhoosa* and water as they liked.

The disease lasted up to 25th, and out of 55 attacked 32 died. The treatment was ghee, black pepper, and *mendee*.

On the 26th August the disease changed in symptoms; 27 head of cattle were attacked with a breaking out over the body, accompanied with constipation of the bowels.

Dr. Corbyn, Civil Surgeon, treated these cattle and only four out of the lot died, and that was before his medicines had been fairly tried.

The disease, it will be remarked, is quite different in symptoms to that which had attacked the cattle prior to the 26th, but must, I think, be in some way connected with it,—the poison in the blood showing itself by the eruption.

Since that date no fresh cases occurred; but it is worthy of remark that the whole of my cattle on the 26th and 27th became dull and lost flesh in a most remarkable manner, so that I was obliged to get in others at once for slaughter. This may be attributable partly to the sudden change of food from green grass to dry *bhoosa*. After a few days they began to improve, but not until they were allowed to graze for a short time daily.

Dr. Corbyn thinks that the disease he saw, unless treated and relieved at once, would be as fatal as that with which the cattle were first attacked. He considers that both are epidemic and both attributable to the same cause,—atmospheric influence telling more particularly on animals fed on low marshy land,—and he believes it so contagious that one animal would infect a whole herd.

The situation of the cattle-pens at Bareilly is low, and the water from a marsh in the proximity had been close up to the pens for some weeks, owing to the heavy rains this year.

I learn from the Collector of Bareilly that a cattle murrain had broken out some time previous in one pergunnah of his district, which was reported to you, resulting in the death of between 300 and 400 head of cattle, the prominent symptoms being violent diarrhoea and great thirst.

Cattle disease in the district.

BAREILLY.
Lieut.-Col. H. Mills. I am of opinion that the disease was introduced amongst my herd of cattle from the city of Bareilly, as very large numbers of cattle came to graze daily in the cantonment lands; and I found a few days after my cattle were attacked that several cows and buffaloes died on the parade ground of the Infantry barracks, and some days afterwards a cow was found dead in my compound, and another a few hundred yards off, for which no owner could be traced by the Police in the cantonments.

Mortality.

The total number of deaths were as follows:—

	Attacked.	Died.
Violent purging ...	55	32
Constipation and eruption ...	27	4
TOTAL ...	82	36

I annex a memorandum drawn up by Dr. Corbyn. I beg to inform you that I think his timely treatment was the means of saving a number of cattle, and I have therefore attached to this a separate memorandum which embodies Dr. Corbyn's recommendations, with a few remarks by myself, showing how fatal the disease proves when treated with native medicines.

I return duly filled in the form sent with your memo. under reply.

J. Corbyn, Esq.

Memorandum of Symptoms and Treatment of Disease which occurred among the Commissariat Cattle,—(dated Bareilly, the 13th September 1870).

Symptoms.

The animal appears dull and languid, eyes red and inflamed, with tears trickling from them; the pulse quicker than natural, the body and breath hot, bowels constipated, difficulty of swallowing and no inclination for food; eruptions resembling "variola" all over the body, discharging a considerable quantity of purulent matter.

If the disease is not checked at this period at once, the following symptoms supervene:—swelling about the head, dulness, but not violent heaving, succeeded by staggering and great debility. After a little while the animal falls, and there it lies until it dies.

I saw four die in this manner; they were past treatment. Twenty-three animals received the following treatment; they all recovered and are now convalescents. The treatment consists in checking the fever, relaxing the bowels, healing the sores, and afterwards assisting the strength with tonics, if necessary. Every article in the following prescription can be procured in the bazaar:—

The following laxatives to be given at the onset of the disease:—

Epsom salts ...	Four ounces
Sulphur ...	Two ounces
Nitre ...	Half an ounce
Ginger ...	Two drachms

dissolved in a pint of water and administered with the aid of a *nar* or hollow bamboo.

Strong sulphur ointment to be rubbed all over the body; sores to be kept clean.

Where the mouth is sore, the following liniment to be applied several times a day:—

Powdered ginger ...	Two drachms
Powdered carrway ...	One drachm
Chiretta ...	Four drachms

Plenty of fresh drinking water to be supplied on the *nands*. The food to consist only of *chokur* and water, and a little dry fodder.

The animal on no account to be coaxed to eat until rumination is established; he may then return to some high and open grazing ground away from other cattle.

Infectiousness.

The disease is extremely infectious, caused either by atmospheric agency, or feeding on wet and marshy grounds. At the very commencement, precautions should be taken to separate the diseased from the sound.

Symptoms.

The symptoms described by Colonel Wroughton, viz., "the animal refuses to eat, not being able to open the mouth, as in lock-jaw; the ears droop, the urine becomes of a very dark color, and the animal is much purged," and which disease has proved so rapidly fatal amongst the cattle here, as stated by Colonel Mills, I should term the "scouring rot." If the disease is neglected or improperly treated, the animal immediately sinks. The cause is the same as in the former malady,—exposure to sudden changes in the weather and feeding on wet land. It is very contagious.

In this disease the liver is always deranged, and there is inflammation of the lining membrane of the large intestines, which if not at once checked terminates in ulceration. **BAREILLY.**
J. Corbyn, Esq.

I have treated this complaint often with success. The following ought to be given at once:—

Calomel ...	One scruple
Chalk ...	One ounce
Opium ...	Two drachms

To be given in a pint of warm water.

Next day if motions do not improve, and diarrhoea does not cease, the following to be administered twice daily:—

Cannabis Indica—"Bhung" ...	Two drachms
Powdered bark, madar plant root ...	"
Opium ...	One drachm
Chalk ...	"

To be given in a pint of water.

The diseased animals must of course be separated and placed in a yard where they can Segregation. get shelter.

The food must be the same as in the former disease.

DISTRICT OF MORADABAD.

From C. A. DANIELL, Esq., Collector of Moradabad, to the President, Cattle Plague Commission, Calcutta,—(No. 482, dated 24th August 1870).

MORADABAD.
C. A. Daniell, Esq.

I have the honor to acknowledge your No. 431, dated — August, received by me on the 20th, regarding cattle disease in this district.

The only description of disease which has appeared at all is that commonly known as *pukka*, which appears to be a mild form of "mouth and foot disease."

This *pukka* is by no means unusual, as I dare say you know. It is not generally fatal.

I first noticed it at the end of March in the part of the district bordering on the Terai, and subsequently in different parts of the district animals have been attacked, but for some time now the disease has been on the decrease.

I do not learn that its extent has been great or its fatality in any way considerable. The disease appears to attack both the *feet* and *mouth*, but appears to be more severe in the feet. I have caused inquiries to be made from time to time regarding its existence, but nowhere have I learnt that the existence this year has been extraordinary or unusual.

A cow of my own was attacked, but got perfectly well in five or six days with ordinary native treatment, i. e., keeping the mouth washed out with salt and water, and the feet covered with tar. The feet are also protected by the animal being placed in mud. I have within the last fortnight received a return from two villages in which there were 300 head of cattle, of which 50 have suffered more or less from this disease; out of 300 head, 20 have died during six months, but I am not able to learn that these died of disease, or what the ages of the animals which died were.

Had I found occasion to believe the disease to have been extraordinary or disastrous, I would at once have furnished Government with the formal report.

From C. A. DANIELL, Esq., Collector of Moradabad, to the President, Cattle Plague Commission, Calcutta,—(No. 497, dated 2nd September 1870).

In continuation of my letter No. 482, dated 24th August, regarding the *pukka* disease among certain cattle, I have had detailed information in one *pergunnah* collected with the following results:—

In 60 villages, among 24,036 head of cattle, 811 have died during the last 6 months from various diseases, viz., *pukka*, *koorka*, and *bissaree*; out of every 15 attacked, 8 recovered and 7 died throughout these 24,036, but I believe that only those cattle which suffered severely are entered among the *sick*; in the case of the *pukka* disease especially, I do not think that more than 20 per cent. of those attacked die usually. With the *koorka* disease, when the throat is attacked and a species of tumour forms, the percentage of deaths to those attacked is much greater; in the *bissaree* disease, when the body swells out and there is a slight running at the nose, and then watery dung, the percentage of deaths is said to be less than in the *koorka* disease.

MORADABAD.
C. A. Daniell, Esq.

2. In the whole 60 villages the percentage of deaths to number of head of cattle is 3.37.

The diseases are not spreading, nor do they appear to attack many head in any one herd. The condition this year I believe to be normal, and not above the average.

The *koorka* and *bissaree* diseases have come on very lately, and appear generally in the rains. The foot and mouth disease (*pukka*) may come at any time.

3. We have had unusually heavy and constant rain since 25th June, and the rivers have flooded unusually; I therefore cannot but expect the cattle to suffer both from constant exposure to the wet, almost living in water as some do, and from blowing themselves out with rank grass, which in some portions of the districts appears to purge the cattle considerably.

4. Inquiries are going on in other pergunnahs, and, if necessary, further information will be sent.

If you get other reports from Rohileund, you will be the better able to learn whether there is anything unusual in this district as compared with others in this part of the country.

From C. A. DANIELL, Esq., Collector and Magistrate of Moradabad, to the Commissioner of Rohileund, Bareilly,—(No. 593, dated 21st October 1870).

I have the honor to state that in consequence of reports showing that cattle diseases of various forms were attacking cattle in several parts of the district, I have from time to time caused local inquiry to be made.

2. I reported the fact of disease being somewhat prevalent in my letter No. 490, dated 24th August 1870, and No. 501, dated 2nd September 1870. There was nothing in the nature of the diseases to lead me to believe that the attacks were very severe, or that danger was to be apprehended of the diseases assuming an extraordinary virulence. I have within the last six weeks directed a closer examination to be made throughout all the pergunnahs by the Tehseeldars themselves, and have found that the diseases which have attacked the cattle have been of the four usual types, viz., *pukka*, *khoora* or *goorha*, *bissaree*, and *bedun*.

3. As far as detailed inquiry has gone, diseases have been found in certain parts of the Moradabad, Hussunpoor, Sumbhul, Billaree, and Thakoordwara Pergunnahs, while Amroha seems to have been almost free from any severe attacks. Up to the latest reports from the five pergunnahs named, diseases have been found to exist more or less in about 250 villages, and out of these I have selected those villages, 29 in number, in which disease has assumed a severe character, and in which 10 per cent. or more of cattle have been carried off by disease.

4. The virulence of the diseases in these 29 villages, and its existence in the remainder, is attributable to a great extent to the heavy rains, the general ill-condition of the cattle, and the large quantities of rank grass consumed by the cattle, especially by buffaloes. The diseases have been for the past fortnight dying out.

5. I may note that fever and ague have been exceedingly prevalent since the clearing up of the rains among the people; the type is not severe, nor is the mortality at all great, but the same causes which tend to produce an extensive spread of fever among the people are probably the same which have produced the severer attacks of disease among the cattle.

6. A copy of this report and of the form attached will be sent to the Secretary of the Cattle Plague Committee in Calcutta. I beg the favor of your forwarding this report to the Government, as I have reason to believe that rumours of severe mortality among cattle have reached the Government.

Return of Cattle Diseases prevailing in 29 villages of the District of Moradabad.

1	2	3	4	5	6	7	8	9	10
Pergunnah.	Mouzah.	Name of Disease in Vernacular or English.	Date of outbreak.	Number attacked.	Number died.	Number recovered.	Number still ill.	Village stock.	REMARKS.
MORADABAD	Sheoporee...	Ghoorka	26th Augt. 1870	60	20	40		200	Excluding the entries under <i>ghoorka</i> , <i>bissaree</i> , and <i>pukka</i> , the result is as follows:— Attacked per cent. of stock ... 26.6 Died per cent. of stock ... 20.3 Died per cent. attacked ... 77
	Laloovala ...	Bedun	15th July "	74	74	.....	.....	604	
	Dheemree ...	Do.	August "	25	25	.....	.....	229	
	Bhudrowla ...	Do.	15th do. "	130	90	40	.....	350	
SUMBHUL	Eesapoor ...	Do.	1st July "	33	33	.....	.....	51	
	Sunwaree ...	Do.	Do. "	155	115	40	.....	600	
	Buhrampoor ...	Do.	Do. "	8	8	.....	.....	80	
	Shoojaetpoor ...	Do.	10th August "	50	50	.....	.....	150	
	Ushruipoor ...	Do.	Do. "	65	60	5	.....	207	
	Dubpa ...	Do.	1st Sept. "	45	29	12	4	210	
	Munnee Khera ...	Do.	15th July "	460	425	30	5	1,015	
	Bhurwara ...	Do.	10th August "	36	36	.....	.....	125	
	Mohrana ...	Do.	Do. "	44	40	.....	.....	150	
	Bura Tajooddeen ...	Do.	20th July "	30	23	7	.....	105	
HUSSUNPOOR	Mohammedpoorgunj ...	Do.	1st do. "	20	15	5	.....	120	
	Rubra ...	Do.	22nd Sept. "	302	166	136	.....	725	
	Sirsa ...	Ghoorka	4th do. "	150	50	40	60	968	
	Mulukpoor ...	Bedun	1st do. "	50	14	14	22	271	
BILLAREE	Solavah ...	Do.	1st do. "	25	10	8	7	95	
	Gungesree ...	Do.	5th do. "	226	200	15	11	1,236	
	Deorarah ...	Do.	1st do. "	75	45	15	15	505	
	Gopalpoor ...	Bissaree	20th August "	28	20	8	.....	156	
THAKOORDWARA	Boodnuggur Khundooa ...	Bedun	15th June "	105	70	32	3	522	
	Mhowussoo ...	Do.	May "	50	25	25	.....	225	
	Soolkanpoor Khuddur ...	Pukka	July "	58	18	18	22	268	
	Buhadurpoor Khuddur ...	Bedun	June "	53	35	12	6	217	
THAKOORDWARA	Gopalpoor ...	Ghoorka	July "	66	53	8	5	500	
	Goduria Ghuzafferpoor ...	Pukka	Do. "	100	41	18	41	508	
THAKOORDWARA	Koomhuria Jubla ...	{ Bedun and } { Ghoorka. }	June "	15	15	.....	.....	81	
TOTAL									10,533
									205
									528
									1,805
									2,538

MORADABAD,
2nd October 1870.

C. DANIELL,

Collector.

MORADABAD.
C. Daniell, Esq.

BUDAON.

DISTRICT OF BUDAON.

S. S. Melville, Esq. *From S. S. MELVILLE, Esq., Offg. Magistrate and Collector of Budaon, to the President, Cattle Plague Commission, Calcutta,—(No. 232, dated 2nd September 1870).*

In reply to your letter No. 432, dated — August 1870, I beg to state that in June sickness showed itself among the cattle in this district, but that it is now on the decrease. Two distinct diseases are stated to have showed themselves,—one, that which is generally known, I believe, as the foot and mouth disease, and called here *pukka*; the other called *bedun*, and which is said to show itself by bloody evacuations, refusal of food, distended stomach, and vertigo. This has been reported to me in answer to inquiries I made in a case of suspected cattle poisoning. No report was made to me by the villagers themselves, so I conclude that the disease is not more severe than it usually is at this season.

KUMAON DIVISION,

COMPRISING THE DISTRICTS OF KUMAON AND GURHWAL.

Index of Records.

[N. B.—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Kumaon.	Historical Sketch ...	...	.....	Page. 433.
	Commissioner of Kumaon ...	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 210. States that cattle disease called "mān" existed in 1868 in the eastern pergunnahs and appears more or less every year.</i>
	J. Renny, Esq., Commissioner, Kumaon Division.	443	28th July 1870 ...	<i>States that there was no cattle disease in the Kumaon District in 1870, but that a disease called "mān" comes nearly every year and has always been known in that part of the country.</i>
Gurhwal.	Assistant Commissioner of Gurhwal.	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 211. Reports that from October 1867 to January 1868 a disease called by the natives "mān" attacked the cattle of his district.</i>

HISTORICAL SKETCH.

The Commissioner of Kumaon states in his reply to the Circular of the Board of Revenue, No. B, dated 27th March 1868, that "cattle disease is as well known in Kumaon as small-pox among human beings." The disease is called *mān*, and comes every year. When it comes regularly, it is less fatal, but when two or three years have elapsed, it appears in a very virulent form; this *mān* only attacks cattle once, and a *mānluar* bullock or buffalo is much more valuable than one that has not had *mān*. The disease is considered contagious, but no attempt is made at separation. This is not a result of apathy, but from a belief of the people that an animal must get the disease, and the sooner it gets over it the better. *Mān* is considered identical with the Hindui cattle disease described by Dr. MacReddie, and is said to have been "known in the hills and Bhabur forests *from of old*"; it is even known in the Snowy Range, and sometimes carries off large numbers of *jooboos* (a cross between the cow and yak); but in such cases the disease is believed to be taken up by the Bhootea traders from the lower country." This fits into the evidence collected at Darjeeling concerning the prevalence of disease among the cattle of Nepal and Thibet, and is further confirmed by information obtained from Dr. Wright, Residency Surgeon at Katmandoo. Horses, sheep, and goats, it is further stated, are not known to be attacked by *mān*.

The local officer at Kumaon states that the cattle of the eastern pergunahs have been suffering severely from this disease.

The information from Gurhwal is to the same effect. *Mān* had been prevailing from October 1867 to January 1868 in the Bhabur forests of the district: about half of the affected cattle are said to have died.

The only information obtained from this Division in addition to the above is a letter from the Commissioner of Kumaon, dated 1870. the 28th July 1870, in which it is stated that no disease prevailed at that time, but that *mān* comes every year and has been always known in that part of the country. There can be little doubt that this *mān* is rinderpest, and it is to be remarked that foot and mouth disease is not mentioned in these reports.

JHANSIE DIVISION,

COMPRISING THE DISTRICTS OF JHANSIE, JALOUN, AND LULLUTPORE.

Index of Records.

[N. B.—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Jhansie.	Historical Sketch ...	...	...	Page 437.
	<i>Extract (para. 92) from Report of Sudder Board of Revenue, N.-W. Provinces, for 1861-62.</i>	...	...	<i>Selections, Government of India, No. 69, p. 200. Stating that cattle disease broke out with great virulence in Jhansie in 1861-62.</i>
	Major B. P. Lloyd, Commissioner, Jhansie Division.	557	1st March 1864 ...	<i>Selections, Government of India, No. 69, p. 203. Reporting on the subject of cattle disease which prevailed in the Jhansie Division during the year 1861-62.</i>
	Deputy Commissioner of Jhansie.	...	28th July 1868 ...	<i>Selections, Government of India, No. 69, p. 214. States that gooshela (hoof disease) and cow-pox are the diseases known in his district.</i>
	J. P. White, Esq., Officiating Deputy Commissioner, Jhansie.	155	15th Sept. 1870 ...	Reports that cattle disease did not exist in 1870 in his district, except in the villages of Dhoorkhooroo and Deeghara, p. 438.
	Deputy Commissioner of Jaloun.	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 214. States that no cattle disease of epidemic form, such as had broke out in Hurdul, has existed in his district.</i>
	Lieut. Colonel J. Davidson, Deputy Commissioner of Jaloun.	640	19th Nov. 1870 ...	Stating that no cattle disease of any sort prevailed in his district, but that in June last the cattle of the Koonch Pergunnah suffered from an affection of the throat, p. 438.
	W. C. Plowden, Esq.— <i>Abstract of Lullutpore Deputy Commissioner's letter.</i>	...	23rd July 1868 ...	<i>Selections, Government of India, No. 69, p. 214. States that no epidemic prevailed in 1868 in his district.</i>
	Major J. Davidson, Deputy Commissioner of Lullutpore.	226	7th August 1868 ...	Reports that cattle disease has broken out in the district, p. 438.
	Ditto ditto ...	304	22nd October 1868	Further report on the subject, p. 438.

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Lullutpore,—continued.	J. Liston, Esq., Officiating Deputy Commissioner of Lullutpore.	232	12th July 1869 ...	States that the mortality among the cattle in his district during the past year 1868 has been very great, and enters into details, p. 439.
	Lieut. Col. A. G. Davidson, Deputy Commissioner, Lullutpore.	406	2nd Sept. 1870 ...	Reports that although careful inquiries have been instituted, no cattle disease can be discovered in his district.
Gwalior.	Major H. R. Wroughton Executive Commissariat Officer, Morar.	349	28th Oct. 1870. ...	Forwarding Commission's Form No. 1 duly filled in, with reference to the recent outbreak of cattle disease among the Government Commissariat cattle at Morar, in Gwalior, p. 440.

HISTORICAL SKETCH.

The information from this Division is more ample and continuous. HISTORICAL SK

As early as the rains of 1861, the prevalence of *matah* was observed in the District of Jhansie. The disease caused great loss in the pergunnahs east of the Betwa. The symptoms are not given : it was considered highly infectious, and precautions were taken to segregate—presumably with some success, for it is stated that where precautions were not taken, almost all the cattle of some villages were carried off. Foot and mouth disease prevailed simultaneously.

The Deputy Commissioner of Lullutpore reports in March 1864 that within the last two years a destructive cattle disease broke out in his district. The symptoms noted were cough, swelling of the throat, and copious discharge from the nose. It is difficult from this statement to say what the species of disease was—most probably it was rinderpest ; and it is noted that the natives practised separation as a precaution against infection.

The replies to the Board's Circular are to the effect that no disease prevailed in Lullutpore ; that cow-pox and hoof disease—*gooshela*—were known in Jhansie, and also a disease attacking the mouth. No disease prevailed in Jaloun.

In July 1868 cattle disease prevailed in the District of Lullutpore. Both foot and mouth disease—*bikra*—and rinderpest—*checkuck*—prevailed simultaneously.

The pergunnahs affected were Marroura, Mehrowrie, and Banpore, and in October 455 deaths had been reported. Segregation had been practised, apparently with good result.

In 1869 there was great loss of cattle in Lullutpore, both from starvation and “small-pox.” The mortality in the Tehsildari of Lullutpore is put down at 10,320, and in that of Mehroni at 8,794 ; total, 19,114. The disease commenced in February, and is said to have been introduced from Saugor by some Bunjara bullocks. The disease of 1868 is also said to have been brought from Saugor. Another disease called *gorara*, a swelling of the throat and discharge from the nostrils, also prevailed in the district.

In February 1870 the Commissariat cattle at Gwalior were attacked by a disease characterised by purging. In a herd of 100 cattle, 26 were attacked and 2 died ; they were treated with ghee and pounded black pepper, and segregation was practised.

Foot and mouth disease—*khooseeta*—broke out in the same station in October. The origin of these diseases could not be traced.

The Deputy Commissioner of Jhansie reports in September 1870 that *khooseeta* prevailed in Sub-division Gurotha of that district, and small-pox in Mouzah Deegarali of the Jhansie Sub-division, where 15 cattle had died. This disease is said to have come from the contiguous Gwalior territory.

The Deputy Commissioner of Lullutpore reports in September that careful inquiry throughout his district was made, with the result that no disease was found to prevail.

The Deputy Commissioner of Jaloun wrote in November that, with the exception of *gurera*, a swelling of the throat, which attacked some cattle in July, no disease prevailed in his district.

JHANSIE.

DISTRICT OF JHANSIE.

P. J. White, Esq. From P. J. WHITE, Esq., *Officiating Deputy Commissioner, Jhansie, to the President, Cattle Plague Commission*,—(No. 155, dated 15th September 1870).

In reply to your letter No. 433, dated August 1870, I have the honor to stat that there has been no loss of cattle in this district owing to the murrain during the last eyear. The following gives particulars for the different sub-divisions of the district:—

Mote and Mow.—No disease.

Gurotha.—Was also healthy, but in Mouzah Doorkhooroo the sickness called *khooseta* prevailed; it disappeared, however, in a very few days without any mortality.

Jhansie.—Healthy; only in Mouzah Deegarah 15 cattle died of small-pox, and the disease did not extend to any other place. This disease made its appearance from Mouzah Moostura, in the contiguous Gwalior territory.

JALOUN.

DISTRICT OF JALOUN.

Lt. Col. J. Davidson. From LIEUTENANT COLONEL J. DAVIDSON, *Deputy Commissioner, Jaloun, to the President, Cattle Plague Commission*,—(No. 640, dated 19th November 1870).

In reply to your No. 434, dated August last, I have the honor to inform you that the replies received by me from the pergunnah officers of this district are unanimous in stating that no sort of cattle disease is now prevalent..

2. The Tehsildar of Pergunnah Koonch reports that in the month of July some of the cattle were attacked by a disease called *gurera* by the agricultural classes. This appears to be an affection of the throat, and is frequently fatal to buffaloes when seized with it. Oil of *sursow* or *til* is used as a remedy for it by the natives.

LULLUTPORE.

DISTRICT OF LULLUTPORE.

Major J. Davidson. From MAJOR J. DAVIDSON, *Deputy Commissioner, Lullutpore, to the Junior Secretary to Government, North-Western Provinces, Nynee Tal*,—(No. 226, dated 7th August 1868).

In reply to your No. 189A, dated 30th ultimo, calling for a further report regarding the cattle disease in certain parts of this district, I have the honor to state as follows.

2. The total number of villages hitherto visited by the disease appears to be nine, situated in Pergunnahs Marroura, Mehrowrie, and Banpore.

3. The total loss is about 150 head of cattle, but the Tehsildar has been directed to furnish more precise details on this point.

4. As it is upwards of a month since the disease made its appearance, the losses do not seem to be heavy, nor does the progress of the disease appear rapid.

5. The heaviest loss (53 head) is reported from Mouza Keolaree, Pergunnah Mehrowrie; but on the 17th July, when the Tehsildar made inquiries on the spot, the disease was reported as having disappeared there; and as the instructions regarding segregating the healthy from the infected animals had been carried out, I infer that some good was thus effected.

6. Since the 17th July the disease appeared in three other villages in Pergunnah Banpore, and the latest account states that it was still going on, the losses in each village being from 15 to 20 head.

7. The disease seems to be taking a course from south to north; and as it was first reported from a village adjoining the Saugor frontier, it may possibly have entered from that district. On this point I am in communication with the Deputy Commissioner of Saugor.

From MAJOR J. DAVIDSON, *Deputy Commissioner, Lullutpore, to the Junior Secretary to Government, North-Western Provinces*,—(No. 304, dated 22nd October 1868).

I have the honor to submit the report called for in your No. 313A, dated 2nd August, regarding the character of the cattle disease lately prevailing in parts of this district.

2. I find that there were two kinds of disease; the first called *bikra*: this attacks the hoofs, which become sore and emit a discharge; there is also a mucous discharge from the mouth: this disease either kills or cripples the animals.

3. Secondly, *chechuck*, of which the symptoms are said to be discharge from the mouth, the eyes become affected, the animal is unable to eat or drink, and its color is changed to a blackish hue.

4. I am obliged to give these details from the Tehsildar's reports, as neither the Civil Surgeon nor myself have had any opportunities of seeing any of the diseased animals. Major J. Davidson. The total number of deaths up to date of the last return is stated to be 455.

5. I regret the delay that has occurred in replying to your letter, which for some time escaped my notice under the unusual pressure of work in the Revenue Department.

From J. LISTON, Esq., *Officiating Deputy Commissioner, Lullutpore, to the Secretary to J. Liston, Esq., Government, North-Western Provinces*,—(No. 232, dated 12th July 1869).

In answer to your letter No. 120A, dated 24th June 1869, I have the honor to report as follows.

2. The mortality among the cattle in this district has this year been very great, but it is a difficult thing now to give the numbers that have died of small-pox,

3. Shortly after I joined this district, finding small-pox amongst the people and cattle, I called for reports, which I continued to get through the Police; but the zemindars, imagining that no benefits would accrue to them from making such reports, seldom reported deaths among cattle till lately.

4. The Tehsildar of Lullutpore on the 19th June reported the total number of cattle dead of hunger and disease up to that date in his pergunnahs to be as follows:—

Lullutpore	...	...	...	...	1,918
Banser	...	...	...	...	2,371
Talbehut	...	...	...	...	5,987
Balabehut	...	...	...	...	44
TOTAL					10,320

This report, knowing that the tehildar took some trouble about his inquiries, and having myself visited the three first-named pergunnahs in May and June, I believe may be relied on.

5. The Tehsildar of Mehrowrie reports 8,794 deaths of cattle from small-pox alone as follows:—

Banpore	...	...	...	...	5,318
Mehrowrie	...	...	...	...	948
Marroura	...	...	...	...	2,462

This I consider to be an exaggerated report. The Tehsildar has, I fear, only lately made inquiries, and the zemindars, being now anxious to get advances to buy cattle, have misled him as to the actual numbers. From what I saw myself, and from what the zemindars of these pergunnahs say, I think that the Tehsildar's report doubles the real numbers of deaths.

6. The disease first commenced in Pergunnahs Marroura and Mehrowrie in the month of February, and was, it is supposed, brought in by the Bunjara bullocks bringing in grain from the Saugor side. From these it spread into Banpore, where, especially in the village of Keilgowan, it was very deadly as early as February, though not to the extent shown by the Tehsildar. It did not get into Bansee and Talbehut till well on in March. The Lullutpore Pergunnah, strange to say, suffered less than any other.

7. In April, when in the Pergunnahs of Marroura and Mehrowrie, I found that out of the 45 villages in the Marroura Police Circle the cattle in 23 villages were affected. In Mehrowrie the disease did not appear to exist to the same extent in the villages visited by me, though it did not leave that pergunnah till the middle of May.

8. The reports sent from Banpore were also then very bad, especially in and near the town of Bar.

9. I visited the Banpore Pergunnah in May, and remained in it till near the end of the month, by which time the disease had nearly left, as reported by me on the 20th of that month. In Talbehut and Bansee the disease was not so bad as in Banpore and the southern pergunnahs, but continued for some time longer.

10. The district is now, I am glad to say, clear of the disease as regards cattle.

11. With regard to the disease called in this district *gorara*, I regret that I am unable to give the required information promised in my weekly report dated 20th May. I sent for cattle reported to have died of the disease, and some were sent; but, on examination, Dr. Dutt found that, through the stupidity or carelessness of the Lumberdar of Talbehut, the animals sent up were not those affected with this disease. Both Dr. Dutt and I were obliged to return to Lullutpore next day, and no further opportunity has occurred of inquiring into the matter.

LULLUTPORE.

J. Liston, Esq.

12. The disease, however, I find from inquiry, is not new, but is well known in the district. The symptoms, however, are those shown in my report dated 20th May, and are something in the style of glanders. The throat of the animal attacked swells up, there is a discharge from the nostrils, and death follows in four or six days.

13. Dr. Dutt writes regarding the barks of the *kulbur*, *ghunt*, *oomur*, and *kurar* as follows:—"Oomur and kulbur belong to the fig tribe; the powdered barks are sweetish to the taste, and are usually taken mixed with flour or some grain. The powdered barks of *ghunt* and *kurar* are stringent, and are also taken mixed with flour. All the barks have little or no nourishment, and act only mechanically in allaying hunger. They are indigestible, and induce costiveness of the bowels. No deleterious effects follow their immediate use.

14. The Assistants in charge of the works, in answer to my inquiries made when I reported the use of the said barks, all informed me that they were used, but that they had not observed any ill effects from their use.

Major H. R. Wroughton. From MAJOR H. R. WROUGHTON, Executive Commissariat Officer, to the President, Cattle Plague Commission,—(No. 349, dated 28th October 1870).

* See letter at page 424, in which this information is concisely given.

In acknowledging receipt of your letter No. 546 of the 18th instant, I have the honor to state that all the details I can give of the disease that broke out among the Government slaughter cattle at Morar in February 1870 are shown in the accompanying form,* which I hope will be found sufficient to enable you to understand fully the nature of the disease.

The disease suddenly broke out without any preliminary symptoms, and it was confined to the herd it attacked. I heard nothing of its spreading among the neighbouring villages.

Another kind of disease has just now appeared among the slaughter cattle, which is also called by the natives *khooseeta* or footsore.

The hoof falls off, and the animal becomes totally lame. The only other symptom is the running of the nose, but the cattle so attacked eat their food well. It is also reported that this disease has appeared among the sheep in the different villages from whence the supply is obtained; seven horned cattle belonging to the Government slaughter-yard have been taken with it; before they got very ill the following treatment cured them:—

Oil of turpentine applied to the sore, and *oorud* atta $\frac{1}{2}$ seer, and 1 chittack mustard oil given to each animal daily as long as not properly cured.

Five have been totally cured within ten days; two are still under treatment.

THE PUNJAB,

COMPRISING THE DIVISIONS OF DELHI, HISSAR, UMBALLA, JULLUNDUR, UMBITSUR, LAHORE, RAWULPINDEE, MOOLTAN, DERAJAT, AND PESHAWUR.

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Rawalpind.	J. C. Plowden, Esq., Commissioner of Murree.	153	10th August 1870	Mentions the diseases that are prevalent in the district of Murree among goats, sheep, and horned animals, p. 499.

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The instructions of the Government of India (page 1) regarding the conduct of the inquiry into cattle murrains in Bengal did not originally indicate the Punjab as a field of observation or research. Reports were, however, received, more particularly regarding the districts of Gujranwalla and Jhung, which showed that most serious losses by murrain were frequently sustained in this province. The reports, moreover, gave such a meagre and imperfect account of symptoms, that the diseases causing such wholesale havoc among cattle could not be identified. It was stated, for instance, "that no animal once attacked recovered; they languish sometimes for months, but surely die." This was so contrary to the experience of the Commission that it was felt that nothing short of a local inquiry could satisfactorily determine the nature of the murrain, or enable the Commission to suggest means by which its ravages might be limited. Government was, accordingly, addressed, and permission was readily accorded to visit the Punjab. This was done in July and August, and a large mass of information was obtained which satisfactorily solved the problem of what these destructive murrains were. It was found that pleuro-pneumonia, called by the natives *phoeprae*, was a well-known and frequently-occurring disease of cattle, and had been known from time immemorial. Cases were seen, *post-mortem* examinations performed, and evidence led, which placed this on a basis of certainty. Another disease, very fatal in character, called locally *bhooknee*—a very intractable form of diarrhoea—had caused great losses of stock in some districts, Gujranwalla and Jhung especially. This disease attacks cattle at the latter end of the hot season, when pasturage is hardly to be obtained and the water is scanty and foul. At such a time the half-starved and debilitated cattle are doubtless attacked with diarrhoea, from eating rank or acrid herbage and plants and drinking foul water.

During the rains and cold weather the pasturage in the Punjab is generally abundant and very good, and at these seasons the disease *suth*—quarter-ill or black quarter—is not infrequently met with among cattle.

Rinderpest, under the local names of *peer*, *vair*, *vah*, *vedun*, *sirruk*, *bedun*, *mah*, *mān*, *moicah*, *burra rog*, *sitlah*, *matah*, *andar-ka-matah*, &c., is unfortunately as well known here as in other parts of India. Ample evidence was obtained of its actual existence in different parts at the very time of the Commission's visit. Cases were seen and examined, and *post-mortem* examinations performed, which placed this beyond doubt; and the oral testimony of the inhabitants (who were always found to be most frank and open in their interviews and dealings) shows that rinderpest has occurred in the province from time beyond recollection. Foot and mouth disease, called *dhukka*, *koorug-moorug*, *laroo*, *khoorah*, *khoora-phutta*, &c., is also to be found among the cattle in every district. Another affection of cattle was also found to be very prevalent among cattle, namely, cystic disease. This malady has such an intimate relation to public health that the fact that cattle are, in different parts of the Punjab, to a large extent affected by two forms of immature tapeworm—found in the flesh (*tænia mediocanellata*), and viscera (*tænia echinococcus*)—cannot be too strongly put forward. Neither of these diseases can properly be called murrain, and they are more important as liable to cause directly a loathsome, or indirectly a fatal, form of disease among consumers of beef, than as diseases of stock, though there can be little doubt that, even putting the use of cattle as food out of consideration, the serious impairment of the functions of their liver, lungs, and spleen, in consequence of their being occupied by large cysts, or of their muscles by small cysts, must debilitate cattle and render them less fit for work than they otherwise would be. An interesting paper on this subject by Surgeon-Major J. T. C. Ross, F. R. C. S., will be found at p. 482, which gives a succinct view of the sanitary bearings of this question. This paper rather refers to the muscle cyst, but the hydatid cyst is more common. It was found by the Commission in Lahore in 11 out of 13 carcasses, and

HISTORICAL SKETCH.

Dr. J. Cleghorn shows that in Mooltan 899 out of 2,109 cattle slaughtered by the Commissariat were infested by these cysts, or 42·6 per cent. The *post-mortem* examinations of cattle made in all parts of the Punjab revealed cysts most commonly of the hydatid or echinococcus kind.

These are the general results of the investigation made in the Punjab. The facts ascertained regarding each division of the province will now be stated briefly in chronological order.

DELHI DIVISION—(Districts—Delhi, Goorgaon, and Kurnaul).

Information regarding the districts of this Division is meagre; the town of Delhi was visited twice in July 1870, and a local investigation made on each occasion. The result was that a sporadic case of rinderpest was found in the city. The disease is here called *rorah*.

The Deputy Commissioner of Goorgaon reported on the 12th of December 1870 that a disease had broken out in that district characterised by "looseness of the bowels, running from the mouth, and, after a day or two, violent purging; entire refusal to eat; death ensuing within a week." This is evidently rinderpest. Evidence of a more explicit kind was obtained on occasion of a visit to the Kurnaul Stud in September 1870. *Mān* rinderpest and *rorah* (foot and mouth disease) had been lately prevailing in the town of Kurnaul, and the former has been always known, occurring in an epizootic form every third or fourth year. The officers in charge of the Stud (Colonel Parrott and Veterinary Surgeon Kettlewell) had not had their attention drawn to the subject.

HISSAR DIVISION—(Districts—Hissar, Rohtuck, and Sirsa).

Very valuable information regarding cattle murrains was obtained on occasion of the visit of the Commission to the Hissar Stud Farm in July 1870. One witness in particular—Hansari, a Salootree—gave most excellent evidence, showing that *sirruk* (rinderpest), *goli* (quarter-ill), *pheepree* (pleuro-pneumonia), and *rorah* or *khoora-phutta* (foot and mouth disease) have always been known in that locality. He stated that his elder brother, who was also a cow doctor, knew of *sirruk* in the year 1810, and that he himself had since 1830 seen it attack the cattle in and near Hissar every fourth or fifth year. It had not occurred there during the last three years.

In April 1864, Mr. H. Dawson, v. s., reported on the epizootic which had lately prevailed among the cattle at Hissar, and from the *post-mortem* appearances noted, it is probable that more than one kind of disease had occurred, namely, quarter-ill and pleuro-pneumonia. So thoroughly convinced was Mr. Dawson of the contagious nature of these murrains, that he recommended, in the event of their again appearing amongst the Hissar cattle, that the diseased animals should be at once destroyed, and the healthy cattle broken up into small herds and sent to fresh grazing ground, never being allowed to graze for any considerable time in one place. In 1866 Mr. Dawson was called upon to report on the cattle murrains which had been prevailing in Hissar. His report enters fully into symptoms and treatment, and it is evident that the disease of which he writes was quarter-ill, which he considers contagious.

The annexed return of deaths among cattle during the ten years 1860—69 (page 457) shows a great mortality among them. In a stock averaging 9,930 head, there is a yearly average loss of 1,439, or 14·49 per cent. *Sirruk*, *pheepree*, *goli*, and *khoora-phutta* are noted as causes of death of almost yearly occurrence.

No information was obtained regarding the other districts of the Division.

HISTORICAL SKETCH.

UMBALLA DIVISION—(Districts—Umballa, Loodianah, and Simla).

It is stated in an official communication from the Deputy Commissioner of Loodianah that a form of cattle disease called *newabee*, whose alleged symptoms resemble those of rinderpest, prevailed in the district twelve or thirteen years previously. It is also stated that *moonkhee* and *rorah* occur every two or three years.

Mokh or *munnoon* appeared in this district in March 1870, in the Jagraon Tehseel. It became epidemic in that Tehseel, affecting 42 villages, and spread to the adjoining Tehseels of Loodianah and Samrala. The disease carried off 1,851 head of cattle in the Jagraon Tehseel and 225 in the Samrala, and it was said to have been imported into the latter by diseased cattle brought from Hissar. The disease was said to be "fast disappearing" in May, but a limited outbreak, apparently of foot and mouth disease, was reported from one village in September.

Cattle disease prevailed widely in the district of Umballa in the months of June to November 1870. Both rinderpest and foot and mouth disease are noted. The general result, as shown in the table printed at page 460, is that in 73 villages, in a stock of 30,867 head, 4,608 were attacked, or 13 per cent.; and 1,146 died, or 3 per cent. of stock and 27 per cent. of attacked.

In October of this year, rinderpest (*burra rog*) and foot and mouth disease (*laroo*) were reported to exist in the villages of Kotkhall and Culteena, in the Rajah of Keonthal's territory, in the Simla District. Segregation appears to have been successfully carried out. No other localities in the district have been known to be attacked.

JULLUNDUR DIVISION—(Districts—Jullundur, Hushiarpore, and Kangra).

In June 1870 foot and mouth disease occurred among the Commissariat slaughter cattle at Dhurmsala. The disease appears to have been imported from Jullundur. In this district both *mogh*, rinderpest, and foot and mouth disease appear to have prevailed generally throughout the district during the years 1869 and 1870, though the number of deaths reported, 50 and 87, is small as compared with other districts. The Deputy Commissioner of Kangra reported in August 1870 that cattle plague existed to a large extent in his district. Captain Harcourt reported that *koorug-moorug* (foot and mouth disease) prevailed extensively in the Kooloo and Plach Tehseels of this district; 250 cattle had died in the former and 62 in the latter. It is open to question whether the disease which caused such a large mortality was foot and mouth disease only; but this form is distinctly named and described, and in the absence of exact data or of a professional inquiry, it is useless to speculate.

UMRITSUR DIVISION—(Districts—Umritsur, Goordaspore, and Sealkote).

The information obtained from this Division is full and interesting. The inhabitants of the village Vadala, six miles from Umritsur, which was visited by the Commission in August 1870, stated that *munnoon* (rinderpest) and *paira* foot and mouth disease, have been known for many years in that district. A farmer of that village asserted that the disease *munnoon* had appeared in his village years ago, also in his father's and grandfather's time. Another man, aged 60, said that he first saw the disease when he was ten years old —1820, again when he was 30 years—1840, and again ten years ago—1860. Rinderpest prevailed in village Choballa of Anjalla Tehseel, Umritsur District, in May 1870, and continued to prevail till July. Fortnightly returns were received from this district from 1st September to 15th December 1870, showing 155 deaths in 218 attacked—71·1 per cent. The symptoms described by the Deputy Commissioner are those of rinderpest. In Goordaspore also, disease prevailed widely during the year. Fortnightly reports from 1st September to

HISTORICAL SKETCH. 30th November show 1,107 deaths out of 4,102 attacked—26·98 per cent. A variety of diseases are given, but rinderpest and foot and mouth disease are prominent among them.

As early as March 1870, murrain broke out in the Duska Tehseel of the Sealkote District, at a place about half-way between Sealkote and Gujranwalla, on the high road: 2,327 cattle are reported to have died during the months March to July. It was believed that the disease was brought from the Gujranwalla District. From the symptoms of the disease, as described by Sub-Assistant Surgeon Futteh Sing, it appears that both rinderpest (*munnoon*) and foot and mouth disease (*mohkur*) prevailed simultaneously. Fortnightly returns from 16th August to 30th November 1870 give a mortality of 3,112 among 3,914 attacked, or 79·5 per cent.

These returns were collected by Sub-Assistant Surgeon Futteh Sing, who made a careful investigation into the circumstances of this murrain.

LAHORE DIVISION—(*Districts—Lahore, Gujranwalla, and Ferozepore*).

The district of Gujranwalla in this Division holds a prominent position in the annals of cattle murrain in the Punjab. As early as the first decade of this century, there is oral evidence of the prevalence of *andar-ka-matah*, rinderpest. An inhabitant of Shekhoo-poor, 80 years of age, testified to the Commission that he had seen the disease before his beard began to grow. In this place the Commission found both rinderpest and pleuro-pneumonia existing, as also in Kokoa, a village adjoining. A chowdry of goallas in the city of Lahore testified that *munnoon* (rinderpest) was known to his forefathers, and frequently appeared.

He had himself seen eight or nine outbreaks in a lifetime of 35 years. He had lost 11 cattle of it in 1861. Similar evidence was recorded regarding *pheepree* or pleuro-pneumonia. In 1869, the hot weather of 1869 a most virulent murrain broke out on the bar of Gujranwalla. This bar is a vast grazing ground where cattle are herded and collected on *rukhs* or pasture farms. This system of herding is purely nomadic, the herds being driven about in search of water; and where this precious element exists, a temporary village of huts is rapidly thrown up. In seasons of drought both pasture and water are bad, and the cattle are liable to a disease called *bhooknee*, whose symptoms are incessant purging, wasting, and death. It was this disease which, during the year ending March 1870, killed 40,525 cattle, valued at Rs. 9,51,298. Cases of it were studied by Dr. Quinell, Civil Surgeon of Gujranwalla, who noted excessive purging and emaciation as the prominent symptoms. Swelling of the dewlap and voracious appetite were observed in some cases. The disease was not supposed to be infectious, but to depend on local influences, and the *post-mortem* appearances indicated anaemia, mal-assimilation and mal-nutrition. The evidence recorded by the Commission was to the same effect. *Bhooknee* and *peer* (rinderpest) were carefully distinguished by the people, and the differential symptoms given. The people were not so familiar with the former as with the latter. They asserted that *bhooknee* was not known until 1869; had begun in the Sarwal district, and spread thence into Gujranwalla and Jhung, and in some cases the somewhat similar symptoms of *bhooknee* and rinderpest were mixed up.

Rinderpest is said to have prevailed in Lahore in 1869. In March 1870 murrain was reported to have again broken out on the Gujranwalla bar, but the disease seems to have died out in May. Rinderpest and pleuro-pneumonia were, however, found prevailing in August 1870, and evidence was obtained of the existence of the former in the month of April in Lahore. Another outbreak of murrain was reported from the Kamokie Pergunnah of Gujranwalla in September. It is supposed to have been pleuro-pneumonia, and it is stated that 100 head of cattle had died within 24 days in two villages named Ghogah and Oode, a few miles on either side of the Gujranwalla and Shekhoo-poor Road. In another report received

HISTORICAL SKETCH. in September *bhooknee* (diarrhoea) was said to be spreading from the bar upwards in the Nowshera Pergunnah, and it was added that in Hafizabad and on the bar pleuro-pneumonia was still causing loss. Cattle disease appeared in May in three pergunnahs of the Ferozepore District, and in two months 4,664 cattle are reported to have died. From the symptoms described by the Civil Surgeon, the disease appears to have been rinderpest.

MOOLTAN DIVISION—(*Districts—Mooltan, Jhung, Googaira, and Moozuffergurh*).

The history of murrain in this Division repeats that of the last almost exactly: rinderpest from time immemorial, a well-known and frequently-prevalent disease; *bhooknee* severely raging in 1869 on the bar, and both rinderpest, pleuro-pneumonia, and black quarter (*suth*) prevailing in 1870. Many oral records of past outbreaks during the spent portion of this century were noted by the Commission in conversations with the people in these villages, particularly the years 1820, 1830, 1840, and 1862; and rinderpest was seen both in the districts of Montgomery and Jhung, and its identity verified by *post-mortem* examination. The mortality from *bhooknee* had been great. In the Chinote Tehseel 14,795 head of cattle were lost in 1869, valued at Rs. 3,51,215. This disease was generally said not to have occurred before the year 1867, but this is doubtful. Detailed evidence regarding diseases of cattle was recorded in both the Jhung and Montgomery Districts, and much accurate and interesting information regarding the five common forms—rinderpest, foot and mouth disease, *bhooknee*, pleuro-pneumonia, and black quarter—will be found in the sequel.

RAWULPINDEE DIVISION—(*Districts—Rawulpindee, Jhelum, Goozerat, and Shahpore*).

Information from this Division is scanty. A report received from Murree in August 1870 shows that rinderpest and foot and mouth disease are known in the district, but no facts regarding prevalence are given. In Rawulpindee rinderpest broke out among the Commissariat cattle in December. The symptoms and *post-mortem* appearances were carefully studied by Veterinary Surgeon Moir.

No information has been obtained from the *Derajat* and *Peshawar Divisions*; but in the face of the evidence above summarised, it cannot be concluded that murrain is absent from these parts.

Cattle disease was also said to have prevailed in Usufzai in 1869, but no details were obtained from the Punjab Government.

DELHI.

DELHI DIVISION.

J. H. B. Hallen, Esq. From J. H. B. HALLEN, Esq., President, Cattle Plague Commission, to the Secretary to the Government of India, Home Dept.,—(No. 312, dated 24th May 1870).

I have the honor to state, for the information of His Excellency the Governor General in Council, that, on being given to understand from several sources that cattle murrain had been for some time past prevailing in certain portions of the Punjab, I applied to the Military Secretary to the Viceroy for permission to visit that province, with a view to extend the Commission's operations thither. On the 16th instant I was favored with the telegram, copy of which is given in the margin for easy reference, authorizing the Commission to proceed to the Punjab.

"If you think necessary, and have authentic information that disease is raging, you may go to Punjab."

2. On receipt of this order, I at once telegraphed to the Commissioners of the Lahore and Mooltan Divisions, asking for information as to the prevalence of murrain in any part of their respective divisions.

3. On the following day I received a telegram from the Commissioner of Lahore, informing me that disease had prevailed in Gujranwalla, but that it had disappeared in March last. No reply, however, was received from Mooltan; and on the 18th current I forwarded another telegram, by way of a reminder, to the Commissioner, soliciting a reply to my former message. The Commission was at Agra up to the 21st instant, having completed the inquiry there; and not receiving any answer from Mooltan, proceeded to Futtchpoor, in the North-Western Provinces, where murrain has been prevailing for some time past.

4. Yesterday I received a communication from the Officiating Commissioner and Superintendent of the Lahore Division, forwarding a report from the Deputy Commissioner of Gujranwalla, bearing date the 5th instant, wherein it is stated that 46,525 head of cattle, exclusive of sheep and goats, had died of murrain, and that the loss to the owners on this account has been about 9½ lakhs of rupees. I beg leave to submit a copy of this paper for the information of the Government, and solicit the favor of your obtaining the orders of His Excellency in Council for placing the province of the Punjab within the sphere of inquiry of the Cattle Plague Commission, as in that case they can have access to all the records of past murrains, and have every opportunity of ascertaining the nature of the murrain that has recently been raging in Gujranwalla, and probably in other districts in the Punjab.

Lieut. Col. H. P. Babbage. From LIEUT.-COLONEL H. P. BABBAGE, Offg. Depy. Commr., Gujranwalla, to the Officiating Commissioner and Superintendent, Lahore Division,—(No. 140, dated 5th May 1870).

I have the honor to state, in answer to your No. 121-1116 of the 3rd instant, and in continuation of my No. 65 of 9th March 1870, reporting that the cattle murrain had again appeared this year, that the murrain does not seem to have prevailed much this spring. It is said that no animal once attacked recovers; they languish sometimes for months, but surely die; and it may be that the spring season has aggravated the symptoms of sickly animals, and so led to the idea of the murrain again reviving; but, any way, I cannot find that any number of sound cattle, worth speaking of, have this year been attacked.

2. I have delayed this in order to add such statistics as I can gather of the loss caused by the murrain.

3. The putwarries were directed to inquire from the villages of their respective circles the number of cattle lost, without attempting any detailed enumeration and worrying the villagers by enumerating the remaining cattle; the loss is, perhaps, somewhat exaggerated, but may be taken as an approximation.

4. The result is that in the Hafizabad Tehseel cattle, as under, are reported to have died:—

No.	Rs.
4,236 buffaloes, male (<i>sunda</i>), value at Rs. 30 each	... 1,27,080
6,751 " female (<i>muji</i>) " " 40 "	... 2,70,040
4,221 bullocks " " 20 "	... 84,420
31,317 cows " " 15 "	... 4,69,758
Total ... 46,525	Total ... 9,51,298

5. This does not include goats and sheep, but includes the loss during the whole twelve months up to the end of this spring, March 1870.

6. Taking the low average value I have assumed for each sort, the loss to the owners is about 9½ lakhs of rupees, with a corresponding loss to the class who, like our rukh con-

tractors, gain their living by grazing. Among these the rukh contractors are the large percentage; for, with the diminished number of cattle, the villagers have found their own herd sufficient, and had no surplus cattle to send to the rukhs as usual; and thus in 22 rukhs not a single head of cattle is reported to have grazed, and in all the others a reduced number.

N. B.—I would refer you to former correspondence concerning cattle murrain, especially to the report of Dr. Quinell, the former Civil Surgeon, which was forwarded with my No. 436 of 20th October 1869.

From E. C. BAYLEY, Esq., Secretary to the Government of India, Home Dept., to the President, E. C. Bayley, Esq., Cattle Plague Commission,—(No. 2891, dated 10th June 1870).

I am directed to acknowledge the receipt of your letter dated the 24th ultimo, and in reply to state that, under the circumstances therein reported, the Governor General in Council is pleased to authorize the Cattle Plague Commission visiting the Punjab, in order to prosecute their inquiries into the causes of the murrain which prevailed in that province.

2. The necessary orders have been issued to the Government of the Punjab to afford the Commission every facility and assistance that may be required.

Delhi, 24th July 1870.

The Commission inspected a bullock this day about eight years old, property of Mr. James Case of rinderpest. Skinner of Delhi. The symptoms were those of rinderpest—loss of appetite, thirst, discharge from the eyes, nose, and mouth, ears drooping, animal dull and listless, congestion and excoriations of the gums; the bullock has been ill for four days; purging has not yet commenced. At Delhi the disease has the name of *rorah*.

From J. H. OLIVER, Esq., c. s. i., Deputy Commissioner, Goorgaon, to the Cattle Plague Commission, Lahore,—(No. 967, dated 12th December 1870).

Reports that a disease has broken out amongst the cattle of some of the villages in this district, from which several animals have died, particularly in the town of Bohora. The symptoms are,—looseness of the bowels and running from the mouth; after a day or two violent purging; entire refusal to eat; death ensuing within a week from illness.

Kurnaul, 6th September 1870.

Two Lumberdars state that *mān* and *rorah* are two diseases which attack the cattle of the city of Kurnaul and its vicinity.

Rorah is always more or less present, but seldom kills an animal; and when it does, *Rorah*—foot and maggots are generally deposited in the mouth or feet.

The symptoms are accurately described by them; purging is never observed: about a month ago *mān* attacked the cattle.

Symptoms,—sore and rotten mouth, off feed, great thirst; after three days purging sets in; the faces are green water-like, are ejected to a great distance, and are very offensive. After a day or two yellow-like matter and blood is in most cases passed with the dung.

Animals die in 6 to 10 days; very few recover; about 400 or 500 have died. Now disease is gradually disappearing; all cattle are now able to go about and graze; all cattle of the town and vicinity graze together and are not sent to a distance to graze.

Mān may attack an animal a second time. Do not think the disease to be contagious; have seen several attacks of the disease. Outbreak occurs every 2nd, 3rd, and 4th year, but now and then an odd case appears by itself. The disease has been known for years—in the time of their grandfathers. Not a new disease.

Buffaloes have suffered and died more than cattle, and our loss has therefore been great. Colonel Parrott informs that he lost a cow last year from a severe form of *rorah*, and another cow attacked recovered.

No epizootic has lately occurred among the stud cattle. Colonel Parrott and Mr. Kettlewell, v. s., joined this Stud three years ago.

The number of cattle in Kurnaul is about 700. When *mān* is severe, nearly every beast attacked dies; when mild, 5 out of 20 die.

DELHI.
Lieut. Col. H. P.
Babbage.

GOORGAON.
J. H. Oliver, Esq.

KURNAUL.

Rorah—foot and mouth disease.

Symptoms.
Mān—rinderpest.

Duration of attack.

Second attack. Contagiousness.
Occurs every 2nd, 3rd, or 4th year.
History.

More buffaloes than other cattle have died.
A death from *rorah*.

No epizootic among the stud cattle.

Number of cattle in Kurnaul.
Mortality from *mān*.

HISSAR DIVISION.

HISSAR.

I. Dawson, Esq.

From H. DAWSON, Esq., Veterinary Surgeon, to the Superintendent of Studs, Kurnaul,—
(dated 23rd April 1864).

I have the honor to forward for your information my report on the late epidemic at Hissar.

Symptoms.

The animal attacked separates itself from the rest of the herd, has a dejected look, profuse discharge of saliva from the mouth, and great enlargement of the glands of the head, neck, &c.; very often one, or perhaps two of the legs begin to swell; in this state the animal is very irritable and rushes at anybody attempting to approach it. I attribute this irritability to the suffering caused by the distressing nature of the complaint, and the animal feeling suffocated from the violent inflammation of the larynx. Excessive weakness soon shows itself, and the animal falls. On examination, the pulse is found to be hard and wiry, breathing accelerated, and the animal dies in 2 or 3 hours; in some cases death did not take place for 6 hours.

In many cases there was an absence of the throat symptoms; the animal showed symptoms of pleuro-pneumonia; in all, however, there were deposits in the cellular tissues.

Treatment.

From the extreme rapidity with which the cattle died on being attacked, it was impossible for medicine to operate properly. Tracheotomy was performed in the throat cases, but with no effect, and liquor ammoniac used as a counter-irritant from the rapidity with which it raises a blister; the debility was treated with the usual stimulants, but without avail, the animal always dying as if no remedial measures had been tried.

Post-mortem appearances.—These, like the symptoms described, vary in all instances; where the throat was involved the larynx was always highly inflamed; in some ulcerated, the tracheal tubes filled with a thick frothy mucus, and the lungs slightly congested; but in cases that appeared similar to pleuro-pneumonia the lungs were completely hepatized. On opening the different swellings about the body, they were found to contain bloody serum. In other respects the different organs, such as the stomach, liver, kidneys, spleen, &c., were healthy.

General remarks.—Finding that medical treatment was powerless in arresting this disease, I resolved to try the effect of sanitary measures.

With this view, I suggested to Mr. Taylor that the different herds should be scattered about the district as much as possible, and never allowed to graze any considerable time in one place. This plan, I am glad to say, succeeded; the mortality became much lessened, the daily report showing 8 or 10 fresh cases, instead of 40 or 50 as formerly. By the time I left Hissar the disease had completely ceased. This epidemic seems to have prevailed throughout.

Hurrianah.

In the *leading* symptoms the disease called hurrianah bore a strong resemblance to the distemper known in England and to "inflamed lungs," the respiratory organs being chiefly involved in all the cases I saw at Hissar. The promptest treatment, however, failed to save a single animal.

The *cause* of the complaint it is very difficult to determine. I should fancy the cold nights and hot days may have been a predisposing cause, especially as the cattle attacked were mostly young stock, and unable to withstand the sudden changes of temperature.

In conclusion, I would beg to suggest that in case of another epidemic appearing amongst the cattle at Hissar, the best and safest plan would be to *at once* destroy the infected, and have the healthy cattle driven (in small herds) to fresh grazing ground: this would be an additional expense (for the time) to Government, as more herdsmen would be required; but the saving in cattle would amply compensate for the additional outlay.

Report on the symptoms of the disease which has lately appeared among the cattle of the Hissar Stud, and of the post-mortem appearances observed,—by Veterinary Surgeon H. DAWSON.

Mr. Taylor, the Officer in charge of the Cattle Stud at Hissar, requested me to examine cattle infected with the epidemic disease, and to make *post-mortem* examinations for the information of the Stud authorities.

The cattle affected were yearlings or 2 years old chiefly; they were apparently, up to the time of seizure, in good health. They were generally taken ill during the night, and in the morning were observed to be suffering from depression and uneasiness, but not pain. The functions seemed arrested—rumination, defecation, and micturition.

External appearances.

The breathing was hurried, very much so in some cases; glassy fluid ran from mouth and nostrils; eyes much injected. Presently the debility increased, and all the symptoms became aggravated. Emphysematous patches apparent on various parts of the body, chiefly on the loins and shoulders.

The abdomen became much distended and the animal died within 24 hours of the first appearance of sickness. There was not any fever, tetanus, or manifestation of pain throughout.

Post-mortem appearances.—The bodies were swollen, and exhibited one or two emphysematous patches. On removing the skin, the portions of cellular tissue answering the emphysema

HISSAR.

H. Dawson, Esq.
Subcutaneous appearances.
Thorax.

were found to be *black*, and in the early stage of gangrene, the emphysema being the result of decomposition.

The thorax was in one case filled with clotted blood, which was very black and apparently imperfectly organized.

The cavities of the heart were filled with clots of dark blood, all these clots being particularly decomposed and filled with air bubbles, though death had taken place but 2 or 3 hours before.

Both lungs would be much congested, though not in a state of acute inflammation; this state resembled that of the subcutaneous cellular tissue, and was, I imagine, the early stage of gangrene.

The rumen was immensely full of undigested fermented grass and the gaseous products of decomposition, which on escaping by the puncture of the knife, were observed to be most offensive. The small intestines contained in places some faecal matter, but their mucous membranes were softened and disintegrated, and in most places covered with muco-purulent matters which in some cases quite filled the canal. The large intestines exhibited the same conditions, though the mucous membranes were not in so advanced a state of disease as that of the small intestines.

Spleen, liver, and kidneys were healthy, as well as all other stomachs, but the rumen, larynx, trachea, and oesophagus were healthy; but in one instance the cellular tissue round the larynx was in the state of mortification mentioned above.

The only microscopical appearances of note were, that the mucous membrane of the small intestines presented no trace of its natural appearance, being nothing but *pus*, and the debris of disintegrated mucous cells.

The blood corpuscles were healthy apparently. I am of opinion that the disease was one of *blood poisoning*, from absorption of the gaseous products of the fermentation of the vegetable undigested contents of the rumen. That there was blood poisoning, I think is certified by the state of the mucous membranes of the intestines and the gangrenous state of the cellular tissues of the body and of the lungs in some cases.

The walls of the rumen were apparently paralyzed by distension and quite unable to expel their contents, which contents remained fermenting, and by that fermentation increasing the distension, until the blood poisoning, and consequently death were the result.

The treatment adopted was the administration of purgatives, which in every instance (that I saw) failed of their effects but one, and in that case there was recovery.

Stimulants were given to excite the rumen to action, but they failed. In five cases the rumen was opened, at the suggestion of Mr. Taylor, by me, by incision along the flank and the contents removed, and in two of these recovery was the result; * in the remaining three, the cattle were in so advanced a stage of the disease that they were unable to stand; they all died shortly after the operation, not from that, but from the effects of the malady. † Mr. Taylor stopped the disease by putting the cattle on a very limited supply of grass, only permitting them half an hour grazing per diem.

From H. DAWSON, Esq., Veterinary Surgeon, Home Stud, Kurnaul, to the Secretary to Government, Punjab,—(dated June 1865).

I have the honor to forward, for the information of His Honor the Lieutenant Governor of the Punjab, a few rules on cattle murrain. I have endeavoured in the symptoms, treatment, &c., to give plain and easily understood directions, avoiding technicalities as much as possible.

2. On referring to my former reports on murrain, copies of which have already been forwarded to you, you will be good enough to observe that I do not place much dependence on medical treatment, the extreme virulence of the disease giving so little time for medicines to have their proper effect; however, I am in hopes that by carrying out the general treatment laid down by me a great many cattle may be saved; but everything will depend on the zemindars applying the remedies without the least delay. I think, however, that the zemindars would find great benefit from the plan advocated by me of *moving the cattle about the country*, murrain being very contagious: too much importance cannot be attached to this advice, as I have invariably found that the cattle so treated preserved their health in a greater degree than those allowed to remain in the locality where murrain first made its appearance.

3. I am afraid that the rules forwarded will, on perusal, appear rather meagre in detail; but had I entered minutely into all the symptoms, &c., of the various phases of the disease, it would, in my opinion, have done away with the object intended, and only tended to confuse the non-professional reader.

HISSAR.

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4. The few medicines required can (with the exception of Epsom salts) be easily obtained by the natives. In case of a fresh outbreak of murrain, Epsom salts would, I imagine be difficult to procure, except through the Government. This medicine is cheap, but large quantities would be required where many animals are attacked. I would therefore suggest that a quantity (when required) should be stored in the district dispensaries and issued to the zemindars on payment for the same.

6. In conclusion, I beg to state that, should I again be called upon to attend Government cattle with murrain, I shall certainly try the experiment of pegging the healthy stock as a preventive, as I am convinced it would be of service in counteracting the tendency towards congestion of the lungs, and thereby be the means of saving many cattle that were attacked with this phase of murrain. Should I prove successful, or discover any thing further relative to the treatment of this disease, I shall be happy to forward you a report on the same.

PUNJAB.

T. H. Thornton, Esq.

Circular No. 4—362, dated 15th February, 1866, from T. H. THORNTON, Esq., Secretary to Government, Punjab, to all Commissioners in the Punjab.

Symptoms.

The following simple rules regarding the symptoms of cattle murrain, and the precautions and treatment which should be adopted on its occurrence, have been drawn up by Mr. Veterinary Surgeon Dawson, of the Stud Department, who has had considerable experience in the treatment of the disease in the Government Cattle Farm at Hissar.

The rules are circulated herewith for general information.

Copies of a vernacular translation accompany for circulation amongst the native community. Care has been taken to make the translation as simple and intelligible as possible, but District Officers should see that the rules are well understood; and, on the appearance of the disease, they should use every endeavour to induce the adoption of the measures recommended.

KURNAUL.

H. Dawson, Esq.

From H. DAWSON, Esq., Veterinary Surgeon, Home Stud, Kurnaul, to the Secretary to Government, Punjab,—(dated June 1865.)

CATTLE MURRAIN.

Symptoms.

The first symptom particularly observed is the dulness of the animal attacked, separating itself from the herd, and standing with head depressed, and a quantity of thin saliva running from the mouth. On going near the animal it very often becomes violently excited and rushes at the nearest person. There is great and rapid loss of strength, the animal soon becoming unable to move; in some cases the belly is greatly distended, and swellings appear on the shoulders and quarters. In all cases there is great and often obstinate constipation; rumination ceases; and, unless relief is obtained, the animal rapidly sinks, and dies in a few hours.

Treatment.

The first thing to be done is to remove the sick cattle at once from the herd, and place them in a clean, airy shed. If the belly is much distended, an opening should be made in the rumen (or first stomach) with a lancet, or common knife, to allow of the escape of gas. The wound should be kept open by the introduction of a trocar. A trocar can be made of tin. It is a tube about four or five inches long, with a shield about two inches from the top, to prevent it slipping into the stomach. The operation of puncturing is very simple. The wound is made on the left side, midway between the haunch or hip-bone and the last rib, and a span below the spine. The tube should be placed in the wound, and, after the gas has escaped, the wound should be closed by placing a piece of coarse cloth smeared with tar over it. Should no gas escape, the contents of the stomach should be removed. This can be done by enlarging the wound, and introducing the hand. In all cases a purgative should be given, consisting 1 lb. of Epsom salts, or 1 lb. Glauber salts, or 1 pint of common or linseed oil, repeated in an hour until the bowels are opened. Where there is swelling of the shoulders or quarters, and the skin is loose or wrinkled, and crackles on pressure, the swellings should be slit up and the wounds dressed with strong salt and water, or tar and salt; the swellings about the joints should be rubbed with mustard and spirits of turpentine. If the throat is affected, and much pain and distress is evinced, a blister should at once be applied, made from the native blistering fly. Should the animal recover, it will require plenty of good generous food.

General remarks.—When murrain first appears, the healthy cattle should at once be driven to some distance from the place where it first broke out, and the grazing changed as often as possible. At night the herd should be driven to as high and dry a piece of land as can be found, and on no account should the cattle return to the village until the disease has disappeared entirely. The sick cattle should be treated at once: no time should be lost, as the disease soon proves fatal; and the only chance of saving the animal is the promptest treatment.

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The cattle should not be allowed to graze more than a day or two in one place; in fact the more they are moved about, the greater will be the chance of keeping them free from this disease. Murrain being very contagious, the zemindars should keep a strict watch over their herds, and remove at once any animal showing signs of this disease.

Note.—For young stock (yearlings, &c.) half the quantity of Epsom salts, &c., should be given.

The operation of "pegging," as practised in the agricultural districts of England, would be attended with beneficial results in this disease. In all *post-mortem* examinations made by me during the prevalence of murrain, I have in nearly every case found that the lungs were involved. "Pegging" acts as a counter-irritant by the action of hellebore-root introduced into a wound made in the dewlap; and, therefore, my plan would be to operate on all the cattle immediately that murrain appears amongst them. I do not imagine that this would prove a *specific*, but I believe, from the great irritation caused by the hellebore, it would certainly render the animals less liable to the complaint, especially if the cattle attacked showed symptoms (as they often do) of inflamed lungs. In England "pegging" is largely practised by cattle proprietors, particularly on their young stock, to prevent pleuro-pneumonia.

The operation of pegging is very simple. A longitudinal incision is made low down on the dewlap, and into that is inserted a small piece of black hellebore-root, tied in the centre with a piece of string or twine having two ends; the root is made to lie across the wound, as it were, so as to prevent it falling out. The two ends of the string hang from the wound, and are required to remove the hellebore after it has effected its purpose. Any native could learn this operation in a few minutes. The irritation caused by the hellebore is very great, and the dewlap swells extensively. After a day or two suppuration ensues, the "peg" is removed, and the wound kept clean and allowed to heal.

Evidence recorded at Hissar, 22nd July 1870.

HISSAR.

PEMA GOWALA, herdsman, about 68 years old, states,—I have served Government at the Cattle Stud in Hissar for 52 years, and have seen the stud cattle attacked with several diseases, viz.—

1st. Goli.—Sudden swelling of one hind-quarter, which extends over the loins, back, and shoulders. When the swelling is pressed, it makes a cracking noise like pressing salt. The animal is very lame on the leg attacked. The respiration becomes very much accelerated, and the animal shows great distress, and is evidently in great pain. We have given medicine, but it is of no use, and have also fired and cut the swelling, but without effect. When the swelling is cut, the blood is all black and thick. When this disease breaks out among the stock the cattle are moved from place to place, with a view of giving them exercise and preventing the lameness coming on, and by moving them about they have not time to eat too much. When they have been driven over ground where the pasturage is scanty, there is less chance of the disease continuing amongst them. This disease does not occur every year, but when the grass is unusually rich and plentiful. If 20 animals are attacked by this disease they all die, and treatment is of no avail. The only way to prevent the spread of the disease is to keep the yet healthy animals moving about and give them limited pasture. I was not told by any one of the nature, symptoms, treatment, and means for the prevention of this disease. All I have said is the result of my own practical experience.

2nd. Sirruk.—First purging and intense thirst and heavy breathing. The stools have an offensive smell, but the mouth remains sweet, except in severe cases, when it becomes sore and stinking. The animals die in a few days if the purging is not stopped. I give the following medicine:—

Opium $\frac{1}{2}$ tola, black pepper 3 pice worth, butter (*ad lib.*) This medicine is given 3 or 4 times (one dose a day), and the animal, as a rule, recovers in 5 or 6 days. No sirruk prevails just now at all; when it appears, it generally comes in January and February.

3rd. Rorah (or khoora-phutta).—No animals die from this disease. We make a mixture of urud flower and til oil, and apply it as a mixture to the feet and rub the mouth with it.

4th. Tilli.—Liver and spleen disease, in which both become much enlarged.

5th. Jaria.—Enlargement of the glands of the throat; firing is the remedy.

The witness was questioned most closely on the subject of rinderpest, and at first did not seem acquainted with the symptoms of the disease. With the symptoms of foot and mouth disease, he is well acquainted, and describes them under the names of *rorah* and *chupka* (from the mouth trembling) and *sitlah bhawani*. He never heard the name of *redun* or *goti* or *matak* (among cattle) or *bussunto*. On further careful examination, and on having the symptoms of rinderpest minutely described to him, the witness stated that the symptoms described to him were those of *sirruk*, which disease appears every 2nd, 3rd, or 4th year, rather in a mild or severe form; but in the most severe attacks he estimates the loss from 19 to 20 per cent. of those attacked.

Khoora-phutta
(*rorah*), foot and
mouth disease.
Treatment.
Tilli.
Jaria.

Hissar.

The witness evidently classifies diarrhoea, dysentery, and rinderpest under the one head *sirruk*. This will explain his statement above, that, as a rule, cattle recover from *sirruk* in 5 or 6 days.

Pheepree (pleuro-pneumonia).

6.—*Pheepree* is another disease to which the stud cattle are liable. When an animal dies from this disease, the lungs are found to be heavy and full of cavities filled with matter; but of 20 attacked with *pheepree* from 5 to 10 die. We give English medicine for this disease.

[N. B.—The Commission saw a case of *pheepree*, and found it to be *pleuro-pneumonia*.]

HANSARI, Mussulman Salootree, states,—I have been in the Government Stud since the year 1840, with the exception of 3 years of the time.

Names of diseases.

The names of cattle diseases are *goli*, *ghooldia*, *tilli* (spleen), *sirruk*, *pheepree*, *peelia*, *rorah djarra* (grass worms in spittle), *bilooa* (worms in water), *garri*, *bai*, *hoobuk* or *gooldun* (immense swelling of throat), *chupka* and *bachka* (swelling of mouth only, no purging).

Goli (quarter-ill).

1. *Goli*.—This name is given to it, as God strikes the part as it were with a bullet and the part swells up.

Symptoms.

The swelling generally is on the hind quarters, but any other part of the body may be first attacked. If it happens to be in the neighbourhood of the heart, the animal at once dies; but if on the hind quarters, it may linger for 4 or 5 hours. It occurs at any time of the year, and attacks cattle of all ages; but those in the very best condition are the ones attacked most; treatment of any kind is of no avail to those attacked. The general Veterinary Surgeon and the Native Haqueems have all tried their remedies in vain. All that can be done is to prevent the spread of the disease among those that are well, by removing the herd to scanty pasturage, keeping them moving about from place to place and allowing them no rest, but giving them much exercise and little food, so as to bring them down in condition.

No remedy.

Preventive treatment.

Pheepree (pleuro-pneumonia).

Symptoms.

Three kinds.

2. *Pheepree*.—Coughing and blowing. The noise of the blowing can be heard some distance off.

There are three kinds:—

1st.—When the lungs become black;

2nd.—When the lungs adhere to the walls of the chest; and

3rd.—When the lungs are found to be hard and heavy, and if cut into, stone or marble-like in appearance.

Mortality.

The rate of mortality is about 75 per cent. of those attacked. This disease is always to some extent present among the cattle, but breaks out with great violence every fourth or fifth year.

Seasons of.

It breaks out generally in the hot weather. During the time of my service, most cattle have died from *goli* and *sirruk* (no medicines are found to be of avail in *sirruk*).

Sirruk.

Symptoms.

The symptoms described by the witness are precisely those of rinderpest, viz., purging, soreness of mouth, most offensive breath and stools, death in from 5 to 12 days. On opening the body, the fourth stomach is found to be rotten and covered with yellow saffron-like stuff. The small intestines and cæcum (*bari aut*) are rotten. The mortality when severest is upwards of 80 per cent. This disease comes every 4th or 5th year. Our cattle feed on pastures by themselves, but it sometimes happens that a cow or bullock of a neighbouring village may come amongst our herds. This disease occurs also among the village cattle. We know the disease to be contagious, and both we and the villagers carefully separate affected cattle. This disease has not existed here for three years, and there is no case of it at present. I have known the disease of my own knowledge for the last 40 years, and my elder brother, who was also a cow-doctor (Salootree), knew of it 20 years before I became acquainted with it.

Hides.

Cattle poisoning.

All hides of dead animals are taken by the Stud chainars and put in the godown, and afterwards sold. Cattle poisoning is unknown.

Rorah foot and mouth disease).

Symptoms.

Mortality.

Bilooa.

Cause.

Symptoms.

Treatment.

The symptoms of *rorah* (foot and mouth disease) are, increased spittle, sore feet and mouth. When very weak cattle are attacked, 5 per cent. may die, but healthy cattle don't die. When the mouth only is sore, it is called *chupka* or *bachka*. When both mouth and feet are affected, it is called *rorah*. *Bilooa* is produced by drinking worms in water.

Symptoms: loss of power of limbs; animals lie down; not able to rise for two or three days; skin becomes dark and light (hide bound). Treatment: ghee and molasses. Seldom any mortality connected with this disease.

Hubuk or *gooldun*.

Symptoms.

Treatment.

Hubuk (or *gooldun*). Symptoms: an immense swelling of the throat, external and internal. Treatment: sometimes open with a knife and let out bloody watery matter. If the swelling is not very great, apply firing and blisters.

Gooldia.

Symptoms.

Treatment.

Gooldia, an affection of the throat, which becomes swollen from the presence of yellow water and the patient breathes with great difficulty; the rattling noise in breathing can be heard many yards off. A yellow water is found in the frontal sinuses. Treatment: blisters and

Hissar.

firing. The Veterinary Surgeons have opened the windpipe without avail: 80 per cent. died. I have seen the disease twice in 40 years. It has been my habit to make *post-mortem* examinations of all cattle which have died in the Stud since I became Salootree.

[N. B.—The evidence of this witness is most valuable.]

DUNGA DAROGAH, has been in the Stud since 1838, and has seen from his childhood cattle affected with the diseases *sirruk*, *pheepree*, and *rorah*. His father also knew these diseases.

SEEHAM PALI, has served at the Hissar Stud for 28 years, and has always been acquainted with *sirruk*, *pheepree*, and *rorah*.

From MAJOR J. ROBINSON, in charge Cattle Farm, Hissar, to the President, Cattle Plague Commission, Meerut,—(No. 153, dated the 9th August 1870).

In reply to his No. 123 P, dated 28th July 1870, has the honor to return Form No. A duly filled in.

FORM No. A.

Showing number of cattle and number of deaths from different diseases during the last ten years in Hissar Cattle Farm.

Year.	Total number of cattle.	NUMBER OF DEATHS FROM DISEASE.															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1860	11,362	500	125	62	200	100	160	150	301	400	62	356	2,472	9	2,472	200	875
1861	8,674	125	62	200	100	160	150	301	400	62	356	2,472	9	2,472	200	875	875
1862	8,882	62	200	100	160	150	301	400	62	356	2,472	9	2,472	200	875	875	875
1863	9,961	200	805	1,000	301	400	62	356	2,472	9	2,472	200	875	875	875	875	875
1864	11,175	805	1,000	301	400	62	356	2,472	9	2,472	200	875	875	875	875	875	875
1865	9,723	1,000	301	400	62	356	2,472	9	2,472	200	875	875	875	875	875	875	875
1866	9,959	300	64	219	40	30	16	100	38	55	38	44	25	10	100	100	100
1867	10,135	40	30	16	100	38	55	38	44	25	10	100	100	100	100	100	100
1868	9,468	30	16	100	38	55	38	44	25	10	100	100	100	100	100	100	100
1869	9,968	64	219	40	30	16	100	38	55	38	44	25	10	100	100	100	100

UMBALLA DIVISION.

UMBALLA. From LIEUTENANT COLONEL W. R. ELLIOTT, Deputy Commissioner, Loodianah, to the Secretary
Lt. Col. W. R. Elliott. to Financial Commissioner, Punjab,—(No. 559, dated 26th May 1870).

With reference to your docket No. 2533, dated 20th ultimo, to the address of Commissioner of the Umballa Division, I have the honor to state that General Taylor has instructed me to submit the required report on the prevalence of cattle disease in this district direct to you.

Distribution of disease. 2. The cattle disease known as *mokh* first showed itself in the village named Agwar Khwaja Bajoo, in the Jugraon Tehseel, in March 1870, whence it eventually spread and became epidemic in 42 villages of the same Tehseel and several villages of the adjoining Tehseel of Loodianah.

3. It still prevails in 24 villages of the Jugraon Tehseel.

Mortality. 4. The disease is said to have carried off a great number of cattle in the Jugraon Tehseel, viz., 851 animals. The deaths of cattle in the Loodianah Tehseel from this disease are declared to be now fast abating there.

5. Two hundred and twenty-five head of cattle are reported to have died from this disease in the Sumrala Tehseel, where it is now also fast disappearing.

6. It is not known how the disease originated in the Jugraon Tehseel, but it is distinctly declared to have broken out in the Sumrala Tehseel, in consequence of some diseased cattle having been imported from Hissar.

Contagiousness. 7. The disease is universally pronounced to be both contagious and infectious, and from the first the people were enjoined to separate diseased from healthy cattle; they seem perfectly conscious of the need to do so.

Varieties of *mokh*. 8. There are said to be three distinct kinds of *mokh* or cattle disease. The most fatal is called *newabee*; it appears to be a sort of dysentery. Symptoms,—violent and incessant purging and passing blood in the evacuations. The next worst form of the disease is called *moonhkee*, where the mouth gets blistered, throat swells, and swallowing food becomes next to impossible; the third and lightest form of the disease is called *roah*. The symptoms are,—swelling of the feet, which is followed by the appearance of worms inside it, commencing just above the hoof.

9. The two least severe forms of the disease show themselves at intervals of 2 or 3 years, and at no particular season; but the most fatal description of the disease called *newabee* has not been known in the Loodianah District for 12 or 13 years, and very rarely shows itself; when it appears, it is at no particular season.

10. The disease generally proves fatal within a week; and should an animal be ill with it for a longer period, experience proves that its recovery is nearly certain.

Treatment. 11. Where the foot is attacked, the zemindars make the diseased animal walk in sand, and wash and soak the foot in the water used by dyers in coloring skins; the *keekur* bark steeped in this water is believed to benefit the diseased feet exceedingly.

12. The zemindars, as soon as an animal is attacked with this disease, feed it either on boiled *mokh*, gram mixed with *goor*, or milk warmed and *goor* dissolved in the same, or *mash* ground and boiled, or chuppatees made of *mash* flour and then smeared with oil.

Cause. 13. It is not known what creates the disease. It appears and disappears at intervals of years, and, generally speaking, without any assignable reason.

No specific remedy is known to the people for the cure of this disease.

Kakoowara village, about 4 miles north-west of Loodianah,—visited August 5th, 1870.

Mannoon on *vaba* SHEIK NADAH, aged about 45 years, states:—The disease which has attacked the cattle in this village is locally known as *mannoon* or *vaba*. This disease has never been in this village before, and we first heard of it four months ago at a place called Burriwall, about 8 miles off on the southern side of Loodianah. We never heard of this disease from our fathers, but we have often seen *rorah* (foot and mouth disease).

Symptoms. The symptoms of *mannoon* are,—total loss of appetite, and dark-green-coloured purging commencing about the 2nd or 3rd day; no blood or mucus has been noticed in the stools, but there is great discharge from the mouth and eyes. [They say now from the nose, while two cases inspected by the Commission showed a discharge from the nose.] I have never examined the mouths of affected cattle to see whether they have sores there. The first animal attacked in the village was a buffalo belonging to Amin Khan; this was attacked a month ago. This buffalo went out to graze with all the other cattle in the village. The cattle of our village sometimes mix with the cattle of other villages. Cattle dealers frequently pass along the road through the village, but no cattle have been purchased by any of the villagers for six months.

Source and mode of spread.

The road from the Kurreana ferry to Loodianah passes through this village. The last time the cattle dealers passed through the village (about two months ago), the cattle passed through the village without stopping.

The symptoms of *rorah* (or foot and mouth disease) are,—swelling of the feet and mouth, or sometimes one of these symptoms only. The animals attacked with foot and mouth disease never die, and generally recover in 10 to 12 days. The treatment resorted to for *rorah* is, keeping the mouth clean with water and washing the feet with a solution of bark. Since the disease *mannoon* broke out in this village, seven animals (two buffaloes and five cows) have been attacked, of which 5 have already died and 2 are now dying; none of the other cattle in the village have been ill at all.

[REMARKS.—The evidence given by the inhabitants of Kakoowara was stated in a most clear and positive manner. It is evident that foot and mouth disease has been known many years in this district. The disease *mannoon* has clearly never been seen by these villagers before the present attack. In describing the symptoms of *mannoon*, they stated the mouth did not become sore, and that no blood was passed with dung. It should be remembered that up to this time they have seen only a few cases of *mannoon*, so their knowledge of the disease was limited; but when shown that the mouths of the two cattle at present sick are sore and excoriated, and that the dung of one of them contains blood, they at once allow that they had never thought of looking into the mouths or examining the dung of the sick cattle.

The *post-mortem* appearances of a carcass examined has clearly proved *mannoon* to be rinderpest; but the *post-mortem* appearances on the whole are not so well marked,—that is to say, the disease has not so generally attacked the different parts of the body, as has been usually noticed in other *post-mortem* examinations made by the Commission. C. P. C.]

Information regarding cattle disease in the Loodianah district supplied by the Deputy Commissioner,—dated 15th September 1870.

One animal died in village Seettowal, Elaqua Noorpoor, of *gal ghutto*, after four days' illness. The symptoms were, watering of the eyes and mouth, and labored breathing.

Rorah and *mokh* broke out in the village Hurrion, Elaqua Machiwaras, on the 28th August; 22 cattle were attacked and only one died. The symptoms assigned indicate foot and mouth disease.

UMBALLA. From MAJOR J. S. TIGHE, Deputy Commissioner, Umballa, to the President, Cattle Plague Commission, Punjab,—(No. 756, dated 7th November 1870).

Major J. S. Tighe.

Has the honor to forward the accompanying return of deaths of cattle, presumed from epidemic disease, in Umballa, with reference to his No. 142, dated 10th August 1870.

The total number of cattle in the district is about 500,000 in 2,324 villages; there appears to have been during the year disease, more or less infectious, in 73 villages containing 30,868 head; of these 4,608 are reported to have been seized, or about 14 per cent.; of these seized 1,146 are reported to have died, or about 25 per cent.

Whenever a report of any epidemic is received, orders are always issued to endeavour to segregate the arrivals in the village, and to allow none to leave.

Of the difficulty in dealing with such cases, there is a prominent instance now in Umballa, the Government having during the last few weeks lost over thirty-three horses in the artillery from an epidemic, or equal to 15 per cent. of the strength present; value to the State not less than Rs. 25,000.

Return of Cattle Disease of an epizootic nature prevailing in the Umballa District.

1	2	3	4	5	6	7	8	9	10
Name of District, Talook, Mouzah, or Village.	Name of disease in Vernacular or English.	Date of outbreak of disease.	Number of cattle attacked.	Number of cattle which have died.	Number of cattle which have recovered.	Number of cattle still ill.	Number of cattle belonging to the village.	Whether the disease is supposed to be infectious or not.	Remarks by the Cattle Plague Commission.
UMBALLA.									
Shahpore	Rorā	August 1870	19	6	6	7	160	Infectious.	Monū is the name generally given in the Punjab to cases of rinderpest, and rorā to those of foot and mouth disease.
Ismailpore	Ditto	Ditto	15	7	8	...	170	"	The symptoms recorded of the diseases named are meagre, so an opinion as to the nature of the other diseases <i>seerh</i> , <i>sallwa</i> , <i>chupla</i> , <i>burra-dookh</i> , <i>gulyhotona</i> , and <i>shukam</i> , cannot be formed; but where the mortality noted is great, probably they were cases of rinderpest, and when slight, very likely foot and mouth disease.
Punjokhra	Ditto	Ditto	16	9	5	2	400	"	
Nuggul	Ditto	Ditto	20	8	9	3	500	"	
JUGADREE.									
Khanpore	Seerh	25th July 1870	40	2	27	11	562	"	The name <i>rorā</i> was also occasionally used, in the hearing of the Commission when in the Punjab, to describe rinderpest; so, doubtless, in this return it is in some instances likewise used.
Burrie	Ditto	Ditto	35	...	35	...	575	"	
Kanree	Ditto	Ditto	...	...	...	...	...	"	
Kochlow	Ditto	Ditto	27	...	27	...	345	"	The deductions from the table cannot therefore be otherwise than very general. They are as follows:—
Chundara	Ditto	Ditto	24	...	24	...	255	"	
Talakour	Ditto	14th August 1870	80	16	44	20	1,030	"	
Moradpore	Ditto	Ditto	7	2	5	...	125	"	Attacked per cent. of stock ... 15 Died per cent. of stock ... 37 Died per cent. of attacked ... 34
Ladana	Ditto	Ditto	10	3	6	1	400	"	
Sarun	Ditto	1st July 1870	500	...	450	50	750	"	
Furreedpore	Ditto	Ditto	95	5	...	90	249	"	The fact that cattle murrain was very prevalent and very fatal in the district among the latter half of 1870 is clearly indicated, and more clearly by the figures, imperfect as they appear to be, than by any description.
Chobootra	Sallwa	15th August 1870	6	6	...	...	125	"	
Munglee	Rorā	12th ditto	57	7	20	30	850	"	
ROOPUR.									
Khalupoor	Monū	1st July 1870	12	7	3	2	95	"	The fact that cattle murrain was very prevalent and very fatal in the district among the latter half of 1870 is clearly indicated, and more clearly by the figures, imperfect as they appear to be, than by any description.
Futtlupoor	Ditto	1st August 1870	35	11	23	1	200	"	
Burkonoo	Ditto	18th July	45	20	25	...	80	"	
Owend	Ditto	1st June 1870	149	82	41	26	552	"	The fact that cattle murrain was very prevalent and very fatal in the district among the latter half of 1870 is clearly indicated, and more clearly by the figures, imperfect as they appear to be, than by any description.
Ruttongurh	Ditto	1st July	77	42	20	15	300	"	
Mallote	Ditto	Ditto	60	15	25	20	250	"	

Afzalbad	Ditto	15th July	65	20	15	30	1,000	"	Unknown.
Dhola	Ditto	2½ months	90	55	15	20	250	"	
Khairce	Ditto	3 ditto	80	60	20	...	150	"	
Assurpore	Ditto	1 month	3	1	1	...	100	"	Infectious.
Sumana	Ditto	1½ ditto	40	15	25	...	300	"	
Khord	Monū	.....	...	...	...	...	...	"	
Bhubulpore	Monū	1 month	7	10	5	2	200	"	Not known.
Khurrur	Ditto	.....	...	...	...	...	...	"	
Muttour	Ditto	26th June	200	90	110	...	615	"	
Ditto	Rora	30th July	50	5	45	...	...	"	Infectious.
Sohana	Monū	1st June 1870	500	200	300	...	1,285	"	
Ditto	Rora	Ditto	20	...	20	...	...	"	
Chupioo	Monū	Unknown	200	100	50	...	...	"	Infectious.
Magree	Ditto	.....	...	...	...	...	...	"	
Jhalon	Chupla	1st June 1870	200	35	155	10	388	"	
Dhunas	Rora	From Sawun	20	7	9	4	250	"	Infectious.
Monlee	Ditto	August	6	2	2	2	1,500	"	
Purch	Ditto	About 2 months	6	...	6	...	175	"	
Gouhra	Ditto	Ditto	10	...	10	...	300	"	Infectious.
Magree	Ditto	.....	...	...	...	...	...	"	
Kursun	Ditto	Ditto	4	2	2	...	150	"	
Bhanoo	Ditto	About 1½ month	20	8	7	5	150	"	Infectious.
Suntpoora	Ditto	Ditto	50	20	10	20	150	"	
Jugulpore	Ditto	Ditto	50	25	20	5	200	"	
NARAINPURH.									
Narainpurh	{ Rora	About 1 month	150	...	...	150	850	"	Infectious.
Mealhpore	Burra-dookh	Ditto	10	...	...	10	210	"	
Ahmudpore	Ditto	15 days	50	...	...	50	250	"	
Mahmujra	Ditto	Ditto	100	1	...	99	200	"	Infectious.
Akburpore	Ditto	Ditto	2	...	...	2	202	"	
Betabore	Burra-dookh	4 days	3	...	...	3	303	"	
Dhurna	Ditto	1 month	15	7	8	...	615	"	Infectious.
Jutwar	Ditto	2 months	125	50	15	60	560	"	
Brabun	Ditto	20 days	70	...	...	70	270	"	
Magree	Ditto		...	...	...	...	...	"	Infectious.
Salapoor	Ditto	1 month	40	12	...	28	328	"	
Fazilpore	Rora	20 days	40	...	...	40	240	"	
Kotelah	Ditto	1 month	20	...	...	12	320	"	Infectious.
Kamplah	Ditto	10 days	50	...	...	50	350	"	
Majree	Ditto	Ditto	40	...	...	40	140	"	
Sarawa	Ditto	20 days	125	...	...	75	575	"	Infectious.
Jegoolce	Ditto	Ditto	50	5	...	45	345	"	
								"	

UMBALLA.
Major J. S. Tighe.

Return of Cattle Disease in the Umballa District,—contd.

1	2	3	4	5	6	7	8	9	10
Name of District, Talook, Mouzah, and Village.	Name of disease in Vernacular or English.	Date of outbreak of disease.	Number of cattle attacked.	Number of cattle which have died.	Number of cattle which have recovered.	Number of cattle still ill.	Number of cattle belonging to the village.	Whether the disease is supposed to be infectious or not.	Remarks by the Cattle Plague Commission.
PEEPLEE.									
Kalwah	Rora	Sawun 1927	100	5	95	...	900	Infectious	
Mughohi	Ditto	Jeyt	30	7	15	...	400	"	
Goodanee	Ditto	Blador	50	1	29	20	550	"	
Balawa	Ditto	8th August 1870	60	5	...	55	1,100	"	
Zunpoor	Ditto	Jeyt 1927	50	10	40	...	850	"	
Thole	Ditto	Sawun	3	1	2	...	350	"	
Kherce	Ditto	Blador	6	5	...	...	204	"	
Seeluknee	Ditto	Jeyt 1927	20	7	13	...	300	"	
Nuglal	Ditto	Sawun	17	5	12	...	250	"	
Chunoo	Gulghotona	Ditto	15	5	10	...	220	Not infectious	
Jharpoora	Durd Gulghotona	Ditto	2	2	...	...	150	"	
Chupra	Sheekun	Jeyt	25	1	24	...	375	"	
Muthara	Ditto	Ditto	200	50	150	...	1,500	"	
Dhand	Dard	Sawun 1927	20	5	15	...	285	"	
Singhour	Shakm	20th July 1870	150	4	126	20	540	Infectious	
Thannessur	Rora	14th August 1870	4	5	4	2	2,040	"	
TOTAL			4,608	1,146	2,246	1,216	30,867		

J. S. TIGHE,
Deputy Commissioner.

UMBALLA;
DEPUTY COMM. 'S OFFICE,
The 8th November, 1870.

From MAJOR J. PARSONS, Deputy Commissioner, Simla, to the President, Cattle Plague Commission, Lahore,—(No. 950, dated 17th October 1870).

SIMLA.
Major J. Parsons.

Forwards herewith a statement of cattle disease which lately prevailed in some hamlets of the Kotkhal Pergunnah of the Simla District, and also in the hamlet of Cutteena in the Hill Rajah of Keonthul's territory. The disease in the Pergunnah of Kotkhal was owing to worms in the hoofs of the cattle, but as there was mortality therefrom, it is included in the statement. The disease, however, in the hamlet of Cutteena was of a very virulent nature, and in a few days destroyed 16 out of the 29 cattle of the hamlet. The 16 all belonged to one man; the disease did not assail the remaining cattle at all. This was probably owing to the unfortunate man's diseased cattle being kept apart from those of his neighbours, which was done by the Rajah's people at my request. Enquiries have been made throughout the district, but no other cases of disease have been reported; further enquiries are being made in the territories of the Hill Chiefs.

Appended statement (abridged),—dated 29th September 1870.

The disease in Pergunnah Kotkhal is called *laroo*—worms in the hoof. It commenced on the 10th of August. In a stock of 400, 150 cattle were attacked and 50 died (12·5 per cent. of stock and 33 per cent. of attacked). The disease was considered very infectious, and said to have been caused by excessive wet weather. The symptoms noted were dulness and lameness, refusal of food and water, rough coat, watering from mouth, and heat of body: duration, 20 or 30 days. The disease in Puteena is called *burra rog*, and broke out on the 7th September. Statistics as given in Major Parson's letter. Considered very infectious; cause not known. Symptoms: refusal of food and water, great dulness, hair standing, watering from mouth, hot body, shivering and looseness of the bowels; duration, 3 or 4 days.

Laroo was treated with success with *chickna* mud and oil, from *keloo* (*cedrus deodara*), and *burra rog* by separation.

JULLUNDUR DIVISION.

JULLUNDUR.

Report by DR. H. P. DICKSON, Civil Surgeon, on the presence of *Eczema Epizootica*, or foot and mouth disease, among the Commissariat cattle at Dhurmsala,—dated 9th June 1870.

In accordance with a request contained in Deputy Commissioner's docket No. 322 of 7th June 1870, I have the honor to submit the following information regarding the presence of foot and mouth disease among the Commissariat cattle at Dhurmsala.

I examined the cattle on the 12th May; there were then ten bullocks affected, one of which had been sent up from Jullundur, and had the disease on its arrival; one of these animals was so reduced in strength that it was thought advisable to have it killed; the others all recovered, and no further cases have occurred.

The animals were kept separate from the herd and their sheds cleaned out; the only recommendation I thought necessary to make was to have the animals fed with some softened food, in order to prevent them from falling away so much in condition. The treatment to which they were subjected was application of camphorated oil to the sores on the mouth and feet, and keeping them standing in a muddy place. To the attention paid by Conductor Smith in keeping the animals affected separate from the herd may be attributed the cessation of the disease.

From LIEUT.-COLONEL T. W. MERCER, Deputy Commissioner, Kangra, to the Sanitary Commissioner, Punjab, Lahore,—(No. 584, dated Dhurmsala, 17th August 1870).

KANGRA.
Lieut.-Col. T. W. Mercer.

With reference to my letter No. 363, dated 15th June, I regret to report that I have been grossly misinformed by the tehseeldars regarding the non-prevalence of the cattle disease in this district. From information obtained from other sources, I learn that the cattle plague exists to a large extent and is committing much havoc in the district in several parts, and I regret to state that, owing to gross neglect on the part of General Prior's cowherd, the disease has been brought into Dhurmsala. All General Prior's cattle are attacked.

2. I have written to all the planters for information, and hope soon to be able to furnish trustworthy reports.

3. There is such an entire absence of intelligence in the tehseeldars of this district on any subject foreign to their own immediate duty, that their reports are not to be relied on. I should therefore be very glad if any officer appointed by the Cattle Plague Commission could visit the district to ascertain the extent and nature of the disease.

4. I send you a report received from Captain Harcourt, Assistant Commissioner of Kooloo. This is not the worst I have received.

5. I am at present without an Assistant, and so overwhelmed with work that I have little time to give to the subject myself.

KANGRA.
Lieut. Col. T. W. Mercer.

6. I have asked Dr. Massy, the Civil Surgeon, to instruct his Native Doctors at Dispensaries to ascertain and report on the disease.

7. I beg the favor of your, by an early date, communicating with the President, Cattle Plague Commission, who, I believe, is at present at Lahore.

KOOLOO.
Capt. A. Harcourt.

From CAPTAIN A. HARCOURT, Assistant Commissioner of Kooloo, to the Deputy Commissioner of Kangra,—(dated Nuggur, 11th August 1870).

I have the honor to acknowledge receipt of your No. 461, dated 27th ultimo, giving cover to a copy of President of Cattle Plague Commission's No. 112 of 18th idem.

2. I beg herewith to forward the information received by me from the tehseeldars of this sub-division.

3. The murrain that has made its appearance amidst the Kooloo cattle is termed *koorug-moorug* in local parlance. The first sign of the distemper is,—an issue of blood from the feet, which are licked by the animal suffering, the poison being thus conveyed into the system. This illness seems to have the effect of impeding all movement, and causing a distaste, or perhaps an incapacity, for food. In each sore insects appear, and the tongue also seems to suffer, but not from any open wound.

4. The remedies for disease of the tongue are as follows:—A plant, termed the *losur*, is bruised and broken up with other plants termed *taelee* and *sooroo* (from these intoxicating liquors are made), and the mash is applied to the affected parts with considerable success.

5. For the feet, the *losur* plant is bruised and smeared over the wounds, and the fresh and young leaves of the apricot tree subsequently; occasionally, also the *rupoorie* and *modul* shrubs are brought into requisition, and with beneficial effect. *Deodar* oil is affirmed to be another excellent remedy.

6. I gather that when young cattle are taken ill with this disease, they generally succumb; but that the full-grown beast for the most part recovers. In Kooloo Tehseel 250 cattle, of which one-third were full-grown, are said to have died in the last few months from this malady, and in Plach Tehseel there have been 62 deaths in all.

7. I understand that the distemper is very widespread, and that it is rather on the increase than otherwise. The Seraj people do not seem to know of any remedy, and I have therefore instructed the Tehseeldar of Kooloo to circulate the knowledge of the medicines that have been of use as widely as possible amongst the Kottees in the Plach Tehseel.

JULLUNDUR.
Leslie Saunders, Esq.

Return showing the number of cattle which have died of disease in the Jullundur District during 1869-70.

Serial No.	Year.	Pergunnahs.	Villages.	DESCRIPTION OF DISEASE AND NUMBER OF CATTLE DIED.					REMARKS.
				Mogh, i.e., purging.	Disease of mouth and hoof.	Chapla, i.e., disease of mouth.	Disease of throat.	Total.	
1	Sept. 1869	Nawashuhr.	Salempoor ...	...	...	...	8	8	On receipt of Government Circular No. 29, dated 17th August 1869, calling for report on the spread of cattle disease, inquiries were made from all Tehsildars. The Naib Tehsildars of Nawashuhr reported that eight cattle had died in this village by throat-swelling disease. No disease in any other villages. Other Tehsildars of this district reported that there was no disease prevailing at that time.
2	April "	Jullundur ...	Doleykee Sundurpoor.	...	...	17	...	17	A petition of Lumburdars, intimating the occurrence of the disease, was received through the Tehsildar; 25 fell sick, 8 recovered, and 17 died.

Return showing the number of cattle which have died in the Jullundur District,—contd.

JULLUNDUR.
Leslie Saunders, Esq.

Serial No.	Year.	Pergunnahs.	Villages.	DESCRIPTION OF DISEASE AND NUMBER OF CATTLE DIED.					REMARKS.
				Mogh, i.e., purging.	Disease of mouth and hoof.	Chapla, i.e., disease of mouth.	Disease of throat.	Total.	
3	July 1869	Nawashuhr	Shekboo, Mau-gara and Niamutpoor.	30	...	...	...	30	Intimation of the disease was received from the diary of the Thanadar Rahun. Enquiries were made from the Tehsildar regarding the measures taken; he replied that the cattle died before he knew of the disease. No more disease afterwards.
4	Feb. 1870	Jullundur ...	Bias Pind ...	7	...	...	...	7	Putwaree reported that there was cattle disease in this village. Jemadar of Tehsil was deputed, who reported that 12 became sick, 7 died, and 5 recovered. Diseased cattle were separated from the healthy ones; no more disease.
5	" "	Ditto ...	Allawulpoor	...	...	...	...	...	It was reported that disease existed in this village, but no cases were reported.
6	" "	Nawashuhr	Mayee ditto	1	...	...	...	1	Tehsildars ported on 8th February 1870 that the disease had visited this village. Orders were issued to report the result and take measures for cure; he reported that four were attacked with disease. Medicine supplied from the sudder was given; one died and the rest recovered.
7	" "	Jullundur ...	Koopur ...	...	...	2	...	2	Deputy Inspector reported the occurrence of the disease. Petition was sent to Tehsildar, who reported that 2 died, 4 recovered, and 2 sick were separated from the healthy.
8	" "	Ditto ...	Khicheepoor	...	...	2	...	2	Mounted Sergeant, Thana Adumpoor, reported the occurrence of the disease; 2 died, rest recovered.
9	March "	Nakodur ...	Litran ...	...	...	3	...	3	Naib Tehsildar reported the disease. Chuprassie was deputed to take steps for remedy. Report received on 1st March; stated that 3 died, and the remaining 3 recovered by giving medicine.
10	" "	Nawashuhr	Dosanjh ...	...	...	...	...	...	Putwaree reported the disease to the Tehsildar. Chuprassie was deputed; 3 which fell sick recovered.
11	April "	Jullundur ...	Dohrey ...	8	...	...	...	8	It was found from the diary of Thana Adumpoor that disease was prevailing here. Enquiries were made by the Tehsildar. Chuprassie was deputed to the spot; result known was, that 8 died, rest recovered. Disease remained for two days. Medicines— <i>goor</i> and <i>ajwain</i> —were given.
12	" "	Phillour ...	Lisara ...	...	...	45	...	45	Mr. Marshall, in his letter, dated 5th April, reported on the disease in this village. Tehsildar reported that 45 died.

JULLUNDUR.
Leslie Saunders, Esq.

Return showing the number of cattle which have died in the Jullundur District,—contd.

Serial No.	Year.	Pergunnahs.	Villages.	DESCRIPTION OF DISEASE AND NUMBER OF CATTLE DIED.					REMARKS.
				Mogh, i. e., purging.	Disease of mouth and hoof.	Chapla, i. e., disease of mouth.	Disease of throat.	Total.	
13	April 1870	Jullundur ...	Mundha ...	...	...	2	...	2	Deputy Inspector, Thana Adumpoor, informed of the disease; 2 died, rest all well.
14	May "	Ditto ...	Lesreewala ..	...	...	3	...	3	Mounted Sergeant reported. Jemadar of the Tehsil was sent to the spot; 12 were sick, 3 died, and 9 recovered.
15	" "	Nakodur ...	Kung Kullan	4	...	...	...	4	Putwaree reported the disease. Tehsildar deputed a Chuprassie to take measures; 11 sick, 4 died, rest recovered.
16	" "	Jullundur ...	Pindomee Nijran.	...	...	...	...	...	Deputy Inspector reported the occurrence of cattle disease in this village. Tehsil Jemadar was sent to the spot; no deaths occurred.
17	June "	Ditto ...	Khoordpoor	...	...	10	...	10	Deputy Inspector reported the occurrence of cattle disease in this village; 50 became sick, 40 recovered, and 10 died.
18	" "	Ditto ...	Bhugwanpoor	...	...	...	...	...	Deputy Inspector reported the occurrence of cattle disease in this village. On enquiry it was found that really no disease existed.
19	Augt. "	Ditto ...	Massania ...	...	...	3	...	3	Deputy Inspector reported the occurrence of cattle disease in this village. Tehsil Jemadar was deputed, who reported that 10 fell sick, 3 died, and 7 recovered.
20	" "	Phillour ...	Chhaola ...	...	...	...	...	...	Tehsildar reported having received intimation of the disease; some died; no number given by the Tehsildar. Deputy Commissioner inspected the cattle of this village.
Total ...				50	...	87	...	145	
Nawashuhr				31	...	...	8	39	
Jullundur ...				15	...	39	...	54	
Nakodur ...				4	...	3	...	7	
Phillour ...				...	...	45	...	45	

LESLIE SAUNDERS,
Deputy Commissioner.

UMRITSUR.

UMRITSUR DIVISION.

From MAJOR F. M. BIRCH, Deputy Commissioner, Umrtsur, to the Secretary, Cattle Plague Commission, Calcutta,—(No. 866, dated 30th May 1870). Major F. M. Birch.

Reports that cattle plague has made its appearance in village Chohalla, 12 miles from the Ajnalla Tehseel in this district. Ajnalla is about 16 miles from Umrtsur; a Government Serai to put up in is available.

2. The plague is principally amongst buffaloes, but bullocks are also now falling ill with the disease.

3. The symptoms are,—stupor, the cattle refuse fodder for about three or four days, followed by a yellow discharge from the mouth, and then of blood from the intestines, for about three or four days, after which death ensues. The symptoms are different from those previously observed.

From T. H. THORNTON, Esq., Secretary to Government, Punjab, to the President, Cattle Plague Commission,—(No. 643, dated 1st August 1870). PUNJAB. T. H. Thornton, Esq.

With reference to the letter of the Deputy Commissioner of Umrtsur to your address, No. 866 of the 30th May last, I am desired to inform you that Major Birch now reports that the cattle murrain in the Ajnalla Tehseel has ceased.

Cattle disease of an epizootic nature prevailing in the Tehseel Ajnalla, Umrtsur District, for the fortnight ending 31st August 1870. UMRITSUR. Major F. M. Birch.

Name of District, Talook, or Mouzah, and Village.	Name of disease in Vernacular or English.	Date of outbreak of disease.	Number of cattle attacked.	Number of cattle which have died.	Number of cattle which have recovered.	Number of cattle still ill.	REMARKS.
District Umrtsur, Pergunnah Ajnalla, Mouzah Kukkar ...	Moong.	26th July 1870.	70	18	52	...	On the 8th August, when by the last reports the cattle plague was said to have ceased, the members of the Cattle Plague Commission arrived. In accordance with their suggestions, enquiries were immediately made from persons then present at the Sudder and Tehseel, and it was discovered that cattle disease existed in Pergunnah Ajnalla and east and west of the city of Umrtsur in Pergunnah Umrtsur. The Commission made an investigation in the village of Buddiala Bhittanid, and the President himself discovered the disease in Mal, which is about three miles from Umrtsur. These enquiries left no doubt that the cattle disease was prevalent in a virulent form in several parts of the district.
Mouzah Dikloot	Sirka ...	28th ditto ...	25	10	15	...	
Mouzah Vera...	Do. ...	Ditto ...	15	10	2	3	
Mouzah Bullian	Moong.	26th ditto ...	78	61	5	12	

DEPUTY COMMISSIONER'S OFFICE ;
UMRITSUR,
The 5th September 1870.

F. M. BIRCH,
Deputy Commissioner.

Village of VADALA, six miles north-west of Umrtsur,—dated 9th August 1870.

VADALA.

GULAB SINGH, aged about 55, states :—

The disease which has attacked the cattle in this village is locally called *mannoon*.

Mannoon.

The symptoms of the disease are,—loss of appetite and watering from the eyes, offensive Rinderpest. breath, sore mouth; on the second or third day violent purging, mixed with mucus and Symptoms. blood. Death follows in five to eight days.

The sore mouth alluded to begins with blisters like bubbles, and when these break, they get raw, red, and sore. The feet never become affected in this disease. They become affected in another disease from which cattle seldom or never die. This other disease is called *paira*. Animals attacked with *mannoon* seldom recover: perhaps from 5 to 10 per cent. *Paira*. recover. The present attack commenced about four or five weeks ago. About 40 animals Foot & mouth disease

VADALA. died in the western *patti* of this village, and about 35 in the eastern. The disease first attacked two bullocks in the western *patti* or division of this village. The bullocks belonged to Heera Singh, and were allowed to herd with the other village cattle. Ten days after they were attacked, and after they had died, the disease broke out among the others. Their carcasses were thrown out by the chamars, and other cattle may have come up and smelt the carcasses.

Dissemination of the disease. [N. B.—The Commission saw the carcasses of about 20 animals, and one buffalo was observed licking the bones, while several others were seen standing in the midst of them.]

Heera Singh, and no other man in the village, had bought cattle for five or six months before the outbreak, and none of the cattle in the villages within one or two *koss* (2 or 4 miles) have been visited with the disease. I cannot say with certainty about villages at a greater distance off, but I have not heard of the disease anywhere near. On 11th April last, a fair was held at Umritsur, which lasted for a week. The cattle dealers passed through this village, or on the road not above two hundred yards distant. No murrain appeared among the cattle at the fair this year, but two years ago *mannoon* appeared amongst the cattle of the fair, and 18 to 20 affected animals had to be removed. We believe the present attack originated in this village, and was not imported. There is another fair held at Umritsur in November. When grass is scarce in this village, fodder is brought from other villages, but it is not the custom to send our cattle elsewhere to graze. Cattle are brought chiefly from Goozerat, Hissar, Sirsa, Rawulpindie, Ferozepore, Kurnaul, &c. There is never any want of water for the cattle in this district, as there are several wells, and the water is considered good. This disease *mannoon* has appeared in this village years before, and in my father and grandfather's time, but the mortality was never so great.

Another man, aged 60, says, he first saw the disease when he was 10 years old, and again when he was 30, and again 10 years ago. He lost ten cattle himself in one of these outbreaks.

History. We have tried giving cooling medicines and herbs, but few cattle have recovered. As far as I know, the disease may attack the same animal a second time, but I cannot remember any instance of this. The domestic servants, called *chooras*, have a right to the skins. They sell them from 12 annas to 3 rupees each to hide merchants in Umritsur. Cattle poisoning is not known here. The best cattle for ploughing are of Hazara breed. The best milch cows come from Nidj, in the Montgomery District.

[N. B.—The Commission saw the cattle (they were very weak) grazing by the sides of the highway on the Lahore and Wuzerabad Road. The rain had fallen only three days previously, and there was hardly any pasture ground or any grass to eat.

The villagers showed the Commission seven animals (buffaloes and bullocks) which they considered to be affected with *mannoon*. On carefully inspecting these animals, three buffaloes and one bullock were found affected with rinderpest, and have been ill from three to ten days. The usual symptoms were observed, but no aphthous condition of the mouth; the mucous membrane of both the gums and buccal membrane were in three cases very much congested, and in one slightly so, and this animal was evidently recovering from disease. The breath of the three was offensive. The faeces of all four were offensive. Blood was not found in the faeces, but mucus in abundance was seen. There were no eruptions on the skin. The discharge from eyes, nose, and mouth was very viscid. All were very weak, one very much so, and constantly lying down.

Two other bullocks were seen recovering from disease.

The seventh, a buffalo cow, was said also to be affected with *mannoon*, and had been lying down, unable to rise, for two or three days; was apparently in a dying state, very much emaciated, but showed no signs of rinderpest. This animal appeared to be dying from debility, the result of starvation, and probably cyst disease.

The Veterinary Assistant was left behind until noon to watch this animal, and in the event of her dying to make a *post-mortem* examination; but at 12 o'clock, when he left, she was still alive.

The Commission, on their return from the above village, visited the village Mál, about two miles north-west of Umritsur, on the Gujranwalla Road.

The disease *mannoon* has been prevailing in that village during the last month; many head of cattle have died, and the symptoms of the disease were given as above recorded. One cow died yesterday.]

SEALKOTE. From MAJOR C. V. JENKINS, Deputy Commissioner, Sealkote, to the Commissioner and Superintendent, Umritsur Division,—(No. 334, dated 9th September 1870).

In reply to your docket memo. No. 114, dated 16th August, relative to the cattle disease, I have the honor to forward a very able and condensed report transmitted me by Mr. Sub-Assistant Surgeon Futtch Singh, in charge of the Civil Dispensary at this station.

2. This officer has rendered me much valuable assistance in the collecting together of the details of this district with reference to the disease, and has personally visited the chief spots whereat the murrain had shown itself in a more extensive form.

3. I had much difficulty in getting at anything like an accurate statement of affairs connected with this pestilence, and being limited in my usual number of European Assistants, I was unable to go out and test the matter in person (as I otherwise should have done, had the measure been practicable).

4. From the report herewith sent, and on which I can place every reliance, the part of the district at first affected would appear to have been the Duska Tehseel, or the area of land situated about half-way between this station and Gujranwalla, and on the direct high road to that place. I obtained the best information I could through tehseeldars, &c., the moment the matter was brought to my attention; but as I felt very doubtful as to the general correctness of the reports, which came in a varied form, I deemed it best to delay transmitting any official memorandum on the subject to you until I could test the matter more certainly.

5. From Mr. Futtch Singh's report I draw the following conclusions:—

1st.—Between May and June, and up to July (the commencement of the rains), the disease appeared severe and in an epidemic form, but it gradually after that date diminished, and is now only in an endemic form and of a slight nature.

2nd.—The tabular statement (carefully tested, corrected, revised, and curtailed to its lowest probable average) shows badly for the months when the disease first appeared, viz., May and June; and I have deemed it advisable to point out to the tehseeldars and other officials in the district that I regret to observe a want of carefulness on their part in not having, at least, ascertained and reported upon a calamity which it is improbable they could have remained ignorant of for so long. It is true, the apathy and indifference of the natives themselves may have been *partially* the cause of the officials in the district remaining (to a certain extent) ignorant of the severe nature the disease had assumed; but still I hold that a little more energy and general activity on their part (and also by personal conversation with the principal lumbarbars, &c., which they should frequently and freely resort to) must have exposed an existing evil of such a nature.

The mortality, 2,327, sounds enormous, but I have every reason to believe it did take place. The whole district must have been more or less affected by its ravages, as I observe that, though it first showed itself in the Duska Tehseel, those of Pusroor, Zufferwal, and more especially Reyah, suffered very heavily.

3rd.—Mr. Futtch Singh attributes the appearance and spread of the disease to the following causes:—

- (1.) Heat,
- (2.) Want of green fodder,
- (3.) Over-work at the ploughs, and
- (4.) Contagion arising from disease.

6. I am inclined to think that the natives are now more inclined (from their recent losses) to take full and remedial measures against a return and spread of the disease, and I have caused several copies of the rules laid down for treatment and prevention of its spread (conveyed in Circular No. 4-362, dated 15th February 1866, from Mr. Thornton, Secretary to Government, Punjab) to be printed off in the jail, and to be thoroughly and widely circulated throughout the different tehseels and villages and in other towns in the district.

7. In conclusion, I would state that the bi-monthly return called for by the Commission must *tend much* to check any further serious visitation of this disease; and in transmitting these remarks on the subject, together with Mr. Futtch Singh's able and careful report, I beg to bring that officer's name before you, as also before the local Government, with a view to the aid he has so voluntarily and efficiently rendered me (at a trying month in the hot weather season) being acknowledged by the said Government and yourself.

From MR. FUTTEH SINGH, Sub-Assistant Surgeon, Sealkote, to the Officiating Deputy Commissioner, Sealkote,—(dated 29th August 1870).

With reference to the cattle disease report, I beg to inform you that the cattle disease commenced in this district in an epidemic form in the month of March 1870. The part of the district first affected was Duska Tehseel, and we believe that the disease was brought here from Gujranwalla District, or at all events that side. At first the epidemic was very mild, but it reached its acme in the months of May and June, and then commenced to decline gradually, so that at present the disease cannot be properly called an epidemic, isolated cases only occurring here and there. The decline of the disease has followed the rainfall.

In a brief report submitted by me a short time ago, I expressed my opinion that the disease never assumed an epidemic form. The data on which my opinion was then based were very few, and even those very imperfect; since that I have received more authenticated information from various parts of the district, and have also made actual observations myself during my last tour of inspection of the branch dispensaries of the district; consequently, I have changed my opinion, as expressed before, and am fully conscious that the disease did really appear in an epidemic form.

SEALKOTE. The accompanying tabular statement shows the mortality among the cattle that was caused by the epidemic from the first of March to the end of July 1870.

Diagnosis of the disease.

As to the nature of the disease, I beg to state that the epidemic presented different forms. The great majority presented the following symptoms:—The animal suddenly appears dull, ceases to take anything or ruminate; there is severe constipation; slight mucous discharge from the nose at first, which becomes fetid and very adhesive; afterwards flow of saliva from mouth; there is tympanitic swelling of the belly; there is also swelling of the throat, as well as of the legs and feet, followed (in some cases) in the latter instance by ulcerations and maggots.

In this state the animal remains from 24 hours to 6 days, and then dies exhausted. In other cases diarrhoea makes its appearance, or dysentery with bloody evacuations is the principal symptom. This latter form was especially prevalent in Reyah Tehseel.

Native names of the disease.

Mannoon and mokkur are native names of the disease.

Causes of the disease.

The causes of the disease are believed to be various; before rainfall the disease was said to be caused partly by there being scanty fodder and the animals being worked very hard. In a single native word, this cause is called *rorah*. Among other causes of the disease, drinking bad water, eating bad grass, heated atmosphere, &c., are also recorded. The disease is also believed to be propagated to a very great extent by contagion.

Class of cattle most affected.

The cattle that suffered most were buffaloes and bullocks.

Duration of disease.

The duration of the disease between its invasion and death or complete recovery was on an average found to be from three to six days.

Treatment.

There were several native modes of treating the cattle affected with the disease in question. Almost all means were employed, but with no great success. Various soothing and astringent medicines were used to stop diarrhoea and dysentery, such as catechu, *keekur* leaves, butter, *mahdee* leaves, &c. The swollen throat and legs were washed with soap and warm water, decoction of poppy heads and alum, *keekur* bark decoction, &c. Cauterization was also used to the swelled throat and legs. To relieve the confined bowels, hot ghee or oil, asafetida, &c., were employed.

In conclusion I beg to state that the fortnightly reports referred to in your letter will be submitted as they are received.

Abstract showing the prevalence of Cattle Disease in the District of Sealkote during the months of March, April, May, June, and July 1870.

District.	Name of disease.	Date of out-break of epidemic.	Number of cattle attacked.	Number of cattle which have died.	Number of cattle which have recovered.	Number of cattle still ill.
Sealkote.	Mannoon or Mokkur.	1st March 1870.	3,516	2,327	934	255

UMRITSUR, &c.

Abridged Tabular Statement showing the number of Cattle attacked and died from disease in the Umritsur, Goordaspore, and Sealkote Districts of the Umritsur Division, Punjab.

Dates of Reports.	Names of districts, with number of tehseels affected.	Number attacked.	Number died.	REMARKS.
From 1st September 1870 to 15th December 1870.	UMRITSUR— 3 Tehseels or Pergunnahs Deaths per cent. of attacked, 71.1.	218	155	The following names are given to the several diseases:— <i>Lahir bath.</i> <i>Mannoon.</i> <i>Pail chalna.</i> <i>Mokkur.</i> <i>Diarrhoea.</i> <i>Dabab</i> or cough. Inflammation of throat. Bleeding. <i>Akur.</i> <i>Bur.</i> <i>Pirtusee.</i> <i>Scabies.</i>
From 1st September 1870 to 30th November 1870.	GOORDASPORE— 4 Tehseels Deaths per cent. of attacked, 26.98.	4,102	1,107	
From 16th August 1870 to 30th November 1870.	SEALKOTE— 4 Tehseels Deaths per cent. of attacked, 79.5.	3,914	3,112	
	TOTAL	8,254	4,374	From the symptoms recorded, there can be no doubt that the diseases chiefly were rinderpest, pleuro-pneumonia, quarter-ill, foot and mouth disease, and probably diarrhoea (<i>hooknee</i>).—(C. F. C.)

GUJRANWALLA. From LIEUTENANT-COLONEL H. P. BABBAGE, Deputy Commissioner, Gujranwalla, to the Commissioner and Superintendent, Lahore Division,—(No. 335, dated the 16th August 1869).
Lieut.-Colonel H. P. Babbage.

Disease in the bar. In answer to your No. 289-2261 of 28th July 1869, regarding the cattle disease in the bar, I have the honor to state that an examination of the bodies of the dead cattle was made in two different places in the bar by country hakeems. I also had two sick bullocks sent into the Suddur, expecting them to die, but as they did not seem likely to die quickly, and I would not send them to graze for fear of contagion to the cattle here, and feeding them tied up was very expensive, I let them go after a fortnight.

2. I annex a memorandum made by the Civil Surgeon of what he could observe while they were under his observation.

3. The disease is now dying out, but I have, since receipt of your No. 289, sent orders to select, if possible, an animal likely to die, and bring it into Gujranwalla, so as to be examined by the Civil Surgeon.

Mortality. 4. Owing to the fluctuating nature of the bar population, and the unwillingness of the fixed residents of those parts to any enumeration of their cattle, I have not been able to make any reliable estimate, but probably 12 or 15,000 buffaloes and horned cattle and 4 or 5,000 sheep and goats may be considered to have died. Even the ravine deer died in numbers, and were seen lying dead about the bar.

Memorandum by Civil Surgeon.

Cases examined by the Civil Surgeon. A full-grown cow, and a calf about two years old, said to be suffering from the cattle plague prevalent amongst the cattle at the bar, were placed under my observation about the 9th ultimo, and remained up to the 22nd. I noted the following appearances the day they arrived:—

The dewlap of the calf was swollen for about five inches along its lower or free margin. There was extreme emaciation in both the cow and calf.

They were active in their movements. The eyes were clear, mouth moist; they ate voraciously; the urine seemed normal in quantity and color. The dung was also natural in appearance, consistence, and quantity, and indicated, as far as could be judged, that the process of digestion and assimilation was unimpaired. Beyond the swelling in the dewlap, the voracious appetite and emaciation, no symptom of a seriously-diseased condition could be made out.

During the fortnight they continued under my observation I saw them frequently, and watched their condition with much interest. At the end of this time the swelling had partly subsided, but no other change in their condition took place.

The men from the bar who accompanied these two animals stated that violent diarrhoea was the most prominent and characteristic symptom of the disease, and that this was rapidly followed by emaciation, and that the swelling of the dewlap only occurred in about 30 per cent. of those attacked. The voraciousness increased with the emaciation, and remained until within an hour or two of death.

In the absence of any well-marked symptoms and the examination of a dead body, it is scarcely possible, in my opinion, to arrive at any definite conclusion as to the exact nature of the disease.

P. S.—The zemindars stated further that the time the disease lasted, i. e., between seizure and death, varied much, sometimes it was four or five days, at other times as long as two or three weeks, but that up to that date, the 9th ultimo, there had been no recoveries.

The two animals while under observation were well fed, but no attempt at any treatment was made.

LAHORE DIVISION.

LAHORE. T. H. Thornton, Esq. From T. H. THORNTON, Esq., D. C. L., Secy. to the Govt. of Punjab, to the Secy. to the Govt. of India, Home Dept.,—(No. 3333, dated 9th November 1869).

In continuation of this office No. 2802, dated 15th September 1869, I am desired to forward copy of a further report, dated 14th October, by Dr. Quinnell, Civil Surgeon, on the cattle murrain in the bar of the Gujranwalla District.

GUJRANWALLA. From Dr. R. QUINNELL, M. D., in Medical Charge, Gujranwalla, to the Officiating Deputy Commissioner Gujranwalla,—(dated 14th October 1869).
Dr. R. Quinnell.

I have the honor, in continuation of my memorandum of the 14th August, to submit the following particulars with reference to the cattle disease which has been prevalent in the bar of this district since September 1868.

The cow and the calf described in that memorandum having subsequently recovered, were allowed to be taken away by their owner, and they were replaced on the 20th August by two fresh full-grown cows, selected as having the disease in its severest form, and believed to be quite past recovery.

The symptoms presented by these two animals, although different in some respects to Symptoms. what had been noted in the two previous, indicated nothing more, in my opinion, than what would be apparent in the same disease in a more advanced stage.

The movements of the animals in this condition were now no longer active; the limbs were weak, joints swollen, and gait staggering; the eyes were dull and heavy, the mouth dry, and the tongue and nostrils also; while the nose, ears, and all other parts of the body were cool and of uniform temperature.

If left to themselves, they grazed about freely, but refused everything in the shape of cut fodder, dry or green. The cattle in the bar are, however, not accustomed to cut fodder. But the appetite, I remarked, was much less keen than in the previous two, which fact, together with the total absence of any swelling in the dewlap, impressed me with the belief that neither the "voracious appetite to the last," as described by the zemindars, nor the swelling in the dewlap could be put down as a characteristic symptom of the disease, and that their statements on this head, alluded to in my previous memorandum, are incorrect.

The emaciation was extreme, and had reached such a degree, indeed, that the outline of almost every bone in the body could be clearly made out. The skin over the prominences of the bones was completely denuded of hair, looked blackened and glistening, and felt adherent to the bones.

As morbid changes in the urine sometimes indicate very clearly certain kinds of disease, the urine was compared with that from a healthy cow, and in neither quantity, color, nor density was any noteworthy difference observed, nor subsequently could any abnormal elements be detected by tests. The dung was fluid and offensive.

But little change was perceptible in their condition from the date they came under observation to that of their death. One died on the 24th August, four days after arrival, and the other on the 13th September, twenty-three days after arrival.

The body of each was opened and examined a few hours after death, and the morbid changes which had taken place internally, with one exception, which will be described further on, were found to be exactly similar, so that the description of one will be for both. Post-mortem appearances.

The abdomen was examined first on laying it open; the entire surface of the viscera presented a very strange greasy appearance, as if coated thickly with oil, and the same impression was conveyed to the touch when handled. On the other hand, the total absence of fat, even in the parts where it is found most abundant in health, was also remarkable.

The liver was small in size, black in color, and its substance so much softened that it could be reduced to fluid by the slightest pressure. The gall bladder was almost empty, and its contents (about the third of an ounce) dark, viscid, and granular. The stomachs were tensely impacted with the grass eaten in different stages of digestion, and their coats thinned and pale. The spleen looked atrophied and bloodless.

The intestines were much distended with gas, and their coats thinned and pallid, with here and there small circular, dark-colored patches of sub-acute inflammation along the mucous surface. The kidneys were natural in size, but pale and flabby. The bladder contained about four ounces of urine, looked shrunk, but was otherwise normal.

The chest was next examined. The heart was large; the walls thinned and the muscles wasted and blanched. The cavities, which were distended, contained a few shreds of fibrin adhering to the muscular fasciculi. The vessels appeared enlarged and prominent. The lungs were natural in color, highly elastic, and healthy. A cluster of hydatid cysts, about twelve in number, the size of hazelnuts, was found adhering to the base of the left lung of the first animal, and constituted the only difference in the morbid changes apparent in the two.

Both the gullet and the windpipe were also examined and found free from any appearance of disease.

As there was no symptom which pointed to the brain being involved, the head was not dissected.

Neither in the stomach, intestines, nor elsewhere did I find any trace of the presence of worms or acari of any kind.

It will be seen from the foregoing that the morbid changes and definite characteristics which mark specific disease are wanting, and that the usual effects of mal-assimilation and mal-nutrition are strikingly manifest in the general anemic and wasted condition of the organs and muscles of the body.

The zemindars believe the disease to be something new. It has been raging in the bar over twelve months, and although it has much abated during the past few weeks, they believe the change is temporary, and that it will break out with its usual virulence when the hot and

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THE PUNJAB.

GUJRANWALLA. dry season comes round again. The total loss from this disease up to the present time is roughly estimated at 10,000 horned cattle, besides sheep and goats.

Causes. Although suspected more than once to have its origin in bad water, the cattle always drinking from ponds or jheels, which after the heaviest showers must soon become and remain foul and putrid for months, no fresh water from canal or wells being at any time obtainable, it has not been observed if the disease has varied in severity during the wet and dry seasons.

The disease, since its first appearance, has confined itself to the bar and its immediate neighbourhood, which fact, with the foregoing evidence, seems to me sufficiently to prove, 1st, that the disease is not contagious; 2nd, that it is due entirely to local influences; and, 3rd, that investigation into what these influences really are can be best conducted on the spot.

Major W. G. Davies. From MAJOR W. G. DAVIES, Offg. Commr. and Supdt., Lahore Division, to the Secy. to Financial Commr., Punjab,—(No. 1210, dated 11th May 1870).

Murrain has died out. In reply to your No. 1481, dated 16th March, and No. 2532, dated 29th ultimo, I have the honor to forward copy of a No. 140, dated 5th instant, from the Deputy Commissioner of Gujranwalla, reporting on the cattle murrain in that district, which, it is satisfactory to learn, has died out.

2. I have to add that, from inquiries from independent sources made by me, I am inclined to concur with the Deputy Commissioner that very heavy loss was sustained by the rukh contractors, owing to the reduction in number of cattle by deaths from the severe epidemic which prevailed last year.

3. Dr. Quinnell's report referred to by the Deputy Commissioner was forwarded with my predecessor's No. 3344, dated 25th October last.

T. H. Thornton, Esq. From T. H. THORNTON, Esq., Secy. to Govt., Punjab and its Dependencies, to the Secy. to Govt. of India, Home Dept.,—(No. 246, dated 23rd March 1870).

Re-appearance of murrain. With reference to the correspondence ending with Home Department letter No. 4977 of 29th October 1869, I am desired to state that a report has been received of the re-appearance of the murrain among the cattle in the bar of the Gujranwalla District, where several fatal cases are said to have already occurred. It is also stated to be severe in the Jhung District.

Lieut. Colonel H. P. Babbage. From LIEUT.-COL. H. P. BABPAGE, Deputy Commr., Gujranwalla, to the President, Cattle Plague Commission, Lahore,—(No. 285, dated 20th May 1870).

I have the honor, in reply to your No. 289 of 16th May 1870, regarding the cattle plague, to state that no plague is now prevailing in this district.

Murrain of 1869. 2. About 16 months ago a very destructive cattle murrain prevailed among the graziers' herds in the bar or jungle-land in the south of this district, and without doubt many thousand head of cattle were carried off by it, even deer were not infrequently seen lying dead; and it was said by the graziers and zemindars that an animal once attacked never recovered, though it might linger for, perhaps, months.

3. All the information collected on the subject will be found in the office of the Commissioner, Lahore Division, at Lahore, and of the Financial Commissioner at Lahore.

4. It may be said to have prevailed in the country south and west of a line drawn through Hafizabad and Shekhopoora, and it prevailed all through the south of the district and into the Jhung and Montgomery Districts, but how far I am unable to say.

5. I am quite unable to specify the nature of the disease; the result of a post-mortem examination made by the Civil Surgeon I duly reported, and it will be found as above stated. Shekhopoora lies 20 miles west of Lahore, on the great Derajat Road.

FEROZEPORE. From G. KNOX, Esq., Offg. Deputy Commr., Ferozepore, to the Offg. Commr. and Supdt., Lahore Division,—(No. 147, dated 21st May 1870).

G. Knox, Esq.

I have the honor to inform you that from three pergunnahs of this district tehseeldars have reported that cattle disease has appeared. I have in consequence issued instructions, according to Circular No. 2 of 1858; by all accounts many deaths have not yet occurred.

2. I will report hereafter on the results of the examinations of carcasses by the Civil Surgeon.

From MAJOR W. G. DAVIES, Officiating Commissioner and Superintendent, Lahore Division, to Major W. G. Davies, the President, Cattle Plague Commission,—(No. 2284, dated 25th August 1870).

In reply to your No. 329, dated 31st May last, I have the honor to forward in original the answers received from Ferozepore to the questions sent down by you, with reference to the cattle disease which appeared in the Ferozepore District.

Cattle disease of an epizootic nature prevailing in the Ferozepore District, dated 30th June 1870: FEROZEPORE. Dr. H. F. Williams.

Question.—Name of district, talook or mouzah, and village? Answer.—103 villages in Ferozepore Talooka, 133 villages in Leerah Talooka, 118 villages in Mogah Talooka, 35 villages in Mokutsur Talooka, total 389 villages.

Question.—Name of disease in Vernacular or English? Answer.—There is no particular Name. name that I know of, but it goes under the general term murree.

Question.—Date of outbreak of disease? Answer.—1st May 1870.

Question.—Number of cattle attacked? Answer.—14,485,—11 per cent. of stock. Statistics.

Question.—Number of cattle which have died? Answer.—4,664,—3.6 per cent. of stock and 32 of attacked.

Question.—Number of cattle which have recovered? Answer.—9,649.

Question.—Number of cattle still ill? Answer.—172.

Question.—Number of cattle belonging to the villages? Answer.—1,26,975.

Question.—Whether the disease is supposed to be infectious or not? Answer.—Yes. Infectionness.

Question.—How supposed to have originated? Answer.—Unknown. Origin.

Question.—Symptoms of the disease, informing on the following points:— Symptoms.

Appearance of the coat? Answer.—Staring, rough, and dirty looking.

Whether there are any eruptions on the body or feet, or not? Answer.—At first there is no foot affection, but after a week oedema appears; no eruption on the body.

Eyes and mouth watering or not? Answer.—Yes, both.

Body cold or hot? Answer.—Hot and feverish.

Cough or labored breathing? Answer.—Breathing labored.

Shivering fit or not? Answer.—In two cases under observation of, and belonging to, the Sub-Assistant Surgeon none was observed.

Swelling of the throat or any difficulty in breathing? Answer.—None. Breathing difficult.

Appearance of urinary or faecal evacuations? Answer.—Urine pale, and apparently increased in quantity; faecal evacuations semi-fluid and darker than natural; no slime or blood.

Question.—Average duration of attack before recovery or death? Answer.—About a week. Duration.

Question.—As to whether any preventive or remedial measures have been used or not, Treatment. and with any success or not? Answer.—None.

The disease appears to be subject to relapse. The animal refuses food altogether, loses flesh, cannot walk, takes liquids sparingly, and finally dies, apparently of exhaustion. The post-mortem appearances show small ulcers of the mucous membrane of the mouth and tongue, with softening. The mucous membrane of the alimentary canal generally is softened and peels off when lightly handled. In some cases there were deep ulcerations, about the size of French beans, in the cœcum and colon. The rectum appeared redder than usual, but no ulcerations were detected. From the quantity of undigested food found in most cases, it would appear that the attack was sudden. The gall bladder was always distended, but the liver was not found diseased, only somewhat paler than natural. In some cases there was effusion in the pericardium and peritoneum. The lungs were somewhat congested at the lower lobes, probably from position, but no appearance of pleuro-pneumonia was found. Kidneys generally normal; congestion of one kidney existed in one of the cases examined. Bladder usually distended.

From MAJOR W. G. DAVIES, Officiating Commissioner and Superintendent, Lahore Division, to GUJRANWALLA. Major W. G. Davies. the President, Cattle Plague Commission,—(No. 2600, dated 28th September 1870).

Forwards for information copy of a No. 355, dated 22nd instant, from Deputy Commissioner, Gujranwalla, reporting the appearance of a murrain among cattle in the Kamoke Pergunnah of that district. The Deputy Commissioner will be requested to report further when the disease is assuming an epidemic form.

GUJRANWALLA. From LIEUTENANT-COLONEL H. P. BABBAGE, Deputy Commissioner of Gujranwalla, to the Offg. Lieut. Colonel H. P. Babbage. Commissioner and Superintendent, Lahore Division,—(No. 355, dated 22nd September 1870).

Bhuknee in Kamokee. I have the honor to report for your information that a sort of murrain has broken out in the Kamokee Pergunnah, and that about one hundred head of cattle are reported to have died within twenty-four days in two villages named Ghogah and Oode, a few miles on either side of the Gujranwalla and Shekhopoora road. No doubt it will be more or less prevalent in other adjacent villages. The disease does not appear to be the murrain known as *bhuknee*, but is probably pleuro-pneumonia, mentioned by the Cattle Plague Commission.

Major W. G. Davies. From MAJOR W. G. DAVIES, Officiating Commissioner and Superintendent, Lahore Division, to the President, Cattle Plague Commission,—(No. 3042, dated 12th November 1870).

In continuation of No. 2600, dated 28th September last, forwards, for information, copy of a No. 401, dated 7th instant, from the Deputy Commissioner, Gujranwalla, furnishing further information regarding the disease known as *bhuknee* prevalent among cattle in the bar, and the Kamokie and Nowshera Pergunnahs of that district.

Lieut.-Colonel H. P. Babbage. From LIEUT.-COLONEL H. P. BABBAGE, Deputy Commissioner, Gujranwalla, to the Officiating Commissioner and Superintendent, Lahore Division,—(No. 401, dated 7th November 1870).

In answer to your No. 310 of 28th September 1870, regarding cattle murrain, I have the honor to report that the disease *bhuknee* seems to be spreading from the bar upwards in the Nowshera Pergunnah, and to have reached the Kamokie Pergunnah, some cattle having died in villages east of the Grand Trunk Road. It seems not to have reached the other pergunnahs at all, and to be confined to the part bordering the Bagh Butcha and Deg stream along the Lahore District boundary; but the mortality is not usually reported severe.

2. In Hafizabad and the bar *bhuknee* is not very prevalent, but pleuro-pneumonia, a disease of the lungs in some shape, is still causing loss.

3. I have had the remedial measures and medicines suggested to me by the Cattle Plague Commission translated and lithographed, and circulated freely all over the district.

From LIEUT.-COLONEL H. P. BABBAGE, Deputy Commissioner, Gujranwalla, to the Officiating Commissioner and Superintendent, Lahore Division,—(No. 449, dated 12th December 1870).

Reports that in the vicinity of the town of Akalgarh, the disease known as *bhuknee* has appeared among the cattle; in the bar it has considerably abated.

Evidence taken at Lahore, dated 10th August 1870.

LAHORE.

Cysts in meat.
Where found.

Different kinds described.
Carcasses containing cysts condemned.
In one day in December 1868, 25 carcasses were burnt.
The lungs are sometimes found heavy.

Maggots in sheep's heads.
Since the end of 1869 the Commissariat Department have issued meat irrespective of its being cyst-infected or not.

Cattle died from disease.
Symptoms.

OWEN JACKSON, Butcher Sergeant at Meean Meer Cantonment, has been so employed for 2½ years. His trade was that of a butcher before entering the Army. He has observed cysts in the liver, heart, shoulders and rounds of beef. The cysts generally vary in the muscle from the size of a small pea to that of a sparrow's egg. In the liver and lights we find large water bladders. These vary from the size of an egg to the size of a large orange, and sometimes contain yellow matter, either thick or thin. The medical officer told me to condemn all carcasses containing water bladders in any parts of the entrails, or cysts in the meat. In the month of December 1868 no less than 25 carcasses were burnt in one day on account of containing cysts. Sometimes the lungs are found heavy; I should say that about 6 per cent. are heavy. They are generally found in thin animals; sometimes these lungs contain a yellowish or greenish buttery kind of stuff.

In sheep's heads maggots are almost invariably found at the upper part of the nostrils. They resemble the maggots found under the skin on the backs of cattle. Formerly the order was to burn all cyst-infected carcasses; but now, since about the end of last year, the Commissariat Department issue all meat, irrespective of its being cyst-infected or not. In the latter end of June and throughout July three cows and two calves died, showing the following symptoms:—running from the eyes and nose, furred tongue, sore and greasy-looking mouth, lying down, off food and water, purging set in the third day, and with the purging blood passed; breath and purging very offensive. In all the cows the hair stood straight up.

One animal died in two or three hours before purging set in, and the other four died, from each of them, in four or five days. The cow which was first attacked had been brought in from the grazing ground about four or five days before.

LAHORE.

The grazing ground is about 11 miles off Meean Meer, at a place called Ruckchahal. I often visited the grazing ground (about two or three times a month), but I met with no disease among the grazing cattle. There is no road near the Ruckchahal.

KHODA BUX, Chowdry of the Goallahs, states that there is no *mannoon* (rinderpest) at present among the cattle of the city of Lahore; but six months ago it did prevail, and about 80 to 90 cattle died from it. *Mannoon* not at present prevailing. Prevalled six months ago.

The symptoms of *mannoon* are:—loss of appetite and spirits; discharge from eyes, nose, and mouth; sore mouth and offensive breath; purging, with white flakes of mucus (but he did not observe blood); dung very stinking. Animals generally die in from 5, 6, and 15 days to a month. Symptoms.

Eruptions sometimes are seen on the skin, on the sides of the legs, and on the udder. The disease was well known to our forefathers. Sometimes *mannoon* appears in a mild form, and sometimes severe. Sometimes mild, sometimes severe.

It does not appear every year, but comes among cattle occasionally every third or fourth year. I have myself seen eight or nine outbreaks. I am 35 years old. Sixteen to 18 out of 20 die when the disease is of a malignant type; when it is mild 1 or 2 out of 20 die. When the animal is affected with *mannoon* I do not mix water with the *bhoosee*. I give always water mixed with *bhoosee* to my healthy cattle, and I give as medicine *ghee*, 6 or 8 chittacks, also 3 or 4 seers of curd to cool them after they recover. We do not give anything when they are actually ill, because we find medicine has no effect. Some people give *arrack*, but I do not think it does much good. I have often seen that the cattle get the disease a second time, and the second attack may be severe or mild. I have found that old and full-grown cattle die more from the disease than the calves. I find too that cows die more frequently than buffaloes, but I keep more cows than buffaloes. It generally breaks out in the city of Lahore in February or March, and lasts for two months. I went to a marriage in last May to the village of Durrawaga, about 20 miles from this, and 3 or 4 miles to the right of the Gujranwalla road, and the cattle were there affected with *mannoon*. Occurs every third or fourth year. Between 1810 and 1870, eight or nine outbreaks of *mannoon* occurred. Mortality. Treatment.

I believe the disease to be contagious, but we do not separate the sick from the healthy. I have 35 cows and buffaloes. I keep them for milk purposes. Last year 2 of my cattle were affected with *mannoon*; both recovered. Cattle may have *mannoon* a second time. Old cattle die more from *mannoon* than calves. Season. Duration. *Mannoon* prevailed in May last in a village 20 miles off. Considered contagious.

About nine years ago I lost 11 from *mannoon*; I had then 35 cattle. The *chooras* take away the hides of the dead cattle. I know not what they do with the skins. We consider the disease more dangerous when there is no eruption on the skin, and in those cases the purging is most severe and offensive. Segregation not practised. *Mannoon* prevailed in Lahore in 1869. Also about 1861. Hides. Disease more dangerous when there is no eruption.

1st September 1870.

KHODA BUX, Chowdry of the cattle of Lahore, says there is no disease among the cattle in and about Lahore just now; he has during the last twelve days made searching inquiries and found none. No disease prevailing among cattle in or near Lahore.

Peer attacked the cattle in and about Lahore in April last, when many died; only 2 or 3 out of 20 attacked lived. The disease was very severe. The usual symptoms of *peer* are described by the deponent, and he especially noted the eruptions on the udder and sides of the body, and "that when the eruptions come out well outside, the animal generally lived; but if the eruptions break out internally, the animal generally dies." Those that lived in last April attack had good external eruptions, and those that died had the breaking out inside and passed blood, and those that had the external eruptions did not pass blood. He also states that cattle are liable to a second attack. Peer prevailed last April. Statistics. Symptoms of *peer*. External eruption. Internal eruption.

Suth is when an animal gets choked from some internal swelling. *Suth*.

Bhooknee is a disease of purging, and sometimes blood is passed; still the animal continues to eat; but in *peer* it does not eat. In *peer* the mouth gets sore and rotten; in *bhooknee* the mouth does not get sore or rotten. In both the breath is offensive, but in *peer* is more offensive. Symptoms of *bhooknee* and *peer* contrasted.

In foot and mouth disease the mouth gets sore, but the cattle do not purge, and they very seldom die from it. He never saw the disease pleuro-pneumonia, but he has seen cattle suffering from cough and getting thinner every day. Foot and mouth disease. Pleuro-pneumonia. Does not send cattle to graze.

I never send my cattle to graze. I stall-feed them. I get my cattle from Goozenera and other surrounding villages, and from dealers who bring cattle for sale. My cows are served by bulls kept in Lahore; they are of this country breed. No foreign bulls are ever imported from other parts of the country. A cow that cost Rs. 20 ten years ago, now costs Rs. 30 or 35. I do not know the cause of this increase in price; there are no fewer cattle now than there used to be. Buys cattle from neighbouring villages. Cows served by bull kept in Lahore—a country breed. Bulls not imported. Value of stock.

KOKA.

Village Koka, 15th August 1870.

Andar-ka-matah—
rinderpest.
Symptoms.

Foot and mouth dis-
ease.

The symptoms of *andar-ka-matah* (rinderpest), as detailed by the Lumbardar of Koka, are as follows:—discharge from mouth and eyes; mouth sore and rotten; purging after the fourth or fifth day; passing blood (*per anum*); it is called here internal small-pox (*andar-ka-matah*), because the inside of the animal in this disease is in the same state as the outside of the body of a man affected with small-pox; the animal generally dies; but even if it recovers, it is liable to intermittent diarrhoea for several months, after which it usually dies; but even if it gets well, it is so weak that it is hardly ever fit for anything afterwards. Foot and mouth disease is quite different, and animals never die from it.

The village of Koka is on the borders of the Hafizabad Tehseel, which was devastated last year by the disease locally termed *bhooknee*, or excessive purging, and it is possible that the witness may have in the above description given some of the symptoms of *bhooknee* in addition to those of *andar-ka-matah* (rinderpest).

SHEKHOOPORA.

Village Shekhopoora, 13th August 1870.

Many sick and healthy cattle have been collected by the Naib Tehsildar for examination by the Commission. Most of them are simply in very low condition from scarcity of pasturage, but two are found to be recovering from rinderpest, called here *vah* and *bhooknee*.

The excoriations on the gums and buccal membrane are only partly healed, one or two are cicatrizing, and on one animal the eruptions are well marked, consisting of small points of desquamation of the cuticle; both animals are still slightly purged and the dung is offensive. Two buffaloes also are suffering from rinderpest in an advanced stage. The one, a large buffalo cow, is literally bone and skin and very weak, has great difficulty in breathing. The nostrils are distended and retracted to the utmost extent at every inspiration. Percussion and auscultation denote extensive hepatization of both lungs, more especially the left. The breath is very offensive and the poor beast is purging; more or less mucus is voided. Purging is offensive. This case is evidently a well marked case of pleuro-pneumonia; it is proposed to purchase this animal in order to hold the examination of the body.

N. B.—This animal was purchased, destroyed, and examined on the 16th August.

14th August 1870.

Examined a two-year-old heifer. Owner states that the heifer has been ill 15 days; purging commenced 14 days ago, and is intermittent.

Present symptoms:—thick discharge from eyes and nose, mouth very hot, fever, excoriation of the gums, purging, respiration quickened, pulse 60. Owner states that the heifer is feeding well; she looks weak and distressed, and there is much oedema all round the eyes.

Case of pleuro-pneumonia. Owner states that the animal began to breathe hard a month ago, and got very weak.

ATTUR, a zemindar, states that the district is flat and the soil consists of three different kinds:—

1. Loam, black-earth, or cotton soil.
2. Intermediate, with here and there pits of kunkur.
3. Waste land, sandy, with kunkur.

In Shekhopoora there are about 200 buffaloes, 800 cows and bullocks, and about 1,000 sheep and goats. The cattle are of the native stock of the Gujranwalla "bar" breed. Female buffaloes come from the direction of Delhi. The price of a good working bullock now is Rs. 40; a good buffalo Rs. 50 to 60; a good cow Rs. 30; a good sheep Rs. 3.

The price of cattle now is double what it was ten years ago, while the price of a sheep has been trebled; other things have risen in the same proportion. Cattle are used for ploughing, draught, and dairy purposes. The proportion kept for dairy purposes is about 5 to 1 of those kept for ploughing and draught. In the cold weather and rains cows are housed in thatched sheds at night, and tied outside in hot weather; during the day they are out grazing. There are five kinds of grass, named,—1, *khabar*, 2, *khamun*, 3, *chemur*, 4, *munik*, 5, *gurh*; of these, *chemur* is the common sort which grows everywhere.

Water is obtained from marshes, tanks, and wells in the last resort. Buffaloes are left out day and night in the jungle during the months of Srabun (July), Bhadro (August), and Asin (September). In times of scarcity and famine, cattle are driven from this district towards the banks of the Ravee and Chenab and the Jummoo Terai, about 90 miles off.

There is one cattle fair held in this district at Aminabad, and this fair is held once a year in the beginning of Baisakh (April). Thousands of cattle are purchased at the Umritsur fairs, and those which are not sold there are brought on by their owners and sold privately in

Number of cattle.
Breed.
Present value.
Value ten years ago.
Uses of stock.
Fouling.
Feeding.
Kinds of grasses.
Water.
Cattle sometimes sent
to the banks of
rivers to pasture.
Annual fair in April
at Aminabad.
Umritsur fairs.

this district. Dealers come to this district from Delhi and purchase large numbers of small cows and bullocks, but not buffaloes. Hides are exported from this district to Lahore. The Lahore dealers purchase the hides in large quantities and have them sent on to Lahore, but I don't know what becomes of them then. The number of dealers in hides has increased; ordinary hides now fetch Rs. 2 each, while ten years ago they used to be sold for Re. 1 only. It is not the custom in this district for hide dealers to give advances. They come once a year in Kartic (October) and make their purchases.

SHEKHOOPORA.
Dealers come to buy
in this district.
Hides exported to
Lahore.
Number of hide deal-
ers has increased.
Price of hides in-
creased.

I cannot say how many cattle die from ordinary diseases, but about 50 per cent. in this neighbourhood died last year of the plague called *bhooknee* in this country. This *bhooknee* began the year before last, but the chief mortality occurred last year. This plague does not exist this year, except in a very few isolated cases. None of the country people had ever heard of or seen this disease before two years ago. It had never existed before.

Mortality from
plague.
Bhooknee began the
year before last.
The chief mortality
from it occurred
last year.

This plague began in the district of Sarwal and extended into Jhung as well as this district.

Only exists this year
in a few isolated
spots.
Had been heard of
before two years
ago.

The disease broke out in the hot weather, but the chief mortality occurred in the cold weather.

Began in Sarwal
District in the hot
weather, but the
chief mortality oc-
curred in the cold
weather.

Pleuro-pneumonia, locally known as *daba*, has occasioned some loss in the district, but this is no new disease and does not attack very many cattle. It occurs occasionally. Last year grass was so scarce that many animals died of starvation, but the year before last there was plenty of grass. Last year the mortality amounted to about 600 out of about 1,400, and the largest number of these died from *bhooknee*, but some also from starvation and pleuro-pneumonia. Cattle are liable to be attacked with *bhooknee* without distinction as to breed, age, sex, or condition.

Daba (pleuro-pneu-
monia) is not a new
disease.

The symptoms of *bhooknee* are:—dulness and feverishness; water falling from eyes, nose, and mouth; mouth is full of sores, and tongue and throat swell; loss of appetite; purging, accompanied in the more severe cases with blood and mucus. Cattle die in from 10 days to a month after showing the first symptoms of the disease. In some cases eruptions come out over the bodies of animals attacked.

Occurs occasionally.
Animals died from
starvation last year.
600 out of 1,400 died
—the majority
from *bhooknee*.
Bhooknee attacks all
kinds of cattle.

In the last stage there is difficulty in breathing. As soon as an animal is attacked its milk dries up. Until they become too weak, animals prefer to stand. The people do not know that the disease is contagious, and consequently the sick cattle are not separated from the healthy. Ghee, barley water, and butter and *mendi* are given as remedies, but they are of no avail. No sanitary measures have been adopted, and the sweepers eat the carcasses of beasts which have died of the disease, while the chamars take their skins.

Symptoms.
Duration of attack.
Suppression of milk.
Segregation not prac-
tised.
Remedies.
Sanitary measures.
Sheep and goats also
attacked.

Sheep and goats are also attacked with the disease, and great numbers have died. Men are not affected with this disease. This disease diminishes after the rains, and breaks out in the hot weather.

Man not affected.
Effects of weather.

[This witness, as well as others living in this locality, mixed up the symptoms of *bhooknee* (or excessive purging) with those of *matah* or rinderpest.]

15th August 1870.

A cow, 6 years old, showing a cicatrizing sore on the gums and buccal membrane, and oedema around eyes, with slight discharge from eyes; in low condition and still purging. Is recovering, has been sick about a month.

Case 1.

A cow, 10 years old, showing the same symptoms, has been sick more than a month, and has cicatrizing sores on the gums. Both these cases are evidently recovering from rinderpest. Ten others were brought in a very low condition, with more or less purging from new grass, and evidently suffered from starvation.

Case 2.

16th August 1870.

ASAYEST, cow-doctor, about 80 years of age, states that his father was also a cow-doctor; is an inhabitant of the village of Sham, 5 miles off. He has seen cases of *phcepre* since his childhood, and his father used to treat animals affected with the disease. It arises from heat, and consists in a deposit of matter in the lungs. An animal generally takes five or six months to die, or even sometimes as long as a year; but sometimes in severe and rapid cases an animal may die within two months.

Phcepre (pleuro-
pneumonia) known
in 1800.
Nature.
Duration of attack.

In cases of purging—*bhooknee*—I have seen blood passed, the mouth is hot, the breath is offensive; many cattle die from this disease.

Bhooknee.

In the disease called *khor* the feet and mouth get sore, but cattle do not die from *khor* this disease.

SHEKHOOPOORA. In internal *matah* they live or die in 10 or 12 days. They have sore mouths and pass blood with their purging, but do not have sore feet.

Diarrhoea. Sometimes animals when they over-exert themselves in draught purge, and this purging may last for six months, but blood never passes with this purging. I saw cases of internal *matah* before my beard commenced to grow.

Hooknee only known the last two years. The disease called *hooknee* I have only known these last two years. In *hooknee* the animal drinks and eats as usual. In *matah* there is loss of appetite. Cattle affected with *matah*, if exposed to rain, do not die. They don't invariably die from *matah*, but they invariably die from *hooknee*, and in *hooknee* they don't pass blood.

[N. B.—The cases of rinderpest seen by the Commission at the place are called by the natives internal *matah* by some, and *hooknee* by others.

LAHORE.

Lahore, 19th August 1870, 6 A. M.

Inspection of meat market. Inspected the carcasses and entrails of cattle, sheep, and goats slaughtered this morning in the city slaughter-houses. The Inspector of Markets and Nuisances, Mr. Scriven, waited upon and accompanied the Commission. Of thirteen carcasses of cattle, the liver and lungs of eleven were found extensively affected with cysts (hydatid).

Livers and lungs found affected with cysts. The cysts were found in the several stages of existence—watery, creamy, hard and gritty. The Inspector stated that he usually found these organs in this state. The carcasses of mutton were not found diseased to the same extent, either as regards number or amount of disease, but cysts were found in some of the sheep. The goats appeared to be comparatively free from disease.

Beef said to be usually found so affected. The Commission saw three head of cattle killed and opened (these are 3 of the 13 above noted), and in each there were extensive cysts. No cyst was observed in the meat, but it was in the carcass, so the Commission had not a good opportunity of finding cysts in its substance.

Mutton not affected to the same extent. The Commission observed that one cow, to be killed to-morrow morning, showed symptoms of pleuro-pneumonia, and the left lung was evidently more or less hepatized. The Inspector was requested to have this cow killed in his presence to-morrow, and then take the opportunity of examining the left side of the chest.

20th August 1870.

No cysts observed in the meat. The Inspector of Markets reports that the near lung of the white cow above alluded to was found, on opening the body this morning, to be "heavy" and sticking to the ribs. The liver and lungs of two other cattle killed this morning in the slaughter-house were brought by the Inspector for the inspection of the Commission, as being "very full of cysts and quite corrupted." The Commission found these organs all but disorganised from holding innumerable cysts in every stage of existence. In a portion of one of the livers several cysts have burst and run into each other, and thus formed an immense abscess, the true nature of which was shown on laying the cavity open.

Post-mortem appearances of the lung of the cow. The native butchers are fully aware of this cyst disease, and some of the most diseased livers were not brought for the inspection of the Commission yesterday morning, until they were shown that more livers had to be brought forward, as the number of carcasses was in excess of that of the livers. When these very diseased livers were at length brought for inspection, several of the cysts they contained were cut open, and the contents removed and washed out. The Commission remarked that all the cattle slaughtered and brought for slaughter were in wretchedly poor condition. The Inspector states that they might be taken as a fair average of the condition of the cattle at all times slaughtered. The Tehsildar states that only condemned cattle—worthless cattle—are slaughtered.

Livers and lungs of two cattle killed this morning. Dr. Smith, Civil Surgeon, informed Mr. Charles, a member of the Commission, that tapeworm in human beings is very frequently met with in Lahore.

Diseased. The butchers informed the Commission that the cyst portions of the carcasses are given to dogs, but probably a great deal of it is eaten by the poor people. Even if it is given to the dogs, cysts will thereby be greatly disseminated by the dogs.

Native butchers found hiding the diseased livers. The Commission observed a Hindoo inspecting the meat, and on inquiring, they were informed that the Hindoo community appointed this man for the purpose of seeing that really sheep and goats are killed and provided for the meat-eating portion of the community, and not dogs or any other animals.

From W. M. MUIR, Esq., M. D., C. B., Inspector General of Hospitals, and Principal Medical Officer, British Troops, to the Secretary to the Government of India, Military Department,—(No. 32, dated 18th January 1869).

I have the honor to acknowledge the receipt of your letter No. 1320, dated 31st December 1868, with enclosures (returned), and in reply to state that the important subject to which it refers has engaged my serious attention for some time past, and that during my recent visit to the Punjab on inspection duty I took the opportunity of personally inspecting, at several slaughter-houses, the carcasses of bullocks as they were being slaughtered and cut up prior to their issue as rations, as well as to collect, from every available source, all the information I could pick up during my passage through that section of the country. I have, moreover, carefully perused the documents forwarded along with your communication, and now take the liberty of submitting to you the conclusions at which I have arrived.

1st.—That the cyst found in our horned cattle is the cysticercus medio-canellata or immature tænia, whose characteristics have been carefully studied of late, and are now pretty well understood.

2nd.—That this germ is completely destroyed by the agency of heat pushed to the point required for perfect roasting or baking.

3rd.—That the cyst has probably been long present in our ration beef, being well known to native butchers and graziers under the name of "Jowa," and will, if sedulously searched for, probably be found in rearing grounds other than those of the Punjab, and possibly in mutton as well as beef.

4th.—That needless alarm has been occasioned by ignorantly confounding this parasite with the trichina spiralis of measly pork, from which it is quite distinct.

5th.—That, so far as the records of this department go, no bad effects have been traced to it before or since its discovery in 1866; nothing approaching to "sturdy" in the living body, and no pathological appearances in the dead.

6th.—That the worst effect that it is capable of producing is tapeworm—an inconvenience rather than a disease, and a trifling cause of inefficiency in this army.

7th.—Admitting the fact of the comparative prevalence of tapeworm among the troops who serve in the Punjab, and the presumption which is strong in favor of the disease being caused by the troops eating encysted beef in an imperfectly cooked state, yet it must not be forgotten that water, vegetables, and fruit are as capable of being the vehicles of the introduction of the "proglottis" as beef, inasmuch as it may then be presumed to be in a live state.

8th.—That a large European community in the Punjab is known to consume, with impunity, the very same beef, often the identical carcasses (if I am not misinformed) rejected as unfit for troops.

9th.—For these reasons I am perfectly satisfied that encysted beef, as it is found in this country, may be safely tendered and consumed as rations; and I am prepared to take the whole responsibility of this step upon myself, on the simple condition that such beef be thoroughly cooked.

10th.—In the present state of public feeling, however, I think that it is expedient that those parts of the animal only which are free from cysts (and this the Commissary General reports would at once be a great saving and remove the embarrassment he is at present suffering from in the matter of supply) should be issued; that those in which a few isolated cysts exist, and in the rarer instances (so far as my observation goes) in which they are more generally disseminated throughout the carcass, be for the present rejected and burnt (burying is not sufficient, for reasons which it is not necessary to go into here); and that the inspection of the meat before issue should continue under medical supervision. In a short time I predict that the apprehensions which have been needlessly caused by faulty observation, and more faulty inferences, will have died out, and cysted beef will be as unsuspiciously and harmlessly consumed by our troops as cysted ham is, every morning, at our own breakfast tables.

Extract from a letter, No. 966, dated 31st December 1868, from A. C. C. DERENZY, Esq., A. C. C. DeRenzy, Esq., Sanitary Commissioner, Punjab, to the Secretary to Government of Punjab.

As requested in your No. 4482, dated 30th current, I have the honor to return the original enclosures forwarded with your letter No. 4395, dated 21st idem.

3. The extraordinary prevalence of tapeworm amongst the Artillery at Mooltan drew my attention to the subject some years ago, and I hope shortly to be able to report the result of my observations thereon.

PUNJAB.
Surgeon Major
J. T. C. Ross.
Prevalence of cyst
disease.

Remarks on the Cyst-infected Meat of the Punjab, by J. T. C. Ross, Esq., F. R. C. S.,
Surgeon Major,—dated 23rd May 1868.

From the following tables it would seem that the presence of cysts in the horned cattle killed for rations was less prevalent in 1867 than in the previous year, but that they have returned in greater numbers in the first three months of 1868. There is evidently, therefore, no real diminution of the disease, and no measures appear to have been instituted for its prevention or remedy.

	Number of animals slaughtered for rations.	Number found infected.	Percentage of infected animals.	REMARKS.
RAWUL PINDEE.				
1866, from 19th January ...	1,305	111½	8·4	Taken from Bengal Sanitary Report for 1866. No animals were found infected in July, August, and November.
1867, whole year ...	2,849	63	2·2	From return given by Assistant Commissary General, Rawul Pindee, for every month in the year.
1868, first 3 months ...	461	66	14·1	Ditto ditto ditto.
CAMPBELLPORE AND SYDUN BAOLIE IN 1867-68.				
1866	485	26½	5·3	From Sanitary Report for 1866. No animals found infected in January, February, August, September, October, and November.
1867	970	3	·3	Every month in the year; return given by Assistant Commissary General.
1868, first 3 months ...	226	0	0	Ditto ditto ditto.
MURREE.				
1866, 4 months	213	9	4·2	From Sanitary Report for 1866. Reports in May, July, August, September; no cysts found in other months.
1867	1,380	9	·6	Every month in the year; return given by Assistant Commissary General.
1868, first 3 months ...	19	0	0	Ditto ditto ditto.

It has been remarked that the number of animals found infected is greatest in the cold weather months, January, February, March, October, and December, but the following statement does not bear this out, except at Rawul Pindee.

In 1866, at Rawul Pindee, of the 1,305 killed and 111 found infected, 756 were killed and 95 found infected in January, February, March, October, and December; the remainder, 549 and 16, were in the months of April, May, June, and September.

At Campbellpore, 337 and 16 are the numbers for April, May, June, and July; the balance, 148 and 9½, in March and December.

At Murree, all found infected were in the months of May, July, August, and September.

In 1867, at Rawul Pindee, of the 2,849 killed and 63 infected, 1,334 and 52 are the numbers for the cold weather months; 1,515 being killed and 11 found infected in the six hot months.

At Campbellpore and Sydun Baolie 486 were killed in the six cold weather months, and none found infected; 484 in the six hot, and only 3 found infected in July and August.

At Murree 266 were killed in the six cold months, and 4 found in October; 1,114 in the six hot months, and 5 found in May and June.

PUNJAB.
Surgeon Major
J. T. C. Ross.

					PUNJAB.	Surgeon Major J. T. C. Ross.
	Number of animals slaughtered for rations.	Number found infected.	Percentage of infected animals.	REMARKS.		
PESHAWUR.						
1866, 3 months ...	793	26	3·2	{ From Sanitary Report for 1866 ; three months only, March, April and May, no cysts being found in other months.	Prevalence of cyst disease.	
1867 ...	{ The return is given in pounds ; 2,310 lbs. were destroyed as cyst-infected in February, September and October only, during the year. The number of animals slaughtered altogether could not be ascertained.					
1868, 3 months	{ 1,210 lbs. were rejected in the first three months, 65 lbs. in February, the remainder in March.					
NOWSHEERA.						
1866, 7 months	744	29	3·9	{ From Sanitary Report for 1866, March, April, May, June, July, August, and December ; cysts not found in other months.		
1867	3034 lbs. rejected in December only of the year.					
1868	13,473 lbs. rejected in January, February, and March.					
ATTOCK.						
1866, 9 months	262	22	8·4	{ From Sanitary Report 1866 ; cysts not found in January, February, or May.		
1867	579 lbs. rejected in the year ; 112 lbs. in February and 367 lbs. in December.					
1868	156½ lbs. rejected in one day in February only.					

The incompleteness of the above return forbids any comparison with the neighbouring district, Rawul Pindee. The Peshawur Commissariat Officer informs me that the numbers of slaughtered cattle, and those found infected among them, could not be ascertained for 1867 and 1868, "as pounds are what we look to, to know what the loss is." It is a pity similar returns from the two districts were not procurable.

The disease was first recognized at Rawul Pindee in January 1866, and it did not occur at Campbellpore, Attock, or Peshawur until March.

The returns and reports show that the cattle first found infected came from the Jhung, Shahpore, Gogaira, Lahore, and Gujranwalla districts,—principally from Shahpore; but early in 1868, Major Lowe, the Commissariat Officer at Peshawur, reports, "all the horned cattle purchased from the Attock outpost came from the Huzara district, and those for Peshawur have come from Lahore, Rawul Pindee, and Eusufzaie districts."

The natural history of this disease in cattle would make it probable that it first originated at Shahpore, and was reproduced along the lines of traffic by the animals themselves, as they passed up-country, and thus the complaint has been spread to such outlying places as Huzara, Eusufzaie, &c.

Dr. Cobbold, the English investigator of these parasites, thus describes the origin and spread of the disease. A man or animal has tapeworm; an ordinary tapeworm may be made up of 1,200 joints or segments, about 750 of which may become reproductive; each joint or segment contains a reproductive organ, the egg-bearing portion in which could contain 45,000 eggs; these eggs are capable of escaping from the body of the worm by a natural opening in each joint, and may thus pass out of the infected body; or a joint itself may be detached from the worm, and escape through the natural passage of the animal on the ground, where, having an independent existence, and being able to travel in all directions, and the eggs in its interior being set free by the death of the segment, their dispersion brings about the continuance of the species, the agencies of earth, air, and water assisting in the spread.

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Every perfect egg contains a young tapeworm larva: when an egg is swallowed, the gastric juice dissolves the egg covering and sets the embryo free, which immediately proceeds to bore through the walls of the stomach, and travels onward until it finds its recognized and natural resting place in muscles or elsewhere.

Professor Davidson at Netley thus, also, shortly puts the whole process:—

"A vertebrate animal harbours in its intestines a sexually mature and perfect tapeworm; the ova of this worm pass to the outer world, and are disseminated among grass, fruits, vegetables, or water. By means of some of these agents, as materials for food or drink, they are introduced to the intestines of the second animal, and here escaping from their strong investing egg capsule, the embryos, by means of their boring apparatus, pierce their way to the inner organs and become encysted, passing through those intermediate stages of growth, during which they are known as cysticerci or hydatids. Finally, by means of animal food containing them, these larval forms reach the intestines of the third animal, where the ultimate change of transformation into tapeworm takes place."

The cysticercus cellulosa of the pig is mostly found in all the muscles of the animal, and has been found in man—in the eye, brain, and muscle of the heart.

The cysticercus mediocanellata, or bovis, of horned cattle is yet only known to occur in the muscles and internal organs of the animal, and has, as yet, never been found in man.

The tapeworm from the pig has its head furnished with suckers and armed with hooks; that from beef is unarmed, having suckers only.

It is only within the last twenty-five years that researches have gained an insight into the generation and development of these parasites.

In 1853, in Germany, the experiment was first made of making a pig eat a piece of tapeworm, and 4½ months afterwards the animal was found infected with the cysticercus cellulosa. In 1855 similar experiments were made on man, and several persons being fed with these cysts, tapeworms were passed two or three months afterwards.

This particular parasite, the cysticercus mediocanellata or bovis, was first discovered in Germany in 1835; but it is only very recently that its presence has been so much brought to notice.

Dr. Thudicum, in his report to the Medical Officer of the Privy Council in 1864, writes:—

"1. The tænia mediocanellata has been observed in London in the present year, but it has only just been zoologically established as a distinct species.

"2. Only young calves can be infected with the cysticercus mediocanellata.

"3. It may be found that the cysticerci do not long survive the adult stage of the host in which they live, and that therefore well-seasoned ox beef, or old cow or bull beef, is always free from them.

"4. The cysticercus has not yet been found in beef."

Statements Nos. 3 and 4 are now proved entirely incorrect.

Dr. Cobbold, in his edition on tapeworm of June 1866, now says of England, that tapeworm from beef infests the people more than the tapeworm from the pig; that out of 120 passed worms examined, 95 had their origin from infected beef; and he otherwise proves that in the present day the flesh of cattle used as food is more commonly infested with the larvæ of tapeworms than the flesh of swine.

Dr. Cobbold fed a calf with matured segments of the unarmed tapeworm: three months afterwards it was killed and found to contain 8,000 measles (or cysts), each one containing the young of the worm; at the time of slaughter the animal appeared perfectly sound and in good condition.

The after-life of animals thus infected is not yet thoroughly understood; it is supposed that it takes about one year "for the measles to lose their power of doing harm to the consumer. In this time a natural death of the larvæ results from calcareous degeneration."

Observers in the Punjab record that it is the fattest animals that produce the most cases of infection; it is the same in England; probably the cysts grow and develop themselves from the greater amount of nourishment they can acquire as the animal improves in condition.

It is also known in England that parasitic diseases have their seasons, in which they are common, out of which they are rare; thus measles in pigs, and hydatids in sheep, are only found, as a rule, in the colder months of the year.

There is no certainty as to how long this disease may have been prevalent among the cattle of the Punjab. Major Lowe, who has paid much attention to the subject, states that old residents (native) at Peshawur say that cysts (called *jowa*) have been recognized from time immemorial.

Major Davidson, writing from Rawul Pindee, January 1866, thinks it probable that cattle have been similarly affected for years, and quotes evidence of cattle dealers who supply the

Rawul Pindee Commissariat. "We well know that in fat cattle there is a kind of secretion called *jowa*; it is not an insect: we eat the meat, and have never felt any ill effects."

I could obtain no other reliable evidence on this subject.

My own opinion is that the disease is recent. It is only since 1865 that cysts have been recognized to infect beef in England, and with all the care there used, it is only natural to suppose that if it had been present, it would have been discovered before. The cyst is such a marked and distinct object, as seen in the buttock of a well-conditioned ration animal, that, speaking from my own experience, I cannot understand how, if it existed long in the Punjab, it could have been passed over. In 1861 and 1862 I inspected the rations at Peshawur four or five times every week, and if cysts had been present then, I cannot conceive how they could have been overlooked.

From the foregoing account the origin and spread of disease is easy to understand. It is seen how, from the casual introduction into a country of one tapeworm, its eggs may be scattered all over the land, the grass, the water, the dust being all, insensibly, foci of the disease; and the more animals that become in time affected, the more it spreads among all the herds. It has been proved that a measly sow impregnated by a measly hog does not bring fourth measly young; therefore we may conclude that the same holds good in horned cattle.

It seems perfectly hopeless to attempt to eradicate the disease from an infected breed by medicine, or changes of food, pasture, or water; but by preventive measures measly pork has almost ceased to be found in England.

In 1854 measly pork was exposed for sale in every London market. Dr. Thudicum in his inspection during 1864 did not find one specimen.

At places of export and import measly pigs have been stopped. If such meat is exposed for sale, it is confiscated and the seller fined; thus the great difficulty of importing, selling, and avoiding seizure has been an almost perfect prevention to the extension of the disease.

These prohibitions and restrictions have brought almost to perfection the power of rearing pigs without these parasites, and Dr. Thudicum states, "the large breeding establishments of pigs in Germany, Holland, Belgium, and Ireland breed pigs which are as free from parasitic disease as those of the best English breeding establishments. During 1867, 49,175 healthy swine were imported into the United Kingdom.

As far as present knowledge goes, it would appear to be impracticable to expect to eradicate the disease from the present infected parts of the Punjab. If the disease in cattle were as easy to detect as it is in pigs, prohibitive measures might be adopted against their sale; but no certain means of detection before death being at present known, the disease can only die out by breeders not being able to sell their present stock of cattle, and they may thus, in time, rear up fresh breeds that will prove untainted; the accounts given of the condition of cattle in the breeding districts all show that some change and care in the pasture, feeding, and herding of cattle is required.

But in the meantime a very large yearly loss is being sustained by Government in the destruction of its ration meat, and the disease may so go on spreading (for there is nothing that can prevent its doing so by natural causes) until beef may cease to be procurable for rations.

It appears to me that the only course open for the provision of future years is to establish breeding studs, where animals can be fed properly from birth; or to purchase them very young, before they have been turned out into jungles to graze, and to stall-feed them entirely and with care until they attain the age to be killed for ration, which ranges from 2½ to 4 years.

I cannot ascertain whether any attempts have been made in England to preserve the population from cyst-infected beef.

At one time it became a question at Rawul Pindee whether thorough cooking of the infected parts would not render their consumption innocuous. A committee inspected thoroughly boiled and roasted joints, and recorded that the parasite had not lost its vitality, but that in baked portions the cyst had become coagulated. It is recorded by Major Lowe that the people who eat beef at Peshawur do not mind the disease being present in it, and do not suffer from tapeworms, but they cook the meat entirely by baking and making it into force meat.

Salting, smoking, and perfect cooking are reported by Dr. Thudicum to destroy the contents of all cysts in pork, whose interior can thus be reached; but it does not follow that some cysts will not escape destruction, whose contents can as well spread the disease as if they existed in greater numbers. Dr. Cobbold states that boiling water destroys the vitality of the measles in pork. No similar experiments appear to have been made with the flesh of cattle.

It must therefore remain at present, I think, a very doubtful question whether any amount of barrack cooking would render the parts safe to be eaten. While perfectly certain

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that under-done meat is dangerous, it is not so certain but that thorough baking might prevent much ration meat being condemned.

Very great care and supervision should be exercised to ensure diseased meat being thoroughly destroyed at the stations where it is often rejected. At Nowshera the Medical Officer and Quarter Master informed me that the condemned meat had been known to be dug up, and might be offered for sale in the bazaar: burning before burial is the only safeguard against this, as burying, except at a very great depth, not only incurs the above danger, but the flesh might be exhumed by animals of the jungle, who would thus become infected, and their droppings contaminate the grass in the district.

Dr. Cobbold has recently stated that mutton, hitherto supposed to be perfectly innocuous, is liable to harbour the larvæ of tapeworm. The type of worm has not as yet, however, been decided on, but joints of mutton have been seen to contain hydatid-like cysts, and specimens of such measles in a calcified condition have been exhibited to the Pathological Society of London. Once a perfect specimen of an armed cysticercus was found in the interior of a mutton-chop.

The above would seem to show that it would not be premature to take precautions about this, and that sheep and horned cattle, at the infected stations, should not be allowed to feed in the same parts.

I do not think that medical officers in the Punjab stations are at all of the same opinion as to the type of tapeworm passed by their men. In many cases the head was stated not to have come away; in these the presumption would be that it was of the armed species from pork, and only one medical officer informed me that the head seen was of the unarmed species (from beef.) It would be strong evidence on the subject if extended and careful observations (by microscope) were recorded on this point, and should determine the question how much tapeworm arises from pork, and how much from beef.

In the present state of the station piggeries, except at Peshawur, any amount of disease might exist among swine, and be disseminated among the troops.

MEERUT.
Dr. J. Fleming.

From J. FLEMING, Esq., M. D., Staff Assistant Surgeon, to the Deputy Inspector General of Hospitals, British Forces, Meerut,—(dated 27th May 1870).

In reply to an official letter from J. H. B. Hallen, Esq., President of the Cattle Plague Commission, dated Camp Lucknow, 4th May 1870, requesting me to communicate the nature and treatment of the disease that I observed among cattle at Meean Meer, I beg that you will forward to the President and Commission the following remarks based chiefly on a few visits to the slaughter-yard of that station during last year.

A short paper on "Cyst-infected Meat" was forwarded to the Inspector General of Hospitals on the 24th of April 1869, and a copy afterwards appeared in the *Indian Medical Gazette* for June following, to which paper I beg to draw the attention of the Commission. It refers particularly to the extraordinary prevalence of the "Cysticercus Bovis" (Cobbold) in the cattle of the Punjab, and suggests a method of prevention deduced from the facts obtained by the best experimental helminthologists. I can hardly add anything to what has been already written on the subject, except to refer to an experiment performed in 1866 by that distinguished investigator, Dr. Cobbold of London. He fed a heifer with ripe proglottides from tapeworms, and about a year after, when the animal was slaughtered, he found that the developed cysticerci had undergone a calcareous degeneration, and could only be recognized by the unaided eye as minute yellowish points on the muscles, but whose nature could be made clear by microscopic examination. From this experiment he considers it proved that a period of 10 or 12 months is fully sufficient to insure the natural death (by calcareous degeneration) of the smaller tapeworm larvæ which reside in cattle. (*Vide* his Supplement to Helminthology, pp. 33 and 34). If such is really the case, it is an important discovery, and it follows that cyst-infected cattle, if kept for 12 months and supplied with clean food and drink, would at the end of that period, when slaughtered, be incapable of conveying the tapeworm disease to man. This, in my opinion, requires confirmation, and is worth a trial before being accepted as a general rule; the opportunities being numerous in India for doing so. I have not observed the minute yellowish specks in the beef which Dr. Cobbold mentions, but I have noticed cysts in a state of degeneration; nevertheless, if his rule be true, they must have been present, as there is reason to believe that the conditions for the propagation of cysticerci always exist in most parts of the country.

A few visits to the slaughter-yard at Meean Meer will be sufficient to convince the most sceptical that parasitic diseases have a firm hold on the cattle and sheep of this country, and that they may ultimately be the means of seriously affecting the supply of animal food, besides propagating themselves in man and animals generally. The condition of the cattle

at Meean Meer is probably not worse than in many other stations in the Punjab, where the parasites may have escaped attention, or where no examination had been conducted, and the bad, unwholesome, lean flesh would be attributed naturally to a dry season and inferior food. The following are the parasites which I observed often present in the same animal:—

I.—Cysticercus Bovis (Cobbold).

II.—Cysticercus Tænia Echinococcus.

III.—Fasciola Hepatica.

IV.—Amphistoma Conicum.

I.—The Cysticercus Bovis or Cysticercus Tænia Mediocanellata has been referred to Cysts already (*Indian Medical Gazette* for June 1869), and methods suggested to prevent its ingress to cattle and man, for there can be no doubt but that it causes the majority of the tapeworms in this country which infest our soldiers and the civil population. Tapeworm disease is much more extensive in India amongst men, women, and children than we are aware of, and it is no doubt rapidly increasing, though there is a difficulty in ascertaining exactly to what extent. During a short period at the Landour Dépôt last season, I noticed that out of a strength of about 30, who were in or attending hospital for various diseases, 8 were affected with tapeworms derived from beef. What share the lower animals have in the propagation of the disease is still a problem; but it is certain they are affected to a great extent, possibly with different species, or different stages of the same species, though it may be not all. In illustration of this I have removed as many as a dozen sexually mature hookless (?) tapeworms, averaging ten inches long, from the small intestine of a Landour rat.

II.—The Cysticercus Tænia Echinococcus was present in almost every case, occupying the lungs and livers of the cattle to a greater or less extent; indeed it was often a matter of surprise how the functions of the liver, and especially respiration, could possibly be carried on, so extensive was the invasion of these parasites.

They are the larval stage of the Tænia Echinococcus, according to Dr. Cobbold and others; but Keschewmeister says that two forms of tænia equally produce them. However, it is certain that the eggs of the Tænia Echinococcus of the dog will, when introduced into the system, produce this form of disease in man and animals, and it would be interesting and important to ascertain the prevalence of the mature form of the parasite in the dogs of the Indian villages.

The wolf, the fox, and the jackal, besides many other animals, may possibly harbour the Tænia Echinococcus in this country as well as the dog, but it still remains to be seen if such is the case, and to what extent they influence the spread of hydatid disease in cattle and sheep.

The treatment of hydatid disease, which naturally presents itself, is entirely preventive and based on sufficient data to warrant its partial success, at all events in India.

Four-fifths of the number of dogs, particularly in the villages and cattle districts of the Punjab, and in fact in all infected districts, should be destroyed, and the larvæ of the Tænia Echinococcus in the various slaughter-yards should share a similar fate, to prevent the chance of their being thrown out as useless refuse and swallowed by the numerous dogs, jackals, and wolves that frequent those places. Should the Commissioners decide to recommend a destruction of the dogs, which seem to be the common property of the villages, it is hoped that a *post-mortem* examination may be conducted to ascertain the prevalence of the Tænia Echinococcus and other forms of parasites, and thus practically contribute to the advancement of the science of helminthology. Some method might be introduced for cleansing the foul, polluted ponds in the infected districts, and affording to cattle a comparatively pure drinking water, which would assist to prevent the spread of almost every form of animal parasite which resides in cattle and sheep.

III.—The extent of disease caused by the Fasciola Hepatica and other Trematoda in the cattle, sheep, &c., in this country has not been ascertained, but their share in the production of epidemic disease has, I believe, been recognised in Great Britain and Europe generally, and it is possible, from their prevalence, that they play an important part in the diseases of animals in India.

IV.—Amphistoma Conicum. This parasite was noticed in numbers in the liver, associated with the Fasciola Hepatica. Dr. Cobbold refers to one in his work on Entozoa, p. 38, found in the paunch of a zebu in the London Society's Menagerie. An extended examination will no doubt prove the existence of others, but even the prevalence of those enumerated, especially the first two forms, induces us to believe that the country, at present a breeding ground for parasites, is invaded by a widespread preventible disease, dangerous alike, directly and indirectly, to man and the resources of the country. I have preserved the species of parasites enumerated in this letter, and they can be examined at any time by any one interested.

MEEAN MEER. *Remarks on Cyst-infected Meat at Meean Meer; its nature and prevention.* By J. FLEMING, Esq., M. D., F.R.C.S., Staff Assistant Surgeon.

[INDIAN MEDICAL GAZETTE, JUNE 1869.]

On cysts and tape-worms.

Any cause which affects, directly or indirectly, the health or wealth of a population is of sufficient importance to demand a careful study. We shall see in the sequel that the cyst-infected meat at Meean Meer, and I am told in many other parts of the Punjab, is a cause which may operate in both ways with pecuniary loss to Government and a serious injury to the public health. From a return, furnished me through the kindness of the Executive Commissariat Officer in this station, it appears that 2,651 cattle were slaughtered during the year 1868 for the use of the troops, and of this number 235 were found cyst-infected, and accordingly condemned, showing a percentage of 8.86. In the years 1866 and 1867 the cattle are shown to have been quite free from cysts. For the month of January, this year, 337 were slaughtered, and 125 were found cyst-infected, being a percentage of 37.09. For the month of February 381 were slaughtered, and 104 condemned for the same cause, giving a percentage of 27.29. Therefore the total number of cattle found cyst-infected in this station up to, and for the month of February amounts to 464, which, calculated at the average price of Rs. 8-8 per head, gives a total loss to Government, not including other expenses, of Rs. 3,944. From this return it is evident that the disease is increasing; but it is likely that the numbers found cyst-infected will vary inversely, according to the amount of rainfall. The Executive Commissariat Officer informs me that the cattle purchased from every district in the neighbourhood of Meean Meer are cyst-infected, equally with those from Hoshiarpore and Ferozepore. The cyst-infected meat is caused by the scolex condition, which is the second stage towards full development of the *tænia mediocanellata*, and is found in almost every tissue of the animal, but mostly well observed in the tongue and between the fibres of the muscles.

The cyst is easily detected, and often exceeds half an inch in length, while the enclosed invaginated worm, when protruded with its caudal vesicle, may be even more than one inch long, but many others, in different stages of growth, cannot be detected by the unaided eye.

There is some little difference, perhaps worth mentioning, between the drawings which illustrate this subject in Cobbold's work on Entozoa, and the specimens from the beef in this station which I have examined. In these latter there is a central apparently sucking disc situated between the four large discs, corresponding to the place of the rostellum in the *cysticercus cellulosæ*, and in the work referred to this disc is wanting; but I believe they are really the same, and the different appearances may be owing to a lithographic error in Dr. Cobbold's book. The same remarks are applicable to the drawing of *tænia mediocanellata* in Dr. Aitken's "Practice of Medicine." It is now well known and proved by actual experiment that when these larvæ or solices are introduced into the human body in a living state with the food, they become developed into mature tapeworms. No doubt cooking the meat well should destroy them; but I think it would not be an infallible remedy, and besides might be difficult to carry out at all times, as the idea is very popular that meat should be under-done.

Tapeworms are not pleasant companions, and should, if possible, be avoided, since they give rise to unceasing annoyance to their unfortunate hosts, and produce symptoms often of a serious nature. Upwards of a hundred cases are recorded, both in our own country and on the Continent, where the scolex condition of the tapeworm has infested the human body and caused death; and there is reason to believe that many cases returned as "died from natural causes" may have been owing to the development of immature *tænia* in the brain, or in some vital organ. Certain epileptic seizures which in many cases terminate fatally can be distinctly traced to tapeworms, and many instances are on record where the expulsion of the worm from the intestines was followed by a complete cure of epileptic convulsions. The development of immature *tænia* in the brain—even one—is sure to cause death, and a cure at present is beyond the reach of medicine and surgery. Tapeworms cause an amount of distress that, from their nature, can readily be imagined, and continental observers, who usually lead the way in investigations of this sort, have gone so far as to note down sets of symptoms for their diagnosis, ending with mania or imbecility. The development of the *cysticercus tænia mediocanellata* in cattle cannot add to the nutritious value of the meat, but rather the contrary, while it serves admirably to propagate an abominable disease in man.

The importance of a subject which bears such a direct reference to the health and well-being of a European and Native population is very plain, and should induce steps to be taken to prevent a disease which naturally tends to increase rather than to diminish. The state of the inhabitants of Iceland, Russia, and Abyssinia affords us practical lessons, from which we should profit in a great measure. It is reported that in Iceland one-sixth of the deaths of the population is caused by the scolex of a tapeworm which infests the dogs, and even in this station it is most remarkable to see the great number of slaughtered cattle, otherwise apparently healthy, whose livers and lungs especially are disorganised by masses of these immature tapeworms. The hydatid disease, as the latter is called, is not very common amongst soldiers in this country, but it is sometimes observed; I should expect it, however, to be common

amongst the native population, considering the relatively very great number of dogs to be found in the Indian villages, and it is certainly common amongst cattle and sheep. From what we know of the wanderings, life changes, and development of this class of parasites—and that knowledge is not a theory, but the result of actual experiment and observation—we are in a position to point out measures, prophylactic and definite, which, if properly carried out, would have the effect of getting rid of the disease.

Tapeworms, whether they occur in the mature or immature forms in man or animals, especially epidemic, cannot be looked on in any other light than indices of bad sanitation in the towns or districts where they are prevalent. I will not say that the sanitary condition of the villages and towns of the Punjab is inferior to, and more neglected than, other parts of India; but I cannot avoid stating that the condition of some of the villages in the Punjab, through which I have passed, is a disgrace to any executive professing to have for its object the care and welfare of the population. To any one who has the courage to examine the interior and outskirts of some villages, it will be apparent that the most ordinary rules of sanitary science are utterly disregarded, and he will see, during the course of the day, men, women, and children obeying the calls of nature in every possible direction, usually close to some pond, which is near every village, and cattle coming to drink and roll in the pond, which probably already contains, in its water and mud, tapeworm eggs beyond human calculation. This, then, is the true source from which cattle become cyst-infected, whether they receive the eggs from the water or grass; since the human body is the host for the mature parasite. If an enquiry should be instituted, I would expect to find full-grown tapeworms amongst the population in the towns and districts which furnish cyst-infected cattle, and their ova also, particularly in the water used by the latter.

As our knowledge of the natural history of this class of parasites or entozoa is tolerably perfect, it enables us to suggest plans for their destruction, before they arrive at the cysticercus stage.

First.—Find out the districts which supply the cyst-infected cattle, and let there be a thorough examination for tape-worm amongst the inhabitants of those districts.

The mature worms, when found, should be expelled from their hosts by some powerful anthelmintic medicine, and the ova destroyed.

This plan, if properly carried out, would be most successful, and the propagation of the disease would thereby be entirely prevented.

Second.—Examine microscopically the water, &c., of those infected districts for the ova of the tape-worm, so that, if it is found to contain them, it should be avoided when practicable.

Third.—Establish a system of latrines in every village, under the superintendence of the chief zemindar, who should be accountable for the general sanitary condition of the whole neighbourhood. By such a plan, at all events, attended with little or no expense, there would be less tendency for the ova to pass into the water or food used by the cattle, or to be washed by the rains over the whole district; but, on the contrary, the ova would be localized, and, perhaps, be destroyed in a short time by slight decomposition.

It has been suggested to organize cattle farms under the management of the Government, and thus insure a supply of good well-fed cattle for the use of the troops; but it might be rather difficult to carry this out, and it would certainly be attended with great expense, besides checking, in some degree, the trade of the country and preventing local enterprise. Neither would such a system produce non-cyst-infected cattle, if the sanitary arrangements already proposed were to be neglected.

MOOLTAN DIVISION.

From W. E. BLYTH, Esq., Deputy Commissioner, Montgomery, to the President, Cattle Plague Commission, Cawnpore,—(No. 330, dated 3rd May 1870).

MONTGOMERY.
W. E. Blyth, Esq.

In reply to your letter B, dated 28th April, I have the honor to state as follows.

1. There has been no disease among cattle since 1867, and with reference to that year, I will answer your queries *seriatim* from the Police Report, dated 4th December 1867.

2. *Name of disease.*—These diseases prevail amongst the cattle:—1st, *suth* or stroke; 2nd, *chechuck* or *seetlah*; 3rd, *mukhuri* or discharge from mouth.

3. *Symptoms.*—The diagnosis of the disease called *suth* is,—swelling in the neck and ribs, and distention of stomach; blood is voided instead of dung; discoloration of skin and hair; great difficulty in breathing and swallowing food, occasioned by obstruction in the throat; there is great heat in the body. Sometimes there is no external swelling or symptom, but congestion of blood in the intestines occasioning great uneasiness to the animal and inability to eat; ulceration of tongue also occurs.

MONTGOMERY.
W. E. Blyth, Esq.

4. That of the disease called *checkuck* and *seetlah* (cowpox),—cutaneous eruption as in the case of human beings; swelling of the palate and tongue; skin becomes black, and eyes red; disinclination or inability to eat, and there is a watery discharge from the mouth.

5. That of the disease called *mukhuri* is,—ulceration of the legs and tongue, a flow of frothy matter from mouth.

6. *Average duration of attack.*—In the first disease, *suth*, death in some instances ensues almost instantaneously; sometimes the animal either recovers or dies within two or three weeks.

In the second the affected animal either recovers or dies within two or three weeks.

In the third it generally lasts nine or ten days.

7. *Average number of deaths per cent. of those attacked.*—The average number of deaths per cent. of those attacked cannot be given, as no record was kept of it.

8. *Contagious or not.*—Yes, all these diseases are considered contagious, as the affected animals were separated from the healthy ones.

9. *Post-mortem appearances, if any, observed.*—These were not observed, hence no information is available.

JHUNG.
G. E. Wakefield, Esq.

From G. E. WAKEFIELD, Esq., *Offg. Deputy Commissioner, Jhung, to the President, Cattle Plague Commission, Lahore*,—(No. 468, dated 16th June 1870).

In reply to No. 287, dated 16th May, states that after very careful inquiry it has been ascertained that cattle disease does not exist in an epidemic form in this district; there are sporadic cases occurring of the disease which was prevailing last hot season, but nowhere with such force and persistence as to warrant the Committee being invited to visit any particular spot, as, under its present condition, there would be no certainty as to their finding the disease in any one locality whence cases had been reported.

In case the disease should develop in any tangible manner, immediate report will be sent to the Commission.

The separate memorandum appended shows the symptoms of the disease, of which scattered sporadic cases are reported.

MEMO. FORWARDED WITH NO. 468, DATED 16TH JUNE 1870.

Symptoms, &c., of cattle disease, of which scattered sporadic cases are reported in the Jhung District.

The eyes of cattle affected become blood-shot and water; great thirst exists; after two or three days a bloody flux sets in, sometimes only a white flux; in an average of eight days the animal dies or recovers. The animals refuse all food, but drink greedily; there is great emaciation. The mortality is very great, *i. e.*, of those affected few recover. The general report is that there is no remedy. The zemindars, however, mix butter with sugar or water and administer it, but they admit that the effect is seldom beneficial.

MOOLTAN.
A. Brandreth, Esq.

From A. BRANDRETH, Esq., *Commissioner and Superintendent, Mooltan Division, to the Secretary to Government, Punjab*,—(No. 145, dated 14th July 1870).

In reply to your Circular No. 38, I have the honor to enclose a copy of my note to Colonel Ferris, and his reply, which will show that there was but little disease here. It corroborates the statement in my former reply to the Commissioner.

2. From conversation with several intelligent natives, I have been led to believe that the cattle succumb more rapidly than formerly to any contagious disease, and very probably because, as stated by them, the cattle get little or no salt now. I believe some similar observation was made in England during the cattle plague. If I recollect right, the disease in Gujranwalla followed on an unusual fall of rain which led to the growth of much poor, weak, and long grass, and I think this also corresponded with the state of things in England. But I do not know enough of the subject to feel that the above opinion is worth even recording.

Demi-official letter from A. BRANDRETH, Esq., Commissioner, Mooltan Division, to the Deputy Commissioner, Montgomery,—(dated 5th July 1870).

What percentage of your cattle do you think died at Jhung? Our idea was that it was hardly four or five per cent. Let me know quickly if you can. Have they had any dying in your new district?

Demi-official letter from MAJOR R. J. D. FERRIS, Deputy Commissioner, Montgomery, to the Commissioner and Superintendent, Mooltan Division,—(dated 10th July 1870). MONTGOMERY.
Major R. J. D. Ferris.

As far as I can recollect, 15 per cent. was supposed at first to be the loss in the Chinote Tehseel, but this afterwards was believed to be much exaggerated. The disease I do not think lasted more than three weeks. It came as far as the borders of the Jhung Tehseel, and then disappeared altogether. The loss at Jhung, as far as I recollect, did not amount to more than 3 or 4 per cent. I reported the appearance of the plague at the time, and I know afterwards that I came to the conclusion that I had been taken in. There was little or no reduction of the Tirnee revenue, and I got very few petitions for reduction, and these chiefly from people on the Gujranwalla border, where I heard reductions had been largely made.

I have written this from recollection, but I think you will find it very nearly correct.

From G. E. WAKEFIELD, Esq., *Officiating Deputy Commissioner, Jhung, to the Commissioner and Superintendent, Mooltan Division*,—(No. 270, dated 18th August 1870). JHUNG.
G. E. Wakefield, Esq.

In reply to No. 154 of the 7th ultimo, with enclosures, requiring a report on the cattle disease which prevailed in Chinote Tehseel last year, reports that the cattle disease was an epidemic of the same form as that which was prevalent in the Gujranwalla bar.

2. The statistics of mortality, with value of cattle that perished, calculated according to the Gujranwalla rates, are as follows:—

	Rs.
1,109 male buffaloes valued at Rs. 30 each	33,270
3,478 female " " at " 40 "	1,37,120
3,741 bullocks, at Rs. 20 each	74,820
6,467 cows, at Rs. 15 each	1,07,006
<u>14,795</u>	<u>3,51,215</u>

3. The disease has not appeared in an epidemic form this year, but sporadic cases have occurred from time to time, and this was duly reported by the undersigned to the President of the Cattle Plague Commission, who have determined on coming to Jhung to enquire on the spot into the nature of the disease.

Village Shaik Boreham, dated the 24th August 1870.

SHAIK BOREHAM.

Evidence of villagers of Shaik Boreham, four miles south of Kamalia, close to the high road between Jhung and Montgomery. The disease *peer* has been affecting the cattle of the village for the last month. It first attacked a neighbouring village in the month of Jait (April), but we do not know where it came from to the other village. Evidence of villagers.
Locality.
Peer prevailing.
Source of disease.

The symptoms of *peer* are,—discharge of water from the eyes and nose, then purging follows in about eight days; off feed and water; and after four days of purging, blood is passed. It is also said that when these sick cattle see water they get frightened and die there. Some of the animals affected were inspected by the Commission. Symptoms.

A male buffalo, aged 4 years; sick 8 days. The symptoms shown are,—discharge from eyes and nose, blood also passing from near nostril; eyes sunk, eyelids almost closed; very weak; pulse about 60, and very weak; has been purging for eight days; no blood said to be passed; condition poor; has fallen off very much indeed; no eruptions; total loss of appetite; the breath is very offensive; the gums are much congested; the buccal membrane slightly congested; and there is one well-marked excoriation on the gum surrounding the central teeth; the muzzle is dry. Case.

A buffalo cow (calt) of nine months old, said to be two days' sick: off feed; lying down; viscid discharge from eyes and nose; muzzle very dry; difficulty in breathing; mucous membrane of the mouth slightly congested; breath slightly offensive. Case.

A buffalo cow, three years old; in very good condition; has been ill nine days. The owner states that the disease is called *matah*. It breaks out inside the body of cattle, as it breaks out outside the body of man. Owner's statement as to the nature of the disease.

The mucous membranes of the gums and mouth are one mass of excoriation, and there is much aphthous deposit; breath very offensive; skin very hot and red about the armpits and inside the thighs; no purging as yet. When she was attacked first, she was very thirsty for the first four days, but for the last five days has been drinking less. Symptoms.

SHAIK BOREHAM. A cow, three years old, three days sick. The owner says she has the disease *matah*. He also adds—in *matah* the inside gets rotten, also that some animals in this disease purge, others do not. In those when the disease breaks out externally the animals generally live, but when the disease breaks out inside the body they generally die. A buffalo was brought forward and the owner said,—here is the external eruption,—pointing to the neck,—and this one will live. Symptoms,—lying down a little, inclined to near side; respiration quickened and labored; body hot; muzzle dry; ears drooping; mouth hot; mucous membrane slightly congested; no discharge from eyes and mouth; flanks very hollow and drawn up; no eruptions; no purging; mucous membrane of the vagina much congested; conjunctivæ also much congested; when standing up, respiration quickened, but not labored.

Case. Buffalo cow, three years old, ten days sick; mouth healthy, except mucous membrane, which is a little congested. This animal is evidently recovering from disease, and is the one alluded to above as having an eruption and likely to live; eruptions all over the body, especially well-marked on cheek, face, and udder. The eruption generally is scaly, and consists in patches about the size of a pea, and desquamation of cuticle. The eruptions about the udder have been vesicular, and there are one or two kinds of pits, half cicatrized. Just inside of the vagina the mucous membrane along the edges of the vulva is slightly excoriated; the whole cuticle of the body is in a state of desquamation in patches.

Peer, syál, and matah are all names of the one disease. Contagious. Buffaloes seldom recover. No remedy for *peer*. History. **MUHADOOR SHAMOOZ** states that these three diseases, *peer*, *syál*, and *matah*, are one and the same disease. *Peer* is considered so contagious that if the unaffected cattle drink from the same place as a sick one, the healthy animal is sure to get the disease. Buffaloes hardly ever recover from *peer*; of the cows, 25 per cent. die when the attack is mild, and 50 when severe. We have no remedy for *peer*. Last year *peer* did not attack this village, but the year before last we lost 60 from *peer*. Last year we did not hear of the disease anywhere. Six months ago it appeared at Bar (Jonapa Rana), Jhung District.

Present number of sick. Thirteen cattle are brought before the Commission, all sick with *peer*. *Peer* is yearly coming among the cattle, sometimes in a mild form, and in others in a malignant form; in the cold weather it is generally mild. This disease attacks an animal only once; if the animal gets over the disease it won't get the *peer* a second time. He never saw or heard of an animal or man getting *peer* or *matah* a second time. There is another disease amongst the cattle of this district called *suth*. The symptoms are,—swelling all round the throat and the lungs, stomach and bowels, in fact all the internal organs of chest and abdomen become red and packed with blood; no animal ever survives—always dies within 24 hours.

Symptoms. When the skin is opened after death, no extravasation of blood is found underneath the skin, but the blood is found in large separated clots inside the body.

Season when *suth* prevails. The disease does not occur in any particular time, but it is liable to appear in the months of Shrabon and Bhaddor (July and August). Only the well-conditioned animals get the disease; the low-conditioned ones never get the disease. The younger animals, from 1 to 3 years old, when in very good condition, are most liable to this disease; our opinion is that it is contagious, because if the cattle of one village affected with *suth* mix at pasture with cattle of another village, then the disease will attack the cattle of the second village, but then the low-conditioned animal never catches the disease.

Segregation not carried out. When one of any herd is attacked, the others are not separated from it, because the one attacked becomes as if hurt with a bullet, and never leaves the place where it becomes ill, and therefore cannot mix with other animals grazing. We have no remedies for this disease. **No remedy for *suth*.** The last death from *suth* among the cattle occurred three months ago.

Mortality from *suth* not known. We cannot give any account of the mortality. There is another disease called *lág*. This disease is produced when cattle are taken to graze near tanks, when in shallow water, and this grass causes the throat to swell. If the animal so affected does not purge it is sure to die, but if it purges it will live.

Another disease called *dhukka*. (Foot and mouth disease.—C. P. C.) Symptoms. Mortality small. When the feet and mouth get sore very few die; they generally live. The very young ones sometimes die; sometimes the mouth only is affected, sometimes the feet, and sometimes both. Those only die that have the mouth affected, but very few of them die. Those that die from *dhukka* never purge.

Another disease called *bhooknee*. There is another disease called *bhooknee*, in which cattle die from purging blood; we do not know the cause of it, they have no discharge from eyes, nose, and mouth. They commence purging from the very first; they go on feeding from the first to the last. They die simply from purging. Last year, in the month of February, two died—one old and one young. This disease does not occur at any particular season. Few are attacked and few die. We have medicine for this disease. We soak wheat in milk and water and give it for fifteen days. **Remedy for *bhooknee*.** We give a seer of wheat, 3 seers of milk, and 6 seers of water.

Another disease called *pheepree*. (Pleuro-pneumonia.—C. P. C.) Nature and course. There is another disease called *pheepree*. In *pheepree* the lungs get congested and solid, and thick yellow water is found in the lungs. They gradually get thin, and die in 1 to 2 months, but sometimes live for a longer time.

Evidence of NEEMA, of Kamalia,—dated 24th August 1870.

NEEMA, about 45 years old, an inhabitant of the village of Salusun, south-east of Kamalia, Neema states that the disease *seetlah* or *vair* attacked the cattle of his village about four days ago, *Seetlah* or *vair*, and he believes that the disease was brought from a place called Kurger, where cattle had the Origin. disease two months before.

The village's name is Enayet Shah, and the disease ceased there about a month and a half ago. There is no other village between my village and Enayet Shah, and I did not hear of any other cattle being affected between the time it ceased at Enayet Shah and broke out in my village. Enayet Shah is four miles from my village.

The symptoms of *seetlah* are,—purging, which comes on in 4 or 5 days after the animal becomes ill; at first the cattle do not graze; sometimes they drink water, and sometimes they do not; no signs of fever; has not observed any blood in the purging, or offensive breath. Three are now sick; one after the other became affected; coat stands on end, and skin looks black; I have not observed any eruption on the animals, but the people say that eruptions are ripening under the skin. None have died yet, nor do they look like dying. There is a discharge from the eyes. The same disease attacked my village eight years ago. I am a cattle owner. I never lost any from this disease. This disease has not appeared in my village since 1862. When I was a child the disease attacked the cattle of my village, but I was so young that I do not recollect much about it. We used to take our cattle annually to the bar to graze; but as there has been no rain there for the last two years, we have not taken the cattle there, as there is no grass.

Evidence of SHAIK MAHOMED, a resident of village Khokar, about eight miles east of Kamalia,—dated 25th August 1870.

Disease among the cattle in this village commenced in Asar (June), about two months ago. The disease is called *matah* or *peer*. It is called *matah* because there is an eruption on the skin. Those in which the eruption does not appear externally nearly always die; in other words, those in which the eruption grows inwardly die, while those in which the eruption comes outwardly often recover. The symptoms are,—discharge from the eyes, and the animal becomes distressed; purging comes on the 4th or 5th day; when the purging is excessive the animal generally dies; but if after a little purging the animal commences to feed again it generally lives; blood comes with the purging, and often with the urine. During the present attack eleven full-grown buffaloes, four small ones, two bullocks, one cow, and one bull calf have died, and about 20 have recovered. The mortality from this disease is from 30 to 50 per cent. I am about 40 years old, and have seen this disease four times among the cattle in my little village, which is about $\frac{1}{2}$ of a mile from the head-quarters of Khokar. This disease is always more or less present, and breaks out occasionally in a malignant form. It never attacks the same animal twice. The village cattle are watered from wells. This disease comes from all sides, but on this occasion it came from Khushal, a village to the south-east. We hardly ever take our cattle to the bar to graze, but do so occasionally in the month of Shrabon (July). The last time the cattle were taken to the bar was last year. They returned in good condition, and did not show any signs of *matah* when there, or after their return. We never import any stock—we breed our own. The *beparies* come occasionally to this village, and we sometimes sell cattle to them.

The *beparies* and other cattle dealers in our neighbourhood are very particular about purchasing cattle which have had *matah* and have recovered and are in good condition. They may look for the marks of eruption, but they can't find them, as when the cattle get well they lose all trace of eruption.

When the eruption breaks out in cows, it is most abundant and best marked on the udder. In cattle generally the eruption is found inside the thighs and inside the eyelids, but in some few cases the eyes become blind. I have never seen disease among the cattle dealers' cattle, nor have I heard of their cattle being attacked with it. Men here are inoculated and vaccinated, but not cattle. We never inoculate ourselves with the matter taken from cattle attacked with *matah*. The cattle in this village are used for ploughing and dairy purposes, and occasionally the *kumhars* use them for carrying pottery from village to village.

About 30 per cent. are used for ploughing, and the rest for milk. Barren cows are never put to the plough, but barren buffalo cows are. Cattle of the village are herded together by day, and during the hot weather are placed together in the open air and guarded; but in the cold weather each man keeps his own cattle in his own shed. Sometimes the cattle of neighbouring villages mix with the cattle of our village when at pasture.

There is *kunkur* (gravel) in the soil at the bar, but not here. The soil is sandy here and flat. Little rain falls, and the country is supplied with water from the canals. There is

Two months ago the disease *peer* appeared. It is also called *matah*. Eruptions—external and internal. Symptoms; unfavorable. Mortality. History. Four outbreaks during the last 40 years; but always more or less present. Second attack. Water. Origin. Cattle sent to the bar to graze in 1869. Stock not imported, but home-bred. Dealers come to buy.

Cattle recovered from *matah* preferred.

Eruption. Vaccination and inoculation. Uses of stock.

Soil. Rain and water.

KAMALIA.	no particular season when this disease appears, but it comes chiefly in Asar (June) and Bhador (August). There are hardly enough hides for local consumption, but when there are many deaths the moochees sell them to hide merchants.
Shaik Mahomed.	
Season of murrain.	
Hides.	
Hide trade.	
Value of stock now,	The price of a good cow now is about ...
and	Buffaloes now ...
Ten years ago.	Bullocks now ...
	Ten years ago a good cow used to be ...
	Good buffaloes ...
	Bullocks ...
Number of cattle decreased in ten years nearly 30 per cent.	The number of cattle in this neighbourhood has decreased nearly 30 per cent. in ten years, partly from famine and partly from disease. <i>Seetlah</i> is sometimes caught by infection, and sometimes does not appear to be infectious. The carcasses of animals are thrown out after the hides are removed. The horns and hoofs are not cared for. Other diseases are:—
From famine and disease.	
Infectiousness of <i>seetlah</i> .	<i>Suth</i> .—The symptoms are,—foaming at the mouth, swelling inside the throat; if the neck is not swollen, the blood collects and gets black in the region of the ribs and abdomen, and sometimes in the quarters. The animal attacked dies in from three to twelve hours, and nearly every single one attacked dies. The animals in the best condition are attacked.
Disposal of carcasses.	
Horns and hoofs.	
<i>Suth</i> . (Quarter-ill.—C. P. C.)	
Symptoms.	
<i>Bhooknee</i> .	<i>Bhooknee</i> .—The symptoms are,—excessive watery purging, and the urine passed is green. This disease came in Cheyt (March), and remained till Shrabon (July) last year. This disease never came to our village before last year, but we have heard of it before. At the time the disease appeared there was very little pasturage. <i>Bhooknee</i> , when it attacks cattle, is more fatal than <i>matah</i> , but not so general. Animals died in 14 to 15 days, but a few in 4 to 5 days.
Symptoms.	
Season of attack.	
More fatal than <i>matah</i> .	
<i>Pheepree</i> . (Pleuro-pneumonia.—C. P. C.)	<i>Pheepree</i> .—The symptoms are,—noise in the nostrils, heavy breathing, cough; the animals die in 15 to 16 days in bad attacks, but sometimes linger for six months. <i>Pheepree</i> is rarer than <i>matah</i> and can be cured. The lungs in this disease become heavy and rotten. This disease is not considered contagious, but has been known for years from the time of our forefathers.
Symptoms.	
Rarer than <i>matah</i> .	
Curable.	
Considered not contagious.	
<i>Dhukka</i> (foot and mouth disease).	<i>Dhukka</i> is common, but none die of it.
<i>Lag</i> .	<i>Lag</i> .—This disease comes from drinking bad water. The throat swells and purging comes on. If animals attacked get <i>jowar</i> and good grass they recover. This disease also is caused from eating bad grass, which springs up on the borders of pools of bad water. The best kind of grass here is <i>chimree</i> (<i>doob</i>), and the kind of grass which causes <i>lag</i> is called <i>murak</i> . Cattle are not poisoned in my village for the sake of their hides, but we have heard they are in some parts. We don't separate the sick from the healthy in any of these diseases.
Cause.	
Remedy.	
Kinds of grass.	
Cattle poisoning.	
Segregation.	

Evidence recorded at Kamalia, 29th August 1870.

Peer prevailed in June.	JUDDAYER SULTAN and REHUNA, inhabitants of the village of Enayet Shah, eight miles west of Kamalia, state,—that the above village has 15 houses and 300 cattle. The disease <i>peer</i> was amongst our village cattle in June; about 125 died. About 200 cattle were taken ill; 75 only recovered. This disease has often attacked our cattle before; it generally appears every second or third year; sometimes it is severe, and sometimes mild. When it is very severe all the animals attacked die, and when it is mild not more than 25 per cent. of those attacked die. It only attacks the animal once in its life; sheep and goats also get this disease, but it is called; when it attacks them, <i>syal</i> ; and when the cattle are attacked it is called <i>peer</i> ; when our children get it, it is called <i>thurdye</i> . The symptoms are,—excoriations in the mouth, discharge from nose and eyes, blood-shot; offensive breath; off feed; purging. They either die or recover in 10 or 12 days.
Statistics.	
Occurs every second or third year.	
Type varies.	
Only attacks an animal once.	
<i>Syal</i> , <i>peer</i> , and <i>thurdye</i> .	
<i>Peer</i> .	
Symptoms of <i>peer</i> .	
Symptoms of <i>bhooknee</i> .	In <i>bhooknee</i> (purging) the animal passes frequently watery stools; no blood is passed with this stool, and the animal feeds more or less through this illness, and the mouth never gets sore or offensive, but in <i>peer</i> it gets offensive. We have not observed any sores in the mouth. In <i>peer</i> there are sometimes eruptions on the body; in <i>bhooknee</i> never. Hides are given to the moochees. The price of cattle is now increased. The cattle that we sold for Rs. 20 ten years ago now cost Rs. 25. Cows that use to sell for Rs. 30 or 40 ten years ago now sell for 45. The reason of this is that before the English Government annexed these Provinces the <i>rukhs</i> of the bar were not paid for, but were common land. Our bullocks are always fed at home; the cows are sent out to graze in the <i>rukhs</i> ; all are cattle of local breed. A good cow will give four or five seers of milk. We used to take our cattle into the Jhung bar or elsewhere, but we now graze them at home. Our village cattle when at pasture mix with other village cattle. We part with our hides to the moochees, but we do not know what they do with them. The tehsildar states that the hides are sent to Mooltan and sold. The horns and hoofs are thrown away. We have no remedy for <i>peer</i> . <i>Peer</i> occurs at all seasons of the year.
Different to symptoms of <i>peer</i> .	
Hides.	
Value of cattle now and ten years ago.	
Increased in price.	
Bullocks fed at home.	
Cows sent out to graze.	
Yield of milk.	
Hides, horns, and hoofs.	
No remedy for <i>peer</i> .	
<i>Peer</i> occurs at all seasons of the year.	

Dhoobrie, seven miles east of Kamalia,—visited 30th August 1870.

DHOOBRIE.

Lumbardars REHENA and MOHAMBAH state that, 16 days ago, the disease *peer* or *Peer* or *mai* prevailed in the village of Khokar, one koss (two miles) to the south; but their cattle never mingled at pasture with the Khokar cattle, not on account of the disease, but their respective grazing grounds are the distance of two rifle shots off each other. Five years ago the disease was among the cattle of this village, and three years ago before that.

The Lumbardars' ages are, respectively, 45 and 50 years, and they have seen five outbreaks of the disease in their village; three times the disease was malignant and twice mild. Every year a sporadic case or two occurs.

When severe, 75 per cent. of those attacked die; when mild, 25 to 30 per cent. die. Cattle have *peer* only once in their lives, and those that live never have it again; we are quite positive as to this.

The symptoms of *peer* were accurately described by the Lumbardars and villagers. Symptoms of *peer*. When blood passes with the stools then cattle generally die. When eruptions on the skin appear, blood is not passed often, and then cattle generally recover; but *matah* is severe and bad when it comes from the inside. Their grandfathers and great-grandfathers often suffered losses among their cattle from this disease.

The disease is contagious, but the cattle that have had the disease once and recovered will not catch it a second time.

They believe that the disease this year came with the wind from Khokar village.

Pheepree has never attacked the cattle of their village in the present inhabitants' time; but in their fathers' time, about 40 or 50 years ago, they heard that three or four died from *pheepree*.

The cattle of their village are all home-bred; no cattle of any kind are ever imported, but bullocks of their village are sometimes sold to dealers who come to the village three times a year to buy—in Cheyt (March), Shrabon (July), and Bhador (August). They never knew of the cattle belonging to the dealers having disease when they came to purchase.

They remain one or two days, and their cattle sometimes graze with the village cattle; but disease has never broken out among the village cattle after the departure of the dealers with their cattle.

The disease called *suth* sometimes occurs in Shrabon (July) among the cattle, but only, as a rule, among the young and very fat cattle; but sometimes a very fat old bullock or cow gets the disease. *Suth* always kills the cattle.

The symptoms are,—sudden swelling of some part of the belly, throat, chest, or quarter; on opening the skin of the swollen part, the blood is found congested, black and blue, and there is general congestion of internal organs.

The symptoms of the disease *bhooknee* are,—purging—incessant purging—and sometimes, but rarely, blood is passed. Three, out of four attacked, die. The cattle affected drink and feed out with the other cattle as usual, but they gradually become very weak from purging and die.

An animal with *bhooknee* never has any sores in the mouth or eruption on skin.

Kamalia, 30th August 1870.

KAMALIA.

PUNJAB SING and SHERISTA, of Batee and Feroze villages, aged 50 years each, state there are some 800 cattle in our villages, all bred by country bulls and cows of the Punjab breed. The bullocks we use for ploughing and taking water out of the wells. Cows and buffaloes are kept for milk. The best of our cattle we generally sell to *beparees* who come from Hindostan (N.-W. P.) The cattle are kept in sheds in the night, and allowed to graze in fields in the day. If there is a good fall of rain the cattle get their water from tanks, otherwise they are watered from wells.

In case of scarcity of grass the cattle are driven to other districts to graze.

If we are in want of cattle we get them from the fairs at Umritsur in Baisak (April) and Kartick (October). The hides we give to moochees, who sell them to other hide dealers. The public road is about one mile from our villages. *Peer* or *matah* has always visited our villages, but *bhooknee* is a new disease; it has never been seen before by us. In *peer* disease the cattle are off feed; have an offensive breath; water from nose and eyes, and purge; but in *bhooknee* the animal takes its food. In *peer* some cattle recover, but none in *bhooknee*. In severe cases of *peer* about 50 per cent. die, but in *bhooknee* all die. The diseases are quite distinct. The cows

KAMALIA. are more subject to *bhooknee*, and *peer* attacks the buffaloes often. There are no remedies for these diseases. Both are contagious; *peer* attacks the cattle once; if they recover, they never get it again. We throw away the hoofs and horns. *Peer* makes its appearance in Shrabon (July) and Bhador (August).

Bhooknee only came two years ago—commenced in Cheyt (March). *Peer*, *suth*, *bhooknee*, *mokhur*, and *pheepree* are the diseases to which our cattle are subject.

In *mokhur* cattle do not die. The goats and sheep are also subject to *peer*. *Peer* was heard before in the north, and then came to our villages.

The difference between *peer* and *bhooknee* is as follows:—

In *bhooknee* the cattle graze longer, and gradually become thin and weak, and then die. In *peer* they are off feed and die quickly, even without losing condition: in *peer* the cattle pass blood, and in *bhooknee* they do not.

JHUNG.

Babaralla, Jhung, 27th August 1870.

Locality. Babaralla, 4 miles north of Rajana, in the bar, is a grazing farm consisting of two or three temporary huts. The disease *peer* has been among the cattle of this herd for the last three months. It appeared first of all three months ago, lasted a month or six weeks, then disappeared, and has now re-appeared some five or six days. One man, Shazad, has at present 12 cattle; lost 5 and 2 recovered. Quasim has 18; 5 died and 2 recovered. Nana has 12; 4 died, none recovered. The disease appears in our herd every second or third year; when it is severe half of those attacked die; when mild 25 per cent. die. It has been always present in our herds, even from the time of our forefathers.

Cases. Four cases of rinderpest were visited by the Commission,—one, a cow, 3 years old, showing all the symptoms of acute rinderpest,—excoriations of gums, aphtha, dysentery, breath offensive, discharge from eyes, nose, and mouth, with excoriations and aphthous deposit on the margins; A second cow, 3 years old, recovering from rinderpest: eruptions all over the body, cuticular desquamation, purging, but no blood; mouth now in a healthy state and breath not offensive. The owner states that she recovered her appetite five days ago.

Two other cases of calves, which had a mild attack and are recovering, were seen.

Second attack. The cattle that have recovered from an attack of *peer* have never a second attack. **Peer considered contagious.** We do not know whence the disease comes. We consider the disease contagious, and we believe that our cattle mixing with the Ravee cattle got the disease, because we heard that disease was prevailing amongst cattle on the banks of the Ravee. We do not know when the Ravee cattle got the disease first; but the cattle of a place called Bhuggut, in the month of June, mixed at pasture with the Ravee cattle; the last cow that died of our stock died four days ago.

Pheepree (pleuro-pneumonia.) We have had the disease *pheepree* amongst our herd. It occurs any time of the year. The symptoms are,—coughing; they don't recover, but die; they don't purge; they linger from four to six months, and sometimes for one year; when we open them after death, we find the lungs heavy and full of matter.

Dhukka or khorah (foot and mouth disease.) We have foot and mouth disease also amongst our herds sometimes; they never die of this disease. We call this disease *dhukka* or *khorah*. [A case was brought for the inspection of the Commission; both mouth and feet were affected.] We keep the mouth and feet clean with water.

Bhooknee (diarrhoea.) *Bhooknee* is another disease. There is continued purging, very watery stools, and the belly swells, and they die in 8 to 15 days; we give no medicine.

Suth (quarter-ill.) *Suth* is another disease. The throat swells; the belly swells; they can't move; they live two or three days and then die; they never recover. The internal parts get black and blue, and rotten. Lungs, liver, and bowels are found black and blue. Underneath the skin also gets black, especially at those parts where the swelling takes place. We have no medicine for it. They die as if they were struck by a musket bullet. When *suth* breaks out, we leave that place and move to another place. *Suth* always attacks the fattest, whether young or old.

Preventive measures. Cattle which used to be sold for Rs. 20 are now sold for Rs. 15. The reason for this is that grass has become very scarce and people are afraid of disease spreading. Cattle have become more scarce of late years. The reason why they have both decreased in number and price is that they give less milk and are less sought after. We do not sell cows, but sell bullocks to cattle dealers. The cows and bullocks here are of the bar breed, but the buffaloes are partly brought from Hissar and Umritsur. A first rate buffalo costs Rs. 100 here. A good cow Rs. 25 to 30. A first rate bullock Rs. 20. Cattle are often stolen, but more are lost from disease than from theft. We have no cattle poisoning here; we never take our cattle to market for sale. We sell our hides at 8 or 10 annas each to chamars who come for them. We eat the flesh of all dead cattle, but not the diseased parts.

Uses of bullocks. *Peer* and *pheepree* and *dhukka* and *suth* come at all times of the year. We keep bullocks for well work and for ploughing, but no pack bullocks. We keep donkeys for carrying purposes. Camels, sheep, and goats get *peer*.

JHUNG.

August 30th 1870.

FATHEH SHAHA, a Lumbardar of Thattah Momin Shah of Chinote Tehseel, age 60, states,—I live at Thattah Momin Shah, which is about 1,700 beeghas in extent. This village is 13 koss east and north of Jhung. The diseases among cattle which I have seen in my village are,—1st, *peer* or *matak*, of which the symptoms are,—loss of appetite, and thirst for a few days, until strength fails; heat of body, hair erect, eyes bloodshot, red, and watering, mouth and nose watering, purging excessive and watery, sets in about the third or fourth day, and the animal dies about the eighth day. With the purging blood is generally mixed, but mucus has not been observed. In some cases eruptions appear on the skin. In severe attacks about 75 per cent. of the animals die, while in slight attacks about 50 to 30 per cent. only die. This disease has been known from time immemorial in this part of the country, and breaks out every third, fourth, or fifth year. There is no remedy for this disease. It is highly infectious. It is the custom in this part of the country to separate sick from healthy cattle to avoid contagion. In my village last year there were about 100 buffaloes, 400 cows, and 500 goats. About 40 buffaloes died last year of *peer*, and about 100 cows. This disease attacks all animals that chew the cud, but is not to the same extent fatal among sheep and goats. Animals only get *peer* or *matak* once in their lives.

2nd. Bhooknee.—This disease is simply excessive purging. The appetite continues; no water comes from the nose, eyes, and mouth; no eruption on the skin. There is no blood, but extremely thin green purging, thinner than in *peer*. Sometimes an animal dies in 10 or 12 days, but occasionally lingers for two or three months. This disease was not known in this district before three years ago; it is now thought to be contagious; but people hitherto being ignorant of this have allowed their cattle to mix together.

3rd. Pheepree.—The animal breathes with noise and difficulty, coughs, retains its appetite, but the body dries up. The animal sometimes lingers on for a year, and sometimes dies in five or six months. This disease is comparatively rare, but almost invariably fatal to those animals which are attacked.

4th. Suth.—A choking of the throat and a collection of the blood in a particular part of the body, sometimes on the throat and neck, sometimes inside the animal, sometimes on the hind quarters, sometimes on the shoulders. The body swells where the blood collects. This disease attacks animals in the best condition, and proves fatal in from two to twelve hours. I have never seen an animal recover from this disease, nor heard of such a thing. This is not, I believe, an infectious disease, and though very deadly, is not of common occurrence.

5th. There is another disease which arises from drinking bad water or eating a grass called *murrak*. In this disease the animal's stomach swells, and unless it is relieved by purging, the animal dies in a day and a half. This disease is not common. To bring on purging we are in the habit of giving molasses and ghee. This disease is sometimes called *iptra*, from the belly becoming swollen (*pet aphra jata hai*).

6th. Cattle also die sometimes suddenly from eating the leaves of the *jowar* plant when they are becoming dry. The green leaves of the plant cause no bad effects, but when the plant becomes dry, cattle are carefully kept from it, and the field in which the plant grows is generally fenced round to prevent cattle getting at it. This disease is very rapid, but is curable, if taken care of in time. Warm butter-milk and the seeds of the small melon (called *kalka*) ground down should be given at once.

7th. Then there is *dhukka*, but animals do not die of this disease. The sore feet and mouth are washed with warm water, but no other curative measures are resorted to; water flows from the mouth of the animal, and the mouth becomes raw inside, but there is no water from eyes and nose, and no purging.

Evidence of ARJMAND, Tehseeldar of Jhung Tehseel.

Arjmand.

I have been here for two months. *Peer* has come into 10 or 12 villages of the Jhung Tehseel this year, but *bhooknee* is not now in this tehseel, nor has it been here. As we know, *peer*, like small-pox among men, has been known for generations, but *bhooknee* has not been known for more than three years in this district. The description given by the last witness of *peer* in my presence is correct; but his description of *bhooknee* does not coincide with my own experience in all particulars. I was in the Hafizabad Tehseel of the District of Gujranwalla when the disease *bhooknee* broke out last year, and I calculate that two-fifths of the cattle in that tehseel died of *bhooknee* alone. I was in the tehseel when *bhooknee* broke out. It did not appear in all villages, but carried off about three-fifths of the cattle in those villages in which it did appear. The symptoms of *bhooknee* were:—

The first sign of illness was that the animal appeared troubled, and separated from the herd and lied down in a shady spot. Its body was warm. Its appetite remained nearly as good as usual, but in three or four days the animal's belly began to swell, and it got hoven, and green and very watery fluid stools were passed copiously. Appetite was somewhat impaired, but not gone. In very severe cases the animal died in eight or ten days, but generally lingered

JHUNG. longer, and occasionally for three or four months. The purging was not accompanied by blood or mucus. The animal remained quiet and still, but its lungs did not appear affected. Its breathing was regular. This disease appeared first in the end of May and continued till August.

Want of pasture. At the time the disease appeared there was a deficiency of pasture, and the cattle were in very poor condition, and weak at the time. Some people said that when the grass got dry and burnt up, small insects (*sivā*) came over it, and that from eating these the animals got *bhooknee*. This disease was found to be highly contagious, but this was not known to the people at first, though subsequently they separated their healthy cattle from the sick as soon as they showed signs of illness. At first no remedy was known, but subsequently it was found that *maindi* water (decoction of privet) administered in the first stages of the disease very often saved the life of the animal. This disease appeared chiefly in the jungle in the middle of the "bar," but very little on the banks of rivers. I had one or two animals cut open after death. The lungs I found lighter than usual, bloodless, and of a pale white color, instead of being pink, as is usual. The mouth of the first stomach had got enlarged, and the outside of the heart instead of being red, had spots of black sprinkled over it. The smaller entrails were twisted and distorted. There was copious rain in the bar in August, and then in a few days the disease ceased wherever it had broken out. This disease was much more local than *peer*, and extended only to the Hafizabad, Chinote, Gujranwalla, Googaira, and Sirkpoor tehseels (the latter in the Lahore district.) This disease was thought by many to be new, and to have appeared for the first time last year, but some people remember to have seen it about sixty years ago. This disease chiefly attacked cows, while *peer* is more fatal to buffaloes than to cows. There is no *bhooknee* this year anywhere in this neighbourhood or in Gujranwalla, as far as I know, but *peer* is more or less present every year.

Rainfall. The land of the Jhung and Gujranwalla districts is very similar. Very little rain falls. **Soil.** The soil is sandy on the banks of rivers, and there are *kunkur* (gravel) beds in many parts.

Breed of cattle. The cows in this neighbourhood are of the bar breed, so also are the bulls, but those in the bar are larger and finer than those near the banks of the river. The reverse is the case with the buffaloes, which are finer on the river bank, and these also are natives to the district.

Price of stock now The average prices of cattle now are as follows:—

Cows from	...	...	...	Rs.	20	to	25
Buffaloes from	...	...	...	"	40	to	50
Bullocks "	...	...	...	"	25	to	27
Sheep "	...	...	...	"	1-8	to	2
Goats "	...	...	...	"	2-8	to	3
Pack Camels from	...	...	...	"	60	to	70
Riding Camels from	...	...	...	"	80	to	100

and ten years ago. The prices of the same kind of cattle 10 years ago were:—

Cows from	...	...	...	Rs.	15	to	20
Buffaloes from	...	...	...	"	30	to	45
Bullocks "	...	...	...	"	18	to	20
Goats "	...	...	...	"	1	to	1-8
Sheep "	...	...	...	"	1		
Pack Camels from	...	...	...	"	40	to	50
Riding Camels from	...	...	...	"	100	to	120

Cause of increase of price. The reason why the price of riding camels has decreased is, that they are now bred in the districts, while formerly they used to come from Bikaner. All the other animals have risen in price because the export has increased. Ghee, bullocks, and male buffaloes are exported in large quantities, but the females are not sold just at present; from disease, the price of cattle has decreased somewhat. The cows and female buffaloes are kept for milk, and are not so numerous as bullocks. Bullocks are almost entirely used for ploughing and well work. Pack or cart bullocks are little used. Those who have many cattle keep them out grazing, but those who have few keep them at home. In the cold weather, even those in the jungle are housed at night in sheds made of the branches of trees.

Names of grasses. The kinds of grass are—

1, *chémri*; 2, *dúbb*; 3, *dháman*; 4, *kheo*; 5, *sain*; 6, *palwán*; 7, *koora*; 8, *sambh*; 9, *murruk*; and 10, *dila*—poisonous.

Watering. The cattle are watered from wells and pits where rain water is caught. There was a great outbreak of *peer* 30 years ago.

Seasons of plagues. Plagues come irrespectively of the season of the year; *peer* attacks young cattle chiefly; **Suppression of milk.** milk stops in *peer* and *bhooknee*, but continues in *pheepree* nearly till the last.

The hides of dead animals are taken by chumars. Cattle are sometimes poisoned in this district out of enmity, and by chumars for their flesh, but never for their skins. Cattle so poisoned are killed chiefly by insertion of poisoned needles under the skin. Cattle skins are largely exported. They vary in price from 12 annas for cows, and 1 anna for sheep, to Rupee 1-8 for buffaloes. *Bhooknee* ceases when rain falls in any quantity, but *pheepree* and *peer* are equally prevalent all through the year. However, the mortality is greater from *peer* in hot weather.

RAWULPINDEE DIVISION.

From J. C. PLOWDEN, Esq., Asst. Commr., Murree, to the President, Cattle Plague Commission, Delhi,—(No. 153, dated 10th August 1870).

In reply to your No. 108, dated 18th July 1870, I have the honor to report that the following diseases are known in this sub-district amongst the sheep, goats, and horned cattle, and have been accompanied with the symptoms hereafter detailed.

Amongst the two former—

1.—*Budi*; 2.—*tandi*; 3.—*bitan*; and 4.—*bola*.

And amongst the latter mentioned—

1.—*Zahmat*; 2.—*garri*; 3.—*mokhur*; 4.—*tákún*; 5.—*pharkí*; 6.—*balún*; 7.—*palchi*; and 8.—*kar*.

* * * * *

[It is difficult to arrive at any correct opinion as to the nature of most of the diseases named from "the symptoms detailed," but probably *zahmat* is the local name for rinderpest, and *mokhur* is that of foot and mouth disease.—C. P. C.]

From T. E. B. BROWN, Esq., M. D., Principal, Lahore Medical School, to the President, Cattle Plague Commission,—(No. 75, dated 25th March 1871).

In answer to your office letter No. 35, dated 1st March, I have the honor to state that the following are, I believe, the names of the grasses in question, and the mention which is made of them in Dr. Stewart's Punjab Plants:—

1st.—*Murruk* (*surpus maritimus*),—a sedge common in marshes, and when fresh is fair fodder, but soon gets too dry.

2nd.—*Chimri* (*eleusina flagellifera*),—abundant in many of the most arid parts of the Punjab plains, specially towards the west. In some places it is stated to be a favorite with cattle.

3rd.—*Dhamun* (*pennisetum cenchroides*),—common in many parts of the Punjab plains, and reckoned one of the best of all the wild grasses for forage both for cows and horses. It would appear from Edgeworth that near Mooltan its seeds are swept from the ground to be used as human food.

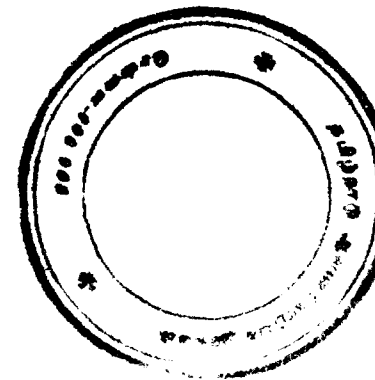
4th.—*Kheo* (*saccharum spontaneum*),—a small species common on islands throughout the Punjab plains. It is given as fodder to buffaloes.

5th.—*Palwan* (*andropogon annulatus*),—abundant in many parts of the Punjab plains. It is considered excellent fodder for bullocks, &c., and for horses when green.

6th.—*Koora* (*saccharum*, sp. ?)

7th.—*Lamleh* (*eragrostes*),—several species are included under this name and are considered good pasture grasses; one at least is used as a pot herb.

8th.—*Dila* (*cyperus, tuberosus*),—but *dila* appears to be a generic name for the *cyperacea*, the roots of several of which are eaten by pigs, and their stems, &c., browsed by cattle.



THE PROVINCE OF OUDH,

COMPRISING THE DIVISIONS OF HURDUI, KHEREE, SEETAPORE, FYZABAD, BARAICH, ROY
BAREILLY, PERTABGHUR, SULTANPORE, OONAO, AND LUCKNOW.

Index of Records.

[N. B.—Those in Italics are not printed.]

Divisions.	From whom received.	Number.	Date.	Reference and Purport.
Hurdul.	Historical Sketch ...	...	...	Page 505.
	<i>J. R. Reid, Esq., Officiating Deputy Commissioner, Hurdul.</i>	1826	6th November 1867	<i>Selections, Government of India, No. 69, p. 194. Reports outbreak of cattle disease.</i>
	<i>A. G. Walker, Esq., Assistant Commissioner, Hurdul.</i>	1866	14th ditto ...	<i>Ditto ditto, p. 195. Further report on the same subject.</i>
	<i>Dr. G. D. McReddie, Civil Surgeon, Hurdul.</i>	...	13th ditto ...	<i>Ditto ditto, p. 196. Memorandum regarding the symptoms, &c, of this disease.</i>
	<i>Major J. Reid, Officiating Commissioner, Seetapore Division.</i>	4280	25th ditto ...	<i>Ditto ditto, p. 198. Forwards a further demi-official report from Hurdul regarding the disease.</i>
	<i>J. T. McAndrew, Esq., Officiating Secretary, Chief Commissioner, Oudh.</i>	115 4215	2nd December 1867	<i>Ditto ditto, p. 199. Circular impressing the duty of reporting epidemics and epizootics, and the propriety of acting on the belief of their contagiousness.</i>
	Deputy Commissioner of Hurdul	2226	22nd September 1869	Reports prevalence of cattle disease in the Sundeela Tehsil, p. 509.
	Ditto ditto ...	2322	2nd October 1869	Reports decline of cattle disease, p. 509.
	Ditto ditto ...	147	25th January 1870	Form No. 1, regarding the outbreak of 1867, p. 509.
	Ditto ditto ...	3069	6th October 1870	Form No. 1, regarding the outbreak of August 1870, p. 509.
Kheree.	<i>W. Glynn, Esq., Deputy Commissioner, Kheree.</i>	2801	22nd November 1867	<i>Selections, Government of India, No. 69, p. 199. States that no cattle disease has been found to exist in his district.</i>
	Deputy Commissioner of Kheree.	Returns in Form No. 1	From 19th July 1870 to 2nd January 1871.	Particulars regarding prevalence of cattle disease in 1868, 1869, and 1870, p. 511.

Divisions.	From whom received.	Number.	Date.	Reference and Purport.
Kherree, - <i>contd.</i>	Mr. A. Foy, Fazelnugger, Kherree.	Form No. 4	6th May 1870 ...	A statement regarding cattle and their diseases, p. 512.
	C. N. Carnegy, Sahibgunge, Kherree.	Ditto	25th ditto ...	Ditto ditto, p. 513.
Seetapore.	Deputy Commissioner, Seetapore.	Returns in Form No. 1	19th July to 1st November 1870.	Seven returns showing the prevalence of cattle disease in the district, p. 515.
Fyzabad.	Deputy Commissioner, Fyzabad.	794	5th March 1870	Reports that no disease exists.
	Ditto ditto ...	Form No. 1	3rd February 1870	Regarding disease in 1867.
	Ditto ditto ...	Ditto	19th July, 8th August and 30th November 1870.	Reporting outbreaks in Soonkherree, &c.
Baraich.	H. J. Sparks, Esq., Deputy Commissioner of Baraich.	2229	18th October 1870	Reports outbreak of cattle disease, p. 516.
	Ditto ditto ...	2296	31st December 1870	Further report, with returns in Form No. 1, relating to five villages, p. 516.
	Ditto ditto ...	2501	2nd ditto ..	States that there is no reason to suppose that the cattle have been poisoned, p. 516.
Roy Bareilly.	W. B. Harington, Esq., Secretary to the Chief Commissioner, Oudh.	263	13th January 1871	Gives the derivation of the words <i>khang</i> and <i>guturooa</i> , p. 516.
	Deputy Commissioner of Roy Bareilly.	Form No. 1	14th April 1870 ..	Gives statistics of cattle disease during the ten years 1859—1869, and names the prevalent diseases.
Pertabghur.	C. R. Crommelin, Esq., Officiating Deputy Commissioner, Pertabghur.	1393	10th July 1869 ..	Report on cattle disease in the district, p. 516.
	Ditto ditto ...	1829	1st September 1869	Further report on the same outbreak, p. 517.
	Deputy Commissioner, Pertabghur.	Form No. 1	From 15th February 1870 to 23rd September 1870.	Seven returns showing the prevalence of murrain in the district, p. 518.
Sultanpore.	Deputy Commissioner, Sultanpore.	Ditto	From 7th March 1870 to 12th October 1870.	Forty-five returns showing the prevalence of cattle disease, p. 519.
Oonao.	Extract from General Remarks on Oonao Crime Return.	...	June 1869 ..	Reports the prevalence of cattle disease in the district, p. 521.
	Deputy Commissioner, Oonao.	Form No. 1	From 23rd February 1870 to 21st November 1870.	Twenty-six returns showing the prevalence of cattle murrain, p. 521.

Divisions.	From whom received.	Number.	Date.	Reference and Purport.
Lucknow.	Quinton, Esq., Deputy Commissioner, Lucknow.	4285	1st September 1869	Reports prevalence of disease in the Mulliabad Tehsil, p. 523.
	Ditto ditto ...	4553	15th ditto ...	Further report of same outbreak, p. 523.
	Villagers of Bijnour ...	...	8th May 1870 ...	Evidence recorded by the Cattle Plague Commission. p. 524. p. 524. p. 526. p. 526. p. 527. p. 527. p. 527. p. 527. p. 527. p. 528.
	Ditto Paharpoor ...	...	10th ditto ...	
	Evidence of Muckood ...	...	10th ditto ...	
	Ditto Pusaia Aheer...	...	Ditto ...	
	Ditto Goolab Aheer...	...	Ditto ...	
	Ditto Lochun and Punchum.	...	Ditto ...	
	Ditto Rewate Aheer	...	Ditto ...	
	Ditto Golaub Thakoor	...	Ditto ...	
	Villagers of Aroonea ...	...	11th ditto ...	
	Deputy Commissioner of Lucknow.	Form No. 1	14th January 1870 to 19th December 1870.	
				Forty-two returns showing the prevalence of cattle murrain in the district, p. 529.

HISTORICAL SKETCH.

The Province of Oudh furnishes evidence, as clear and ample as that already considered under the other Provinces of the Bengal Presidency, of the frequent and widespread prevalence of murrains among cattle. Early records are, however, wanting, and not until very recently has the subject become matter of general attention or careful inquiry. This attention and inquiry have revealed so much sickness and death among cattle in nearly all the districts of the Province, that it cannot be believed that the revelations of 1870 disclose an exceptional prevalence or severity. This view is further supported by the oral evidence obtained by the Commission in the neighbourhood of Lucknow in May 1870. The villagers were unanimous as to the periodical prevalence of murrain, and several distinct instances of plague—in 1840, 1850, and 1859—were mentioned. Here, as elsewhere, there are a great variety of cattle diseases, known under different vernacular names; and it is difficult from the confused and meagre description to identify them; but rinderpest and foot and mouth disease stand out prominently among them, the former known by the names *pokna*, *vaba*, *debee*, *haiza*, *bade*, *raze*, *murrée*, *burree*, &c., and the latter called *khoorah*, *chupka*, *khang*, &c. Having premised these general remarks, the information obtained from each Division will now be systematically summarised.

SEETAPORE DIVISION.

This Division forms the north-western part of the Province, and comprises the Districts of *Hurdui*, *Seetapore*, and *Kheree*.

It appears from information supplied by Messrs. Carnegy and Foy, who hold land in the northern part of the District of Kheree, that murrains are frequently prevalent in the breeding tracts of the Nepal Terai. Mr. Carnegy states that in 1861 a plague among cattle prevailed, and, writing in 1870, he says that cattle disease existed annually during the past eight years in the neighbourhood of his estate. Cattle are here herded in the same way as in the Darjeeling and Kumaon Terai, and murrain is here also perennially present, being conveyed into the plains when the cattle return, and finding its way occasionally into the hills of Nepal. Mr. Carnegy's interesting statement links together the information obtained regarding the jungle tract or Terai east and west (*vide* page 253).

In November 1867 "a fatal cattle disease" was reported to exist in the District of Hurdui. "Hundreds of cattle" were dying in the villages of the district of a murrain characterized by bloody purging and in some cases maggot-infested mouth. Efforts were made to segregate, and cattle were ordered *not to be impounded*, in case disease might be spread by this means. The symptoms of this murrain were studied by the Civil Surgeon, Dr. McReddie; they are those usually assigned to rinderpest. He notes that the mortality was about 50 per cent. The statistics of this outbreak are entirely wanting, but the Deputy Commissioner notes that 50 and 100 cattle had died in two villages where particular inquiry had been made, and he was struck with the number of skeletons of cattle lying near them.

This murrain was considered to be infectious, and measures were adopted, apparently with success, to segregate cattle and prevent the spread of the disease to neighbouring districts. Inquiries were made about this time in the adjoining District of Kheree, but no disease was found to exist. The Hurdui disease seems to have died out in December; it was called *murree*,—an indefinite term applied to any disease with much mortality.

Although no official record of disease in the Kheree District in 1867 exists, it appears from Mr. Carnegy's statement that murrain did prevail in the northern part of the district from April to October.

HISTORICAL SKETCH.

It appears from returns prepared in 1870 that cattle diseases prevailed in the District of Kherree both in 1868 and 1869. It is evident from the figures given with regard to 23 villages that a considerable mortality took place, and from the symptoms assigned to the different diseases named, though these are by no means clearly distinguished, it is evident that both rinderpest and foot and mouth disease prevailed, swelled throat being also mentioned under the term *guturooa*. Disease appears also to have prevailed in the District of Seetapore during the year 1869, the returns prepared in July 1870 assigning a considerable mortality to that year, and mentioning also outbreaks in the Baree Tehseel in the years 1858, 1859, 1860, 1861, and 1862.

Cattle disease prevailed in the Sundeela Tehseel of the District of Hurdui in September 1869, having spread thither from the Mulliabad Tehseel of the Lucknow District across the Goomtee river. The disease abated in October.

In 1870 murrain seems to have prevailed in all the districts of the Division. It broke out in Kherree and Seetapore in April, and periodical returns were received from these districts from July to December, showing that considerable losses of stock occurred. These returns are given in a summary form in the sequel. In Hurdui disease broke out in August 1870. Two forms of disease are described by Dr. McReddie,—*burree*, under which name he describes the symptoms of rinderpest, and *khoorah*, or foot and mouth disease. Fifty-two cattle had died on the 30th of September of 153 attacked in a stock of 775, or 7 per cent. of stock and 34 per cent. of attacked.

FYZABAD DIVISION.

This Division forms the north-eastern part of the Province and comprises the Districts of *Fyzabad*, *Baraich*, and *Gonda*.

In May 1867 cattle disease—called by the natives *gulsooa*—prevailed throughout the Fyzabad District. The symptoms assigned to it are those of rinderpest; the disease was considered infectious, and measures were taken to segregate and isolate the sick. These measures are said to have stamped out the disease. No record of disease exists with regard to the other districts in 1867, nor the Division in 1868 and 1869.

In February 1870 *poknah* broke out in Soonkheree, in Fyzabad, and in August and November in two other localities in the same district; the losses were however small. The figures given are as follows:—

Place.	Stock.	No. attacked.	No. died.	No. recovered.	No. still ill.
Soonkheree ...	106	29	17	12	...
Goordaspoor ...	60	16	4	...	12
Naseerpoor ...	135	116	100	4	12
TOTAL ...	301	161	121	16	24

This gives a mortality of 40 per cent. of stock and 75 per cent. of attacked. The symptoms assigned are those usually given—bloody purging, &c.

In October of this year, the widespread prevalence of cattle murrain was reported from Baraich. The diseases prevailing were called *khang* and *guturooa*,—hoof and throat disease. The symptoms assigned to the latter were so anomalous

and suspicious that an inquiry was made as to whether cattle poisoning may not have been the cause of the deaths assigned to *guturooa*. This was, however, answered in the negative. The figures given in the reports received are as follows:—

Place.	Stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
Pyagpore and Puchderorie ...	216	181	28	141	12	<i>Khang</i> .
Chitramiror ...	254	112	54	29	29	<i>Khang</i> and <i>guturooa</i>
Gilawlie ...	201	31	23	5	3	<i>Ditto ditto</i> .
Matabar ...	...	131	55	45	31	<i>Ditto ditto</i> .
Siseyarylwan ...	455	194	79	28	87	<i>Khang</i> .
TOTAL ...	1,126	649	239	248	162	

This gives a death-rate from *khang* of 15 per cent. of stock (taking that of the blank village at 200) and 36 per cent. of attacked; 32 cases are put down to *guturooa*—all fatal.

The Deputy Commissioner states in a letter printed below that 1,073 cattle died among 1,343 attacked (79 per cent.) in 47 villages of the Korasul Tehseel, and 4,176 of 9,838 (42 per cent.) in 219 villages of the Nanpara Tehseel. Though the foregoing information is subject to doubt as regards the type of the disease which prevailed, it is valuable as showing that great mortality took place in the district from murrain.

No information has been received from the District of Gonda.

ROY BAREILLY DIVISION.

This Division forms the south-eastern part of the Province and comprises the Districts of *Roy Bareilly*, *Pertabgurh*, and *Sultanpore*.

A return was received from Roy Bareilly, dated the 14th April 1870, in which 12 diseases of cattle are named and the statistics of 10 years given. The cattle diseases named are marginally put down. Rinderpest appears to be known as *haiza*, and foot and mouth disease as *khoorah*; for the rest, it is impossible to identify them accurately. The figures given are as follows:—In a stock of 205,994, 25,095 were attacked (12 per cent.), and 18,934 died (9 per cent. of stock and 73 per cent. of attacked).

Disease is said to have prevailed from June to September in each year.

No specific record of disease exists until July 1869, when a great mortality was reported from “cholera and *chechuck*” among cattle in the Pertabghur District; foot and mouth disease seems also to have prevailed. The mortality for the district is stated at 5,735 head of cattle. The principal disease was no doubt rinderpest.

In the District of Sultanpore also, *hoolka* or cholera broke out in March 1859 in the Moosafir Khana Pergunnah. The statistics of one village only are given by the Deputy Commissioner in a return dated 7th March 1870. In a stock of 243, 56 had been attacked (23 per cent.) and 38 had died (15 per cent. of stock and 68 per cent. of attacked).

During the latter half of the year 1870 murrain prevailed extensively in both the two last-mentioned districts. The particulars forwarded from time to time are given in a summary form below. Cholera—no doubt rinderpest—and foot and mouth disease are the two principal causes of sickness and mortality mentioned.

LUCKNOW DIVISION.

This Division forms the south-western portion of the Province and comprises the Districts of *Lucknow*, *Oonao*, and *Burrabankhee* or *Durriabad*.

The first official report of cattle disease in this Division is from Oonao in June 1869. The mortality was very great and general; 83 per cent. of the cattle attacked are said to have died. The disease was called *zahurbad*, and swelling of the glands of the throat is the only symptom mentioned. The oral evidence obtained by the Commission showed that cattle disease prevailed in this Division long anterior to 1869. On the 1st of September the Deputy Commissioner of Lucknow reports that cattle disease had appeared in the Mulliabad Tehseel of that district; the symptoms described point unmistakably to rinderpest. Isolation and burial of carcasses were enjoined. On the 15th of the same month a further report was submitted, showing that disease still prevailed in Pergunnahs Mulliabad and Mahonah; 341 cattle had died out of 770 attacked, or 44·3. The disease is said to have died out in November.

In the districts both of Oonao and Lucknow cattle plague continued to prevail throughout the year 1870. In the former, the early reports concerned the Suffeepoor Pergunnah, but during the last half of the year disease seemed to have spread all over the district. The murrain was called *haiza*—cholera—because purging was the most prominent symptom, but there can be no doubt that rinderpest was the main cause of sickness and mortality. In Lucknow the early reports concerned the Pergunnah of Bijnour. In the beginning of May this district was visited by the Commission, and rinderpest was found prevailing in and around Banthra, some 16 miles from the city near the road to Cawnpore.

Reports continued to come from different parts of this district up to December 1870, and it is evident from these that rinderpest, called cholera, dysentery or looseness, was spread widely over the district and caused very material damage. No information has been received from the District of Barabunkee.

DISTRICT OF HURDUI.

From the Deputy Commissioner of Hurdui, to the Commissioner, Seetapore Division,—(No. 2226, dated the 22nd September 1869).

In reply to your docket No. 5073, dated 11th current, I have the honor to state that the Tehseeldar of Sundeela reports he has visited several villages in his tehseel, and finds that cattle disease has crept in evidently from the Mulliabad Tehseel of the Lucknow District in the following villages north of Sundeela, and running towards the river Goomtee, viz., Kimowra, Ant-Surgowhan, Lalla Maow Muvaie, Madaree Khara, Sheopoorce, Narainpore, Punduriah, Somickpore.

2. The disease has greatly abated, however, and it is hoped is daily on the decrease.
3. Agreeably to your instructions, I have perused the file of former correspondence on this subject, and also the Chief Commissioner's Circular No. 115-4215 of 2nd December 1867, and the orders contained therein have been duly issued to the Tehseeldar of Sundeela.
4. I have requested the Tehseeldar to make further inquiries, and will again report on this subject by 5th October 1869.

Memorandum by CAPTAIN J. N. B. HEWETT, Deputy Commissioner of Hurdui,—(No. 2222, dated the 2nd October 1869).

In continuation of this office No. 2226, dated 22nd September, the undersigned begs to state that the Tehseeldar of Sundeela now reports the cattle disease to have greatly abated in all the villages bordering on the Goomtee river, except in Mouzah Mugrah.

The Tehseeldar has been directed to make a further report in ten days, and the undersigned will again communicate on this subject to Commissioner on the 15th instant.

Information regarding cattle murrain in the District of Hurdui, furnished by DR. McREDDIE, Civil Surgeon,—dated 25th January 1870.

The disease is popularly called in the vernacular *murree*,—an indefinite term applied to any disease accompanied with much mortality; it prevailed in the District of Hurdui during the year 1867.

The statistics of the outbreak cannot now be given.

The disease is infectious; the result of observation on this point is that among cattle grazing together, the diseased do not impart the infection to the healthy, but among diseased and healthy cattle *tied and fed together*, the latter take the disease: thus, a house which has had one death amongst its cattle, is certain of having more die, or at least take the disease.

The origin of the disease is uncertain. It is said by some to be due to the *new grass* which springs up after the rains, and on which cattle feed; but in other parts of Oudh the epidemic has occurred in the early part of the year before the setting in of the rains. It may be that a combination of causes, such as bad and insufficient feeding, the total want or insufficiency of salt, and, above all, some potent influence, either imported by diseased cattle or by atmospheric agency, accounts for the disease.

The symptoms observed were as follows:—The coat loses its smoothness and it becomes corrugated and *hangy*,—the latter aspect due to emaciation and loss of flesh; no eruptions were noticed in the epidemic of 1867; eyes and mouth watered; the body was of higher temperature than natural; shivering occurred in the beginning of the attack; diarrhoea was seen, with stools of dark-brownish color, with blood in small quantities passed distinct from the faeces, and subsequent to the latter, stools passed frequently, but apparently without pain; urinary excretion not examined; swelling of the throat is said to occur as one of the symptoms; it has not, however, been observed by me.

The duration of the disease was 3 to 15 days; recoveries were frequent, if the symptoms were protracted beyond a fortnight. The isolation of diseased cattle was the measure recommended and resorted to, apparently with the result of checking the epidemic. Opium, alum, chalk, and spirits (country) were the medical agents recommended.

Statement, dated 30th September 1870.

Khoorah and *burree* broke out in the town of Hurdui about 20th August 1870. From the outbreak to 27th September 1870, in a stock of about 775, 153 cattle have been attacked, 52 have died, and 101 have recovered or are in course of recovery.

HERDUI.
Dr. McReddie.
Infectiousness.
Origin.
Symptoms.

The natives do not believe it (*burree*) to be infectious, but it undoubtedly is communicable by contact from one animal to another. *Burree* is probably due to cattle grazing on grass which has lately been submerged. The symptoms are,—rough-looking coat; there are no eruptions on body; ulcers form in feet, but this is a separate disease from the one which causes large mortality. *Burree* is a form of dysentery. Eyes and mouth water in some cases; the body is hot from fever—cold only in last stages; cough was not observed; labored breathing present only before death. Swelling of the throat occurs only in exceptional cases, and is a very fatal sign; urine scanty and high-colored; faecal evacuations liquid, bloody, dark-brown in color, passed frequently.

Two diseases which I believe are quite distinct from each other have been observed,—first, *khoorah*, so called by people here, and named so also in Dr. McLeod's paper, is ulceration of the feet and curable, proving fatal only secondarily.

The average duration of attack is five to fifteen days. Recoveries are frequent if cattle survive a fortnight. In severe cases the average period from commencement to death is five days.

For *burree*, powders of a combination of alum, chalk, and opium have been given, and with considerable success. In *khoorah*, carbolic acid diluted with oil (1 to 4) acts like a charm; for general use alum has been recommended.

Treatment.

DISTRICT OF KHEREE.
Summary of Returns received from the District of Kheree.

Pergunnah, Tehseel, or Talooqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
KHEREE	15 villages	Raze ...	From Jan. 1868 to Dec. 1869.	July 19, 1870 ...	3,045	595	303	292	...	The symptoms assigned to the diseases named in column 3 are confused, and imperfect; but <i>haiza</i> , <i>bhade</i> , and <i>vaze</i> appear to indicate rinderpest, <i>khoorah</i> and <i>chupka</i> foot and mouth disease, and <i>ghuturooa</i> swelled throat. Taking them all together, the mortality is 20·7 per cent. of stock and 68·7 per cent. of attacked; 301 per cent. of stock were attacked.
	4 villages	...	June, August, & October.	Ditto	5,070	1,124	923	201	...	
	5 villages	...	April 15, 17, 18 and 20, 1870.	Sept. 13, 1870 ...	1,400	267	159	108	...	
	3 villages	Bhade	September 1870	Nov. 14, 1870 ...	710	294	180	99	15	
	2 villages	...	August 1870 ...	Jan. 2, 1870 ...	1,045	626	609	17	...	
	Gillimpoorwa	...	Oct. 1, 1870 ...	Oct. 29, 1870 ...	50	19	14	3	2	
	Oodraina	...	August 1870 ...	Nov. 1, 1870 ...	200	20	20	...	...	
	4 villages	Guturooa	Feb., Sept., Oct., and June.	July 19, 1870 ...	1,455	48	42	6	...	
	Bahorra	Haiza	August 1870 ...	Nov. 3, 1870 ...	400	100	40	50	10	
	Mohundee	Khoora	Ditto	Nov. 12, 1870 ...	15	1	1	...	...	
GOLA	3 villages	...	Sept. 22, 1870 ...	Ditto	37	37	...	15	22	
	4 villages	Raze	May, June, and July.	Sept. 15, 1870 {	2,850	125	50	25	50	
	a Bujooa	Ghuturooa	...	...	...	10	8	1	1	
	b Santeesa	Ghoora	...	...	...	220	5	60	155	
	c Mohumafad	...	...	...	...	...	...	...	...	
	d Grant Heerapur ..	...	...	...	...	...	...	...	...	
	99 villages	Ghoora, Chupka... Haiza and Raze...	July 20 April to September 1870.	Dec. 3, 1870 ...	29,233	10,545	7,455	2,485	605	
	Kurempore	...	Aug. 10, 1870 ...	Sept. 15, 1870 ...	300	30	15	...	15	
	14 villages	Raze	August and September 1870.	Nov. 1, 1870 ...	6,652	1,871	1,152	570	149	
	13 villages	...	Ditto	Ditto	3,825	1,002	672	200	130	
BHOOS ...	Moonda	Chupka	Sept. 15, 1870 ...	Ditto	100	73	46	7	20	
				TOTAL	56,323	17,007	11,694	4,139	1,174	

KHEREE.
Mr. A. Foy.

Information regarding cattle murrain in the District of Kheree by Mr. A. Foy,—dated 6th May 1870.

Locality.	The following information applies to Fazelnuggur, Kheree, 100 miles north of Lucknow and 10 miles south of the Chowkar river: the area of this estate is 4,000 acres.
	The land is known as "gauger" land, alluvial and yellow clay; subsoil resting on a bed of sand more than 20 feet deep.
Number of cattle.	There are some 80,000 head of cattle in the country between the Sajoo river and the Cowriala river.
Breeds.	The principal breeds are,— <i>dhowrera</i> , <i>singhai</i> , <i>paoner</i> , and <i>parair</i> . In those places there are large herds of cattle where breeding goes on without rule.
	The average value of cattle now is—cows, Rs. 6 each; buffaloes, from Rs. 15 to 30 bullocks, from 10 to 50. Ten years ago cattle cost about 25 per cent. less.
Uses.	Cattle are employed for plough and draught and dairy.
	Both <i>rubee</i> and <i>khureef</i> crops are cultivated; the sowing time is in June and October.
	Cattle are worked in the plough from 6 to 11 A. M. Bullocks only are used. Cattle are also used for draught and burden. Pack bullocks are used to carry hides. Dairy cattle are very few, buffaloes chiefly; the breeds above enumerated do not produce good milch cows; a cow gives only 1 seer a day: a great deal of this is due to the small quantity of food that is given.
Housing.	Cattle are housed in temporary sheds during night in order to keep them warm. These sheds are constructed of thatch-work, saul uplights, grass walls and roofs.
Feeding and watering.	Cattle are allowed to feed themselves just as they can. The cart bullocks are better cared for; they get <i>bhoosee</i> , oil cake, cotton seed, and wheat chaff.
	The open country generally bears <i>doob</i> grass. In the forests there is <i>sondhaor miaree</i> , and <i>kaushai mearee</i> grows on low grounds. Water is obtained from wells and running streams.
Herding.	Cattle are always herded; they are housed in cold weather during nights. The herds or <i>lingars</i> consist of 200 to 300 head of cattle.
	Cattle are sent up from Lucknow and northwards to the Terai; they are sent up in November, where they remain till February. They come from distances of 140 miles.
Condition.	Cattle are very low in winter; they pick up after February; during the rains they are in good condition.
Stock how kept up.	The stock is kept up by breeding indiscriminately. Bullocks are castrated for draught; plough bullocks are not castrated. Even some of the draught bullocks are left entire. In my own estate Hansi bulls are kept up. But it is with the utmost difficulty that cows are kept from other bulls.
Markets.	Peleebheeth of Bareilly, in Rohileund, North-Western Provinces, is the only market where cattle are sold twice a week. People also get their cattle by private purchase.
Export.	The cattle from Dhowrera and Luckimpore are exported towards Moradabad in North-Western Provinces, and those bred in Rohileund are imported into Oudh as plough bullocks.
Export of hides.	The export of hides is very large. Not less than 6,000 hides are exported to the North-Western Provinces (Delhi and Agra) from the west of the Cowriala river annually. In the Baraich tract, Jews conduct the hide trade and export to Lucknow. The number of hides exported has increased of late.
	[On account of the demand for hides in the Calcutta market, the infermant, Mr. Foy, has commenced to deal in hides. There are 10,000 hides sent to Calcutta weekly. The Jews have their agents from the Cowriala to Goruckpoor, or rather the Gunduck, and in Calcutta.]
	The present price of hides is Rs. 24 the score, these being <i>murdari</i> hides.
	Advances are made to chamars for the supply of a stipulated number of hides within a certain time; but the required number of hides is seldom obtained in time.
Mortality.	The ordinary mortality among cattle is about 4 per cent., including deaths by starvation; 50 per cent. die from murrains.
History.	Murrains have prevailed periodically in this locality. The disease is called <i>pokenah</i> —
Character of plagues.	diarrhœa and dysentery, which also prevails among sheep. Imported cattle are subject to fever. The cause of these diseases generally depends upon the pasture.
Season.	Diarrhœa generally prevails in October; fever in September and October; foot and mouth disease comes on in March. Sheep are known to get foot rot. An outbreak generally lasts for two months.
Contagiousness.	Diarrhœa is contagious; fevers are endemic; foot and mouth disease is also contagious.
Treatment.	Alum is applied to the mouth in foot and mouth disease, as also <i>kameela</i> to the feet. This treatment has been successful. No sanitary measures are adopted.

KHEREE.
Mr. A. Foy.
Horns and hoofs.
Other animals.

Buffalo horns are exported; cow horns and hoofs are not taken.

Sheep get diarrhœa, and with it sticky discharge, from the nose and slight discharge from the eyes; off feed; they die in 2 or 3 days. This did not, however, happen during the cattle plague. Sheep got the disease in May 1869, and 3 years ago there was a general plague among the sheep in Oudh, 50 to 60 per cent. dying. They give a little mustard oil to the sheep.

Two months ago there was dysentery in my estate, and 1½ month ago a new disease, alluded to in a letter of my agent, made its appearance: no disease now. At changes of season these diseases become prevalent. Disease at present prevailing. Weather.

I should wish the breed to be so far improved as to give us the advantage of dairy produce; cross-breeding under proper agency and management will in a few years effect it. It will be very desirable to have a veterinary and agricultural school here, as no one in the province has any definite idea of diseases and their treatment. All the people complain as I do, and my agent mentions this want particularly in his letters to me. Breeding. Veterinary school.

Information regarding cattle murrain in the District of Kheree by Mr. C. N. CARNEGIE, Mr. C. N. Carnegie.—dated 25th May 1870.

The following information applies to the Sahibgunge Grants, Tehseel Mohumdee, and Kheree District:—

Area 8,480 acres; bounded, north by the Patna Nuddi; south by the Pepuria Etowa estate; east by the Rajah of Mohumdee's grant; west by the Pepuria Etowa estate and grant; greater part mixed soil, second quality, partly sandy. Locality. Soil.

About 9,000 head of cattle graze on the grants, being 170 to the square mile. Number of cattle.

The breeds are the *parair* breed of cows, and buffaloes of all common breeds.

Price per head now and ten years ago:—

Cows per head	...	...	...	Rs. 7-8	Rs. 5
Bullocks	...	...	...	" 40	" 30
Buffalo cows	...	...	...	" 20	" 25
Ditto bulls	...	...	...	" 12	" 15

Cattle are used for agriculture, draught, dairy, and breeding. Bullocks are alone employed for agriculture; ploughing is carried on in February and March and during the rains; and treading out the grain in November, April, and May. The best bullocks are reserved for draught (carts): these are generally well fed and housed. Uses of cattle.

About 10 per cent. of the cows and all buffalo cows are kept for dairy purposes; 90 per cent. of the cows and 2 per cent. of the bulls are kept for breeding; about 20 per cent. of the bullocks are kept for agriculture alone; 40 per cent. for draught and agriculture; and 38 per cent. for draught alone.

Cattle used for agriculture, draught, and dairy are housed in grass-roofed sheds in the cold weather and rains, and in open courts from April to July. Cattle used for breeding are driven into paling enclosures under the banian or any other shady tree. Housing.

Draught bullocks are fed in *maunds* with *bhoosa*, gram and oil-cake steeped and mixed up together with salt every second or third day. All others are simply allowed to graze in the jungles. The jungle grasses are *doob*, *surwara*, *putawer*, *khooss*, *khauss*, *kuniar*, *gaurer*, *lybe*, *badha*, and *jarrooa*. When grasses are scarce cattle feed on the leaves of the *peepul*, wild date, and other trees, and on the flower of the *dak* tree and *mowah*. Cattle are mostly watered from the Kutna Nuddi, but sometimes from pools and wells. Feeding. Watering.

Draught cattle are never herded; those used for agriculture and dairy are herded during the day, but are tied separately at night. Cattle used for breeding alone and buffalo cows are herded together day and night, and in all seasons. Breeding cattle are herded and driven north into the Nepal country, a distance of 60 or 70 miles, from November till June. Herding.

The general condition of cattle is good. The stock is kept up by breeding. The very best bulls are retained in the herds; I have known Rs. 900 paid for a pair of *saars*. No cattle are imported. Stock, how kept up.

There are no hats nor markets near this place; young bulls, mostly two-year-olds, are sold to dealers on the spot in October and November. Markets.

The cattle dealers collect large droves of young bulls and send them off to the different markets in Rohileund and to Pehanney, Hurdul District, and Sindowr, Nawabgunge District, Oudh; the latter is the great mart for cattle in Oudh. The *parair* breed are the hardiest and I think the best draught cattle in India; they fetch higher prices than any others as cart and *ruth* bullocks. Cattle driving.

I cannot tell the number of hide dealers that come here, but I believe they have much increased of late. Hides fetch about Re. 1-12 each; they sold formerly at four or five per rupee. Chamars collect and dry the hides and sell them to dealers. Hide trade.

KHEREE.	On this estate about 40 per cent. of the deaths amongst cattle have been from plague; I believe about 7½ per cent. of cattle die or are killed by tigers annually.
Mr. C. N. Carnegie.	
Mortality.	
History.	Plague occurred here in 1861 and 1867,—that is, on the grants; it has raged more or less in the neighbourhood every year for the last eight years.
Nature and origin of plague.	The cattle plague is called by the natives here the <i>raze</i> , and the great disease they suppose to originate amongst the cattle that go north to graze during the cold season, and to spread amongst the cattle here by infection. I believe the disease is much increased, if not originated, by the cattle drinking hot, bad water from pools in April and May. The <i>chupka</i> —swelling in the tongue, lips, and throat—is brought on by eating rank wet grass; and in July the <i>khoorah</i> —rot in the hoofs—(seldom fatal), by standing on damp foul ground at night. The <i>bissareh</i> (poison) is a swelling in the ears, neck, and forelegs. The <i>jonkee</i> is caused by small leeches in the stomach and on the liver (the latter two are very fatal if not doctored at once); the <i>jonkee</i> is brought on by grazing near the river in May and June: these diseases occur mostly during the rains.
Varieties of cattle disease.	
Season.	These plagues lasted from April till October, and are worst in July; the <i>chupka</i> and <i>khoorah</i> prevail from July to September; <i>jonkee</i> in September and October. It is impossible to say how long the outbreak lasts; all depends on the size of the herd, the weather, air, and precautions taken to prevent the spread by infection.
Statistics.	During the plague of 1867 about 80 per cent. of the herds infected were attacked, of which 25 per cent. recovered and 75 per cent. died.
	Male buffaloes of all ages and all cattle in good condition are most liable to attack; lean cattle always escape free.
Symptoms.	The symptoms of <i>raze</i> are,—eyes watering and drooping ears; in about three hours after, the body becomes cold; shiverings begin; refuse food and don't ruminate; hair stares; bowels become loose and expanded; shortly, frequent motions of blood alone; tongue, nostrils, and throat swell; skin and tongue crack; there is a very offensive smell; animal breathes with great difficulty; refuses to move; lies down with the head outstretched; mortification ensues, and then death; animal seems to have lost all feeling of pain during the last six or eight hours; the secretion of milk is suppressed from the first attack.
Post-mortem appearances.	No body has been examined by me personally. Chamars say the stomach and entrails are inflamed and full of blood; liver swollen, flabby and discoloured; gullet one mass of sores.
Contagiousness.	Plague and <i>chupka</i> are contagious; other diseases are not.
Treatment.	I gave a buffalo cow infected a dose of opium 2 drachms, <i>churrus</i> 2 drachms (Indian hemp), and calomel 1 drachm; it recovered, but I cannot say if it was owing to the medicine, as I had no opportunity of trying it again. Natives try no remedy for the plague; for <i>chupka</i> they use decoctions of <i>nim</i> and other leaves and barks; the <i>khoorah</i> is cured by a decoction of tobacco and onion juice, and by <i>gunda beroza</i> (resin). The <i>bissareh</i> is cured by bleeding from the ear, the part first attacked. The <i>jonkee</i> is cured by purging with salt and <i>rohinee</i> (English name not known).
Sanitary measures.	The only sanitary measures adopted by the natives are, the separation of sick from healthy and burial of the carcasses.
Horns, hoofs, &c.	Hides are disposed of as stated above; horns and hoofs are of no value here, and are buried with the carcass.
Pigs.	Pigs are very liable to infection by the plague, and it has been noticed as a fact that when the plague breaks out amongst pigs it leaves cattle entirely.
Human disease.	As I had the honor to report to the Deputy Commissioner in September 1867, I have always noticed that cholera and malignant fevers amongst human beings follow the tracks of the plague amongst cattle; I leave it to others to decide why, but I believe it is partly owing to the noxious air, and partly to the chamars eating the meat of diseased cattle: disease breaks out first amongst them.
Present disease.	No disease prevails on this estate, but the plague has been raging all round about; it has decreased within the last fifteen days.
Weather.	The plague is always worst in hot, sultry weather, and generally decreases after a heavy fall of rain, especially if followed by a westerly wind.
Plague worst at commencement.	The plague is always worst at the commencement for the first ten days or so: every beast attacked dies after some time; the attacks become less severe; cattle linger on longer, and in many cases recover. Natives say that cattle which have recovered from the plague are never attacked again; I am by no means certain of this. The above remarks may be made regarding all epidemics of both men and beasts I think. Cattle, and men too, would, I think, be much better if the former were kept outside the village in sheds or courts built on high sloping ground to the north of the village, if possible; I have tried this with good effect, but, unsupported by Government, very little can be done that goes against the native ideas.
Second attack.	
Housing.	

DISTRICT OF SEETAPORE.
Summary of Returns received from the District of Seetapore.

Pargunnah, Tehsil, or Talooqua.	Villages or No. of Villages.	Names of Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
BAREE	47 villages	Pokna Khoorah Chupka Guturooa Soojwa	1268 F. (1861) ... 1267 F. (1860) ... 1266 F. (1859) ... 1265 F. (1858) ... 1269 F. (1862) ...	July 19, 1870. Ditto Ditto Ditto Ditto	68,544	183 2,332 40 107 295	139 1,170 20 99 226	44 1,162 20 8 69	...	Pokna and burri are names for rinderpest; <i>khoorah</i> and <i>chupka</i> are foot and mouth disease; <i>guturooa</i> and <i>soojwa</i> are apparently hoven. The death-rate among stock and attacked from each disease is:— Pokna ... 1·0 74 Khoorah ... 7 41 Chupka ... 74 74 Guturooa ... 08 Soojwa ... 07
MISRIE	71 villages	Burri Khoorah Guturooa Soojwa	July 1869 Ditto Sep. 1869 July 1869	Ditto Ditto Ditto Ditto	129,700	2,607 977 151 113	2,139 313 108 70	462 664 43 43	...	Stock. Attacked. The general result is,— Attacked per cent. of stock ... 3·3 Died per cent. of stock ... 1·9 Died per cent. of attacked ... 56·8
BISWAN	21 villages	Pokna Chupka Guturooa Soojwa	February 1869 to Aug. 1870. Apr. and June 1870. June and July 1870. June 1870	July to Sept. 1870 July 1870 July & Aug. 1870 Ditto	59,000	2,459 336 266 61	1,755 115 183 55	343 217 58 6	361 4 25 ...	
SEETAPORE	114 villages	Khoorah and Chupka	Sep. 24, 1870 ...	Nov. 1, 1870 ...	125,310	5,147	2,042	1,025	2,080	
DITTO	12 villages	Pokna or Deorarah	Apr. 1870	July 19, 1870 ...	116,207	1,476	984	407	85	
				TOTAL	498,761	16,544	9,418	4,571	2,555	

DISTRICT OF BARAICH.

BARAICH.

H. J. Sparks, Esq. From H. J. SPARKS, Esq., Deputy Commissioner, Baraich, to the President, Cattle Plague Commission,—(No. 2229, dated 18th October 1870).

I have the honor to report that I have been informed that many cattle are dying in this district in the Pyagpore Elaka, some 15 miles from Baraich. According to the report, some cattle are taken ill suddenly, have a difficulty in breathing, and die in about an hour; for this illness the people have no remedy: others get a swelling in the foot, next day there are worms in it. The animals are tied up in a tank by way of cure; some recover, others die.

2. The second illness does not appear serious, and I have as yet received no detailed report regarding the first mentioned one; many animals, however, are dying, and as soon as I have collected information on the subject, a further report will be sent to you.

From H. J. SPARKS, Esq., Deputy Commissioner, Baraich, to the President, Cattle Plague Commission,—(No. 2296, dated 31st October 1870).

In continuation of my letter No. 2229, dated 18th instant, I have the honor to report that from information I have received many more cattle are dying, and have died, from foot rot than from the other disease which the natives call *guturooa*.

2. Neither the District Superintendent nor myself have seen an animal suffering from the latter disease, but the natives state that almost every animal attacked has died. It is thus described:—swelling in the throat, great difficulty in breathing, gurgling in the throat, flow of froth from the mouth, and entire loss of appetite. The animal has usually died within 24 hours from time of illness.

3. There has been a good deal of illness among the cattle throughout the district. In the Korasur Tehseel inquiry has been made in 47 villages: out of 1,343 head of cattle attacked, 1,073 died. I give the result of inquiry made personally by the District Superintendent in five villages within easy distance of Baraich; these villages were visited at hap-hazard.

4. In the Nanpara Tehseel inquiry was made regarding 219 villages with the following result: 9,838 head of cattle had been attacked; of these 4,176 died, 3,665 recovered, and 1,997 are still ill.

Copy of a docket from H. J. SPARKS, Esq., Officiating Deputy Commissioner, Baraich, to the Commissioner, Puzabad Division,—(No. 2501, dated Baraich, the 2nd December 1870).

In reply to No. 6750, dated 24th ultimo, reports that there is no reason to suppose that any of the cattle have been poisoned.

The Officiating Deputy Commissioner is not aware what is the derivation of the word *khang*; *guturooa* is believed to be derived from *ghate*, the throat, as it affects that part.

ODDH. W. B. Harrington, Esq. From W. B. HARRINGTON, Esq., Officiating Secretary to the Chief Commissioner, Oudh, to the President, Cattle Plague Commission,—(No. 263, dated Lucknow, the 13th January 1871).

In continuation of my letter No. 6115, dated 21st December, I am directed to inform you that, from further inquiries made regarding the derivation of the words *khang* and *guturooa*, the Chief Commissioner learns that the former is a compound word, *kha* and *ang*, i. e., "body-eater,"—an insect supposed to be bred in the foot, and which is said to devour the whole body. *Guturooa* is a corruption of the word *gatterawan*: *gatti* throat, and *rewan* hair, or hair growing in the throat of cattle, causing a continued cough, and ultimately death.

DISTRICT OF PERTABGHUR.

PERTABGHUR.

C. R. Crommelin, Esq. From C. R. CROMMELIN, Esq., Officiating Deputy Commissioner of Pertabghur, to the Secretary to the Chief Commissioner of Oudh,—(No. 1393, dated 10th July 1869).

I have the honor to inform you that on the 22nd May last Mr. Gartlan, of the Palmerland Estate, wrote to me that there was a disease amongst the cattle in his quarter. I immediately sent directions for the diseased cattle to be separated, and for a report regarding the disease, and why Tehseeldars had not reported.

PERTABGHUR.

2. On the 2nd June the Tehseeldar of Behar reported that the cattle in Pergunnah Ramessur only had suffered; and on the 16th he reported that there had been so much cholera about, that the Chowkeedars had not come in to report, and that, from what he had heard, not many cattle had died. Rajah Hanwant Singh told me the mortality was exaggerated.

3. The Tehseeldar of Patty reported on the 9th June that there was very little mortality in his tehseel, and this was confirmed by Rai Madho Pershad, Talookdar of Dalippur.

4. The Tehseeldar of Pertabghur reported on 14th June that in Sundanpur only, a village in Talook Dandi Kath, cattle had died, but in no other mouzah in the tehseel.

5. The Tehseeldar of Salone reported on 9th June that in four villages about 100 cattle had died; that the people employed music, fumigation, rubbing the animals with charcoal &c; that the disease was a swelling of the head about the jaws; that the animals could not eat; and that at that time the mortality had ceased.

6. The Tehseeldars were again ordered to report the number of cattle that had died.

7. The Tehseeldar of Pertabghur reports the death of 1,097; Salone, 1,661; Behar, 832; Patty, 1,053. This result is far larger than the first reports of the Tehseeldars led me to anticipate. The mortality has ceased.

From C. R. CROMMELIN, Esq., Officiating Deputy Commissioner of Pertabghur, to the Secretary to the Chief Commissioner, Oudh,—(No. 1829, dated the 1st September 1869).

In reply to your letter No. 3052, dated 15th July 1869, I have the honor to send a further report on the cattle disease which prevailed in the district in the months of May and June.

2. The Tehseeldar of Patty reports that the disease came from the direction of Mirzapore Chowharee, a village in Allahabad District, and to the south-west of the tehseel.

3. The Pertabghur Tehseeldar reports that the disease came into his tehseel from the direction of Thannah Lhow, also in the direction of Allahabad. The Tehseeldar of Behar reports that it came from the direction of Pertabghur. From these reports it appears that the disease came generally from the south, and extended from Patty to Behar in the latter tehseel, going from south to north to the Salone Tehseel.

4. The natives call the disease *baghi*. The head and jaws of the animal swell, it is unable to eat, and the stomach swells. Little is done in the way of medicine: they perform *poojah*, accompanied with music, and in some instances give ghee, *goor*, and chillies.

5. Some cattle have died from a kind of cholera—violent purging accompanied with blood—and some from cow-pox—*chechuck*; the latter appears after a disease in the feet called *baghi*. This attacks the sole of the foot about the division of the hoof. A good many have died from hunger, and this I fancy has had a great deal to do with the deaths generally.

6. In my letter No. 1393, dated 10th July 1869, I reported that 4,643 cattle had died. From new returns received, the total number of cattle that have died is 5,735. All Tehseeldars report that there is now no disease.

Summary of Returns received from the District of Pertabghur.

Tehsil, Pergunnah, or Talooqua.	Villages or No. of Villages.	Names of diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.	
PARTY	328 villages	Baghi, pox, cholera, khoorja, ishal.	June 1, 1869 ...	Feb. 15, 1870 ...	37,968	1,309	1,309	...	...	Cholera, pox, and bowel complaint are evidently rinderpest; foot and mouth disease also prevailed. The general result of the table is— Attacked per cent. of stock ... 5.1 Died per cent. of stock ... 4.1 Died per cent. of attacked ... 80.7	
	Shekpur	Cow-pox	May 21 and 26, 1870.	July 19, 1870 ...	1,902	173	132	12	29		
	Sunreh										
	Sultanpoor	Bowel complaint	October 2, 1869	Aug. 24, 1870	54	15	4	...	...		
	Patkathas										
	Dum-Dun										
	Roghnathpoor	Cow-pox	March 26, 1870	April 23, 1870 ...	300	2	2	...	...		
	Bhysori										
	Biaunpoor	Bowel complaint	July 15, 1870 ...	Aug. 6, 1870 ...	581	1	1	...	...		
	Loniapoor										
	Gowra	Cow-pox	" 23, 1870 ...	Aug. 6, 1870 ...	286	2	2	...	...		
Parsani											
Purch Meharwan	Ghurka	" 9, 1870 ...		100	40	35	...	5			
" Katee											
Mozra Nowbosta	Baghi, pox, cholera, khoorja, ishal.	" 1, 1869 ...	Feb. 15, 1870 ...	505	36	33	3	...	...		
4 villages											
PERTABGHUR	51 villages	Cow-pox	May 2 to July 3, 1870.	Sept. 6, 1870 ...	888	645	205	200	130		
	Bhadowsi										
	Bansi	Foot and mouth disease.	From Aug. 31 to Sept. 14, 1870.	" 23, 1870...	200	1	2	...	...		
	Bhadowbi										
	Babochara										
	Harcharipoor	Cow-pox	June 11, 1870 ...	July 19, 1870 ...	116	64	15	49	...			181
	Ajgurah										
	Mohamedpoor	TOTAL	45,525	2,364	1,893	290	...	...			
	Khanipoor										
	Dhowarah										
	Sandhour										
Bhujed											

DISTRICT OF SULTANPORE.

Summary of Returns from the District of Sultanpore.

Pergunnah, Tehseel, or Talooqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
MOSAFIR KHANA	Mirzamoodunpore	Cholera	March 28, 1869 ... Aug. 25, 1870 ...	March 7, 1870 ... Aug. 25, 1870 ...	243 167	56 58	38 34	18 17	 7	Rinderpest is indicated by <i>cholera</i> , <i>small-pox</i> , and <i>pokna</i> ; foot and mouth disease by <i>kungwa</i> , <i>khoorta</i> , &c. The general result is— Attacked per cent. of stock ... 12.6 Died per cent. of stock ... 5.5 Died per cent. of attacked ... 45.02
	Chittainugger									
	Amrulo	Cholera	June 1870 ... July 11, 1870 ... Aug. 10, 1870 ... July 28, 1870 ... Sept. 1, 1870 ...	June 1870 ... Aug. 31, 1870 ... " 25, 1870 ... July 28, 1870 ... Sept. 21, 1870 ...	312 216 140 177 155	117 16 23 53 12	79 15 23 45 9	38 1 8 3	..... ..... ..... ..... .....	
	Bajapore									
	Gurthoolia									
MONI	Toolepore	Cholera	Sept. 1, 1870 ...	Sept. 21, 1870 ...	155	12	9	3	 3	
ORDIAN	Lulanugger									
SULTANPORE	Mujwara	Chitrahooah	28, 1870 ... " 9, 1870 ...	Oct. 28, 1870 ... " 11, 1870 ...	347 255	20 51	3	17 51	..... .....	
	Ootaree									
	Amutpore	Goorkhoor	" 26, 1870 ... Ditto	" 28, 1870 ... Ditto	139 100	9 20	 8	..... .....		
	Pindae									
	Khaliapore	Goorkhoor, Chitrahooah.	" 27, 1870 ... " 29, 1870 ...	Ditto Oct. 11, 1870 ...	60 40	4 5	 3	 2		
Sadhkhanpore										
MUNGOWLEE	Dowlutpore	Kungwa	Oct. 8, 1870 ...	" 28, 1870 ...	116	12	1	10	 1	
	Katadee	Khoorta	Sept. 4, 1870 ...	" 28, 1870 ...	230	30	5	25	.....	
	Gowrigunj	Cholera	" 12, 1870 ... " 14, 1870 ...	" 11, 1870 ... " 8, 1870 ...	155 100	6 2	5 2	1 .....	..... .....	
	Hurpore									
	MEOPUR DEBIA	Kulianpore	Chitra or Cholera.	" 15, 1870 ... " 17, 1870 ... " 18, 1870 ...	" 8, 1870 ... " 11, 1870 ... Ditto	150 65 50	4 2 3	4 1 3	..... ..... .....		..... 1 .....
Ragopore										
Gopalpore		Chitra and Kungwa. Small-pox	" 23, 1870 ... " 24, 1870 ... " 24, 1870 ...	Ditto Oct. 28, 1870 ... Ditto	240 225 225	5 9 10	1 6 6	..... ..... .....	4 3 4	
Dewaree										
Kapooram		Chitra or Cholera	" 20, 1870 ... " 22, 1870 ...	Oct. 11, 1870 ... Ditto	150 150	7 2	4 .....	..... .....	3	
Ditto										
GOPALPTE	Kukua	Small-pox	Oct. 11, 1870 ...	Ditto	150	2	2	.....	.....	
DILAS SING AND JAI-TURN SING.	Maroopore	Small-pox	" 22, 1870 ...	Ditto	150	2	2	.....	.....	

Acc. 45636

Summary of Returns from the District of Sultanpore,—continued.

Pergunnah, Tehseel, or Talooqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recover- ed.	No. still ill.	REMARKS.
MAHARPOOR	Aroulie	Kumkhor	Sept. 25, 1870	Oct. 28, 1870	100	25	.....	25	.....	
SOMRUTHPOOR	Burahree	Khoorga	Ditto	Ditto	264	23	17	6	.....	
DEHEA	Khalsipore Doorga, Kurnalpoore	Kungwa	Ditto	Oct. 8, 1870	{ 150 250	43 60	6 16	30 27	7 7	
RASSE	Wudduaypore	{ Cholera Khoorta	Sept. 27, 1870	" 28, 1870	{	62 3	40 1	4	18 2	
CHANDER	Ghatanpore	Cholera	Ditto	Ditto	117	9	9	.....	.....	
ULTAR, SOMA KALLAN	Suraich	Chitrahooah	Sept. 28, 1870	Ditto	200	80	25	50	5	
JEHANGIR BUKS KHAN.	Ganges Bisalpoore	{ Kungoor	Ditto	Oct. 8, 1870 Sept. 29, 1870	200 100	29 1	2	3 1	24	
MUNIAPORE	Jafarpore	Kungwa	Oct. 12, 1870	Oct. 12, 1870	250	4	1	1	2	
HUSSANPOOR	Salarpore	Chirhooa	Sept. 28, 1870	" 28, 1870	40	12	7	5	.....	
BADAYOON	Santa Sadulpore	{ Kungoor Pungina	" 29, 1870 Oct. 7, 1870	Sept. 29, 1870 Oct. 7, 1870	{ 60 58 152	16 27 14	 2	12 15	4 12 12	
KHYRUT ALI KHAN...	Tirae	Cholera	Sept. 29, 1870	" 11, 1870	552	4	4	.....	.....	
KOORWAR	Misrowlie	Kungoor	" 30, 1870	Sept. 30, 1870	100	40	.....	25	15	
MEHDOWNA	Rajapore Mallesh	Pookunwa Chitrahooah	Oct. 3, 1870 " 5, 1870	Oct. 3, 1870 " 5, 1870	25 100	2 5	..... .....	..... .....	2 6	
	Benowlie	Ghoor Ghoor	Sept. 4, 1870	" 11, 1870	259	8	8	.....	.....	
				TOTAL	7,751	984	443	403	138	

DISTRICT OF OONAO.

Extract from the General Remarks on the Oonao Crime Return for June 1869.

"I herewith append a statement showing the mortality amongst cattle in three Police Circles—Poorwah, Achulgunge, and Mowrawan—of this district. My attention was called to the subject by Inspector Khodabux, the Inspector of the Poorwah Circle. I have called for a statement from Police Officers of those Police Stations not included in the list now submitted. The mortality would seem to be very great: 83 per cent. of the cattle attacked succumbed to the disease. The disease is called by the natives *zakeebad*; this word I cannot find in Forbes. The Native Doctor tells me that the term *khuak* is an equivalent for *zakeebad*; *khuak*, according to Forbes, is quinsy sublocation. The Inspector says that the majority of the cattle die from a swelling of the glands of the throat."

Summary of Returns received from the District of Oonao.

Tehsil, Pergunnah, or Talooqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recover- ed.	No. still ill.	REMARKS.
SUPREPORE	Shahpoor, Mawni, Brahminon, Syab- nath, Kuseha, As- seewan.	Debee-ka-rooria...	Jan. 24, 1870	Feb. 23, 1870	2,452	186	146	24	16	
	Muty Takoor Serai Seekain, But- leseen, Sukbunraj- patan.	Hyza or Cholera ... Badah, Pakka, and Gurdah.	July 14, 1870 Sept. 5, 1870 Ditto Oct. 1870	Aug. 8, 1870 Nov. 21, 1870 Ditto Ditto	458 150 650 1,100	14 72 40 18	9 54 25 18	 8 15	5 10	Dabee, haiza, cholera, and <i>pookta</i> indicate rinderpest. There seems to have been no other form of disease observed. The general result is— Attacked per cent. of stock ... 10.1 Died per cent. of stock ... 6.1 Died per cent. of attacked ... 61.03
MOHAN	Shunkerpore Tukrobad Kurond e Surawlee Bhuroulee Hugla Huswa Hasupore Godhwan Dura Kuttra Rampoor Godhwan. Tikrobad Husumpore Serai Matakadam.	Hyza or Cholera ...	May 8, 1870 June 1, 1870 " 9, 1870 " 7, 1870 " 8, 1870 " 7, 1870 " 7, 1870 April 1, 1870 June 1, 1870 May 25, 1870 June 23, 1870 " 10, 1870	June 3, 1870 June 15, 1870 July 4, 1870	2,382 246 300 264 805 217 941 658 192 305 519	87 13 11 11 16 20 20 48 32 42 5 19	58 9 4 4 4 16 12 238 29 1 5	3 4 7 7 12 4 8 210 13 9	26 4 5	

Summary of Returns received from the District of Oonao,—continued.

Tehsil, Pergunnah, or Taluqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
MOHAN,—contd.	Sedhour	Hyza or Cholera	June 22, 1870 ...	July 4, 1870 ...	304	4	1	.....	3	
	Kharabad		" 4, 1870 ...		130	30	25	5	.....	
	Kureemabad		" Ditto		171	21	15	6	.....	
	Tikra		March 23, 1870 ...		541	279	62	214	3	
	Beechowiee	Cholera	June 1, 1870 ...	Aug. 26, 1870 ...	2,438	297	210	32	55	
	Goondah		Aug. 24, 1870 ...		190	58	41	7	10	
	Dhuruahra		Sept. 7, 1870 ...		290	15	10	5	.....	
	Burkundi		July 10, 1870 ...	July 13, 1870 ...	898	200	159	41	.....	
	Mushawun	Cholera	" 3, 1870 ...		250	43	32	2	9	
	Kuttra		" 11, 1870 ...		100	18	12	1	5	
OONAO	Shahpoor		" 5, 1870 ...	" 19, 1870 ...	172	5	4	1	.....	
	Chuknousee		" 2, 1870 ...		24	13	9	4	.....	
	Dowlutpoor		" 10, 1870 ...		255	4	4	.....	.....	
	Bheekareepoor		" 15, 1870 ...		12	3	3	.....	.....	
	Mawai	Gurduha	Aug. 10, 1870 ...	July 27, 1870 ...	235	22	15	.....	7	
	Beekeepore		Sept. 2, 1870 ...		112	27	22	5	.....	
	Burdahai		July 15, 1870 ...		100	4	1	3	.....	
	Oonao Khas		" 18, 1870 ...		2,777	20	9	.....	11	
	Atateurer	Not known	June 13, 1870 ...	June 30, 1870 ...	9	9	5	4	.....	
	Hyassa	Pookta	July 25, 1870 ...	July 27, 1870 ...	393	53	23	7	23	
POORWA	Lowah		" 25, 1870 ...		88	14	10	2	2	
MOWRAWAN	Hurdi	Hyza	" 20, 1870 ...	Ditto.	391	47	25	8	4	
	Brahminon	Hyza	Aug. 29, 1870 ...	Sept. 18, 1870 ...	477	16	8	3	5	
TOTAL					22,328	2,256	1,377	676	203	

DISTRICT OF LUCKNOW.

From J. W. QUINTON, Esq., Deputy Commissioner of Lucknow, to the Commissioner of the Lucknow Division,—(No. 4285, dated the 1st September 1869).

I regret to report that a disease, apparently of an epidemic character, has appeared among the cattle of several villages in the Mulliabad Tehseel.

2. From a local inquiry I have ascertained that the first cases made their appearance in two villages on the banks of the Goomtee in the end of Jeth. In consequence of the great scarcity of pasture at that season, crowds of cattle from long distances resorted to the river, and to this crowding the generation and propagation of the disease is doubtless to be attributed. The symptoms reported are,—fever for a day, followed by bloody evacuations, and water running from the mouth and nostrils. This continues for five or six days, and then the animal dies.

3. No treatment is attempted by the people, and their only hope is in *poojah*. They have not hitherto isolated the infected cattle, or even buried the carcasses of those that died.

4. From the two villages where it first appeared, it has spread to others along the banks of the river, in some of which it is stated to be dying out.

5. I have directed the Peshkar of Mulliabad, with as many Chaprassees as can be spared, to visit all the infected villages, to use every means to isolate the infected cattle, and to have the carcasses of all that die buried with their hides. He has also been directed to impress in every way on the Zemindars the adoption of the precautions recommended at page 7 of Dr. Kenneth McLeod's letter, received under docket No. 14-156, dated 29th March 1869.

6. The Police will also be ordered to co-operate as far as possible.

7. Copies of this letter will be sent to Secretary, Chief Commissioner, and to Deputy Commissioners of Hurdul, Oonao, Barabankee, Roy Bareilly, and Seetapore.

From J. W. QUINTON, Esq., Deputy Commissioner of Lucknow, to the Commissioner of the Lucknow Division,—(No. 4553, dated Lucknow, the 15th September 1869).

In continuation of my letter No. 4285, dated 1st instant, I have the honor to report that since the 11th instant 15 villages have been visited by the Peshkar in which the disease was reported to be most virulent.

He has succeeded in persuading the people to isolate the diseased from the sound cattle, though he was unable to induce them to remove the former to any long distance on account of the expense.

The carcasses of cattle that died have been interred, and the people have promised to bury at once in future, with their hides, the carcasses of such cattle as may die.

The appended statement shows the state of disease in the villages visited by him.

Statement showing the state of the Cattle Disease in the Mulliabad Tehseel.

VILLAGES.		Number of cattle that were attacked.	Number since cured.	Number that died.	Number now suffering.	REMARKS.	
PERGUNNAH MAHONAH.	PERGUNNAH MULLIABAD.	Rodhun Khera	150	30	40	80	Disease prevailing still.
		Para	90	20	50	20	" subsiding.
		Kurrania	1	...	1	...	" commencing.
		Gurhie	6	...	4	2	" subsiding.
		Bussarie	65	15	25	25	" prevailing still.
		Sultanpore	14	3	9	2	" subsiding.
		Bahadoorpore	21	1	15	5	" "
		Ikduuria	207	150	57	...	" disappeared.
		Rajapore	115	20	70	25	" prevailing still.
		Hurwas	91	30	60	1	" subsiding.
		Buggaba	...	...	...	...	" not apparent here.
		Mullookpore	4	...	4	...	" subsided 15 days ago.
		Bhugowanpore	...	...	...	...	" not apparent here.
		Bulwa	1	...	1	...	" subsided one month ago.
		Nowrunpore	5	...	5	...	" " 20 days ago.
TOTAL ...		770	269	341	160		

BIJNOUR.

Village Bijnour, 8 miles south of Lucknow,—visited 8th May 1870, 6-30 A. M.

Evidence of villagers.	A villager, 76 years old, says that he does not know the name of the disease, but that he knows that cattle plague appears in the village every 4 or 5 years : calls the disease <i>vaba</i> .
Periodical prevalence of <i>vaba</i> .	Has seen this disease about 10 or 15 times in his life. There are nearly 1,000 houses here.
Murrain in 1867.	LALLA and CHEDEE, cultivators of Bijnour, 50 to 55 years old, say that there is no disease of any sort in the village now, but they heard 10 or 15 days ago that 2 or 3 buffaloes died here; did not see them sick, and do not know what they died of. Three years ago there was murrain in the villages, and 10 or 15 head of cattle died thereof. The informants did not lose any cattle; one of them (Lalla) had 2 of his bullocks sick, but they recovered. Have seen only 2 murrains during their lives. The symptoms are,—sticky discharge from the nose and running from mouth, sometimes blood; lower gums raw; purging; then offensive stools with great force, containing either black or bloody streaks; the animal affected died in 2 or 3 days; did not see any eruptions or shivering; do not know the name of the disease. Tears fall in some cases from the eyes; feet don't get sore as they do in another disease called <i>khoorah</i> ; slight cough in some cases and a hissing sound when breathing; the animal that recovers takes one year to recover thoroughly and get into good condition; but when they are well fed with <i>ghae</i> and <i>roti</i> they become strong enough to walk about in less time. There are no bulls in the village, but the uncastrated bullocks serve the cattle. The disease is considered to be infectious, as it goes from one bullock to another, and spreads from one village to the neighbouring villages. The cattle of this village and the neighbouring villages do not graze on the Terai, but in the neighbouring fields, where they mix with cattle of other villages. Three years ago the village of Mourungabad, standing on the side of the high road, was first attacked; the disease then attacked this village; and afterwards went to some village lying on the east side. Know human small-pox, and call it <i>chechuck</i> , but don't know that it attacks cattle.
Bulls.	
Infectiousness.	
Mode of spread.	
Recent disease.	DONA, an agriculturist of Bijnour, says that he lost one buffalo 6 or 8 days ago. It was ill for 15 days, and then died. It purged, then had offensive stools, was off feed, had eruptions all over the body, shoulders, neck, udder, and specially about the thighs; he did not notice any sores in the mouth; there was an offensive discharge from the mouth and vagina, and the rectum was swollen. The deaths that have recently taken place have occurred from one house to another for the last 3 months. The buffaloes that have died have been grazing in the fields with other cattle and with the cattle of Lowtha. Does not know of any cattle of Lowtha being affected.
Symptoms.	
Foot and mouth disease.	The people say that foot and mouth disease appears in the village occasionally. In <i>khoorah</i> the mouth and feet are affected,—no purging; hence they distinguish this disease from the other malady for which they have no name. Have never known an instance of any land lying fallow in consequence of loss of cattle from murrain.
Cultivation.	
Disposal of hides.	AUGNOO CHAMAR, of Bijnour, 50 years old, takes the skins of dead cattle and eats the flesh. Has seen sores in the throat and a yellowish kind of thick secretion in it in bodies of cattle that died of purging; does not sell the skins, but makes leather-bags for water; the stomachs of those that die have black and red marks and appear rotten; these parts are not eaten, but thrown away.

PAHARPOOR.

Paharpoor, 15 miles south of Lucknow, visited 10th May 1870, 6-30 A. M.

Case No. 1.	1. A female buffalo, 4 days ill, 3 years old: condition poor; has running from eyes, nose, and mouth; gums and buccal membrane very much congested; aphthous excoriation on one sore on the gums; purging; vagina not congested; animal very weak; no eruption; off feed for the last 4 days; great thirst; nasal membrane swollen and congested; ears drooping.
Case No. 2.	2. A cow, 8 years old, 3 days ill: condition poor; off feed and drink; profuse sticky discharge from nose and profuse running from eyes; muzzle perfectly dry; edge of nostril covered with viscid mucus; on opening the lips large excoriations are seen on lower gums, and several fissure-like cracks, all more or less covered with aphtha; breath most offensive; coat staring; excoriations on buccal membrane; purging—offensive matter and mucus; vagina very much congested, with aphtha-like deposit round the edges; animal very weak.
Case No. 3.	3. A bull, 4 years old: condition poor; 10 days ill; off feed, but drinks a little water; profuse sticky discharges from eyes, nose, and mouth; muzzle perfectly dry, and fissured; discharge from urethra; the discharge from eyes being caked on the cheeks; shivering a little; eyes seem closed; ears drooping; animal very weak; buccal membrane congested; has purged for 8 days, but it does not now purge much.
Case No. 4.	4. A cow, 8 years old, 6 days ill: condition poor; profuse sticky discharge from eyes and nose; muzzle dry; conjunctivæ congested; mucus membrane of gums, buccal membrane, and palate much congested; excoriation on buccal membrane and palate; vagina congested; aphthous deposit; off feed; a little thirsty; purging watery stools; hair standing, but no eruption; animal very weak; coat rough on back.

5. A male buffalo, age 7 months: condition poor, and evidently an unhealthy subject; ill 7 days; off feed and thirsty; deep congestion of mouth generally, specially of the buccal membrane; discharge from eyes and nose; purging dysenteric and most offensive stools, consisting of yellowish mucus with streaks and small masses of blood—flesh-like clots; no eruption on skin. PAHARPOOR. Case No. 5.

6. A cow, 10 years old, five days ill: condition very poor; sticky discharge from eyes, nose, and mouth; congestion of gums; small amount of aphthous deposit; conjunctivæ slightly congested; vagina deeply congested, with aphthous deposit; coat staring; ears drooping; purging watery stools and mucus. Case No. 6.

7. A bull, 2 years old, 12 days ill: slight congestion of gums; more congestion of buccal membrane; sticky discharge from eyes, nose, and mouth; coat staring; off feed; condition fair; ears drooping; congestion of urethra; has purged very watery stools for 10 days. Case No. 7.

8. A bull, 4 years old: condition fair; 6 days ill; is off feed, and drinks a little; sticky discharge from eyes, nose, and mouth; gums very much congested; aphthous deposit; four blister-like patches on tongue, but on examining more closely fissures are found; deep congestion of prepuce; no eruption on the skin; coat staring; sore in the clefts of hoof; purging watery stools. These sores, however, do not appear the result of blisters; conjunctivæ very much infected. Case No. 8.

NOTE.—This is a complicated case of rinderpest and foot and mouth disease.

9. A bullock, 7 years old: condition fair; 5 days ill; picks a little; very slight discharge from eyes, nose, and mouth; mouth hot; congestion of mucus membrane; no purging; is thirsty; coat staring; ears drooping; muzzle somewhat dry. Case No. 9.

LALTHA SINGH, JOWTHA SINGH, NARIEN SINGH, and BROMERY SINGH, residents of Paharpoor, Village stock. say,—there are nearly 400 head of cattle in this village, consisting of 150 bullocks, 200 cows, and 50 buffaloes. This is a Hindoo village, where mostly Thakoors live. It is quarter of a mile distant from the Cawnpore Road. There are milkmen and carters here; the latter send their carts to Roy Bareilly, Cawnpore, Lucknow, and other places. There are 175 or 200 families living in this village. The village also has a road passing through it which goes to Roy Bareilly. There is disease in this village. The villagers do not know the name of the disease, but they called it *poknal-ki-bimari*—purging disease. The disease has come here from the north side; can't exactly say from which village it came, but think that the disease came from Bunthra, Lucknow, and Bijnour. There are no goats or sheep in this village. Goats and sheep. This disease has been in the village 4 times within the remembrance of the informants, appearing at an interval of 8 or 10 years. The disease is not new, as the people heard from their fathers that in their time the malady existed; twenty years ago the disease was very severe in this village, and the mortality was 50 per cent. There was another attack 11 years ago, and the death-rate was 8 or 10 per cent. The disease has appeared in the village during the last fortnight; 14 died, 8 recovered, and 18 are still ailing. The disease is infectious and travels in the air; we know that separation is good, but cannot adopt it, as sometimes a young bull gets loose and mixes with sick cattle, carrying disease with him. The cattle are housed during night and grazed on open and common pasture during day, mixing with cattle of different villages, even with those of Bunthra and Bijnour, $2\frac{1}{2}$ miles and 9 miles distant from this village. Those only who are well-to-do men—and they are few here—give *bhoosa* to the cattle during night; others do not give the animals anything. Rice straw is also given to the cattle, but not throughout the year. It is given in the month of Assar (July) to Kartie (October). Thirty years ago there was murrain in this village, and some of the people were obliged to let their lands lie fallow in consequence of loss of their cattle. Skins are taken by chamars and sent to Cawnpore. Murrain in 1840. Cultivation. Skins.

Evidence of Ram Narain, Inspector of Police.

Ram Narain.

The Inspector of Police, Ram Narain, says that he had not heard of cattle being poisoned in the interior for the sake of their skins or for any other purpose, but that he knows that cattle, goats, and sheep are stolen for the sake of their hides; the trade in hides has of late increased much, and the *sowdagurs* (dealers) make an advance of Rs. 5 to 7, and in some cases Rs. 200 to 250, and in some cases even Rs. 500 to 700, to chamars to ensure their supplying a stipulated number of hides within a limited time. No written deeds are known to be executed, but he has seen verbal contracts being made before witnesses; knows of no suits being instituted for breach of contract. The largest quantity of hides comes from the north (Baraich), Kheree and the Terai. Cattle poisoning. Cattle stealing. Hide trade. Advances.

Evidence of villagers—continued.

The people of this village get their cattle from Kalligunge Bazaar and other bazaars. The *Pikars* also come to the village periodically, bring the cattle from the north, and sell them here.

PAHARPOOR.

Breeds.
Breeding.Price of cattle.
Pasture land.

The cattle thus sold are of two breeds, *viz.*, *woollarie* and *wangor*. There is another kind of cattle called *desi*. Special bulls are not kept for breeding purposes. Until recently, *Banjarees* (itinerant merchants) used to come in large numbers to these places and bring rice and wheat; they now come and scour the country, but in small numbers.

They come from the north, including the Terai in the Nepal territory. The price of cattle has increased 25 and 50 per cent. There is a small tract of pasture land close to the village: this place is sometimes farmed by the Commissariat Department, and when it is thus farmed the Commissariat cattle graze there. The cultivation is gradually increasing, and the jungles removed year after year; the *churee* (pasture land) is generally very small; pasture land is assessed at a rate of 25 per cent. less than the rate other crop lands are assessed at. The people store the *bajra* and *jowara kurbie* for the cattle. This fodder is given to animals till the new crops are harvested. The *bajra* is heating, as it tends to dry up the milk; *jowara* is fattening.

Case No. 10.

10. A bull brought from Bunthra, 7 or 8 years old, in good condition, 15 days ill: buccal membrane congested, lower gums slightly congested; sticky discharge from nose; muzzle dry; purging; has not eaten for the last 14 days; is picking a little to-day; prepuce much congested; no eruption on the skin.

Case No. 11.

11. A bull from Bunthra, 10 days ill, 8 years old: condition fair; picks a little; purged for 4 days; bowels are improving now; no eruption on the skin; muzzle dry; congestion of urethra; a slight discharge from nose; mouth healthy; animal evidently recovering.

BUNNI.

Evidence of MUCKOOD, of Bunni, aged 36 years.

Muckood.

Foot and mouth
disease.Disease among sheep
and goats.Loss of sheep and
goats.

Symptoms.

Treatment.

Damp pasture.

I own sheep, goats, and cattle; the latter had the disease called *khoorah*. They have just recovered; one bullock died, but of old age. The clefts of their hoofs were sore, and they had sore mouth; maggots formed in the sores; they recovered in 8 or 10 days. The sheep had swollen throat and went on purging watery stools, and got weak, till they died after a month or so. The sheep had sores in their mouth; the goats had blisters on the tongue, gums, and lip, and they got into the same state as the sheep, only they had no swelling on the outside of the throat. I lost 52 sheep out of 100, and 8 goats out of a herd of 35. I opened all the sheep and goats that died of disease and observed enlargement of the liver; it was very soft and flabby. The lungs were congested, and the stomachs were soft and flabby. I lost every one of the sheep that had the attack. Neither the goats nor the sheep had sore feet. The mouth of the cattle was affected first. I have seen the disease among sheep and goats often; it appears every 2nd or 3rd year in March and April; but whenever there is much rain the disease is sure to follow in March and April following. I doctor my own sheep and administer my own medicine, such as *comilah* and *kharee nimuck*—half a seer of the former to 6 seers of the latter, mixed up. This medicine is sufficient for 100 sheep; when they are having this medicine they are shut up, and only allowed to graze for a short time in the afternoon after the sun sets, and they eat a little,—sufficient to enable them to ruminate. I take my sheep and goats to graze generally to high ground, but in the months of March and April I am obliged to take them to damp places where some green grass can be obtained. I would not take them to such places at any other time of the year for fear of their dying from damp, for the place is almost like a tank. The last outbreak came on in Falgoun (February) and Magh (January) last; as the sheep got weaker, so their stomachs grew larger, and on being opened seemed to contain water; and they had the dropsy.

OQNAO.

Evidence of PUSAIA AHEER, of Dantowlee, Zillah Oonao, a mile south of Bunni.

Pusaia Aheer.

Murrain prevails pe-
riodically.

Purging.

Foot and mouth
disease.Symptoms of purg-
ing disease.

Mortality.

Treatment.

I am a cow doctor; in my country cattle plague comes on every 3rd or 4th year. This disease appears generally in hot weather, and sometimes in cold weather; this disease is the purging disease from which the cattle die. The malady called *khoorah* comes on in May and June, wherein the hoof drops off and maggots form on the clefts of the hoof; the cattle also die of this disease (*khoorah*). The symptoms of the purging disease are,—purging stringy mucus; the white of the eye looks blackish; off feed; little thirst; sore mouth; excoriation on the buccal membrane and tongue, which sometimes become swollen at the commencement; there is discharge from mouth; dry cake of mud in the nostrils; forced breathing; sighing; no snuffing; ears droop; no eruptions on the skin; the cattle die—50 per cent. of the number attacked—in 8 days, more or less. I give the affected cattle cooling drinks, such as buttermilk or flour mixed with water; at the commencement of the disease I gave black pepper and ghee; I also apply *goolar* tree bark, bruised and mixed with water, to the sore mouth.

Evidence of GOOLAB AHEER, aged 33 years, a resident of Bunthra, 14 miles south of Lucknow.

BUNTHRA.

Goolab Aheer.

I had before the outbreak of plague 23 head of cattle, of which nearly half the number died in Falgoun (February) last of the purging disease. I don't know any name for this disease, but we called it *pakne-ki-bimari*. I know what foot and mouth disease is. In this disease the feet are sore, and the affected animals don't purge. In the purging disease the cattle purge and the feet are not sore. The mouth also gets sore in the purging malady. In *khoorah* I have not seen sores in the mouth. In *pokna* the skin of the gums is peeled off, and of the lips; there is also a whitish stuff on the sores; they are, however, not so white as cotton; they are of a dirty white colour. The disease made its appearance in September, and lasted for 6 months. The disease prevailed in the village of Umburpoor, a mile to the south of my village, a few days before it came to my place.

Umburpoor stands on the side of the Cawnpore Road, and in that village there is a place where the carts passing along the road stop for the night and the bullocks are watered. I am a cultivator and hold 17 beegahs of land. I have two ploughs; two of my plough bullocks got ill, they subsequently recovered; they are now working. I lost 1 bullock, 8 buffaloes, 1 cow, and two calves. Our cattle while grazing mixed with the cattle of Humeerpoor, Umburpoor, Coroway, and other villages. When I was about 10 years old there was a like purging disease in our village, and our cattle died on that occasion. I don't know whether the disease is infectious or not. I have seen *khoorah* once only.

Evidence of LOCHUN, 35 years old, and PUNCHUM, 34 years old, of Bunthra.

Lochun and Punchum.

There are a great many head of cattle in our village, but I cannot give the exact number (the Police Inspector says that there cannot be less than 400 head of cattle). We had the purging disease very badly in September last, and half the number of those attacked died; we have had the disease *khoorah* in our place, and it comes on every 2nd or 3rd year. The difference between *khoorah* and *pokna* is, that in the former the foot and mouth get sore, whereas in the latter there is purging blood, sore mouth, but no sore feet. *Khoorah* is fatal; in *pokna* the affected animals die. In *khoorah* the feet of animals get very bad and maggots form there, and they consequently suffer for a long time, but they do not die. In the other disease the affected animals die. During the last outbreak I lost 7 head of cattle; my brother Nowhory lost the same number; Fackeera Sing lost 3; Chhutter Patty lost 5; Lochun 11; Bursaty 1; Ram Churn 1; Nanoo 5; Bhowany 6; Holash 8; &c. Almost every family in the village lost 2 or 3 head of cattle. The price of cattle has increased 100 per cent. The witnesses say that there is at present no disease at Bunthra, but the Commission this morning saw sick cattle belonging to that village.

Evidence of REWATI AHEER, 26 years old, of Corowtee, 10 miles south of Lucknow.

COROWTEE.

Rewati Aheer.

There has been the purging disease in our village in the month of March last. The mouth of the affected animal also got sore. I know *khoorah*; the feet in this disease get sore, but not so in the purging disease commonly called the *pokna*. There was *khoorah* two years ago; no disease now. I have lost one buffalo. I have 19 more cattle which escaped attack: these animals have been and are kept in small batches in different rooms; three other animals were tied along with the diseased, but they escaped altogether. The buffalo and all other cattle belonging to me used to graze together. I don't know whether the disease is contagious or not, but I know that it comes with the air. The disease broke out in the village of Noroodden Kheree, and 3 cattle died. It then came to my place: our cattle and the cattle of Noroodden Kheree and of Bunthra used to graze together.

Evidence of GOLAU THAKOOR, 35 years old, Zemindar of Bujher, 14 miles south of Lucknow.

BUJHER.

Golaub Thakoor.

There are 30 or 40 families in my village and 100 head of cattle. I have never seen the purging disease in my village; there has been *khoorah*, but there were no casualties. My village stands on the Cawnpore Road.

NOTE.—The village Nebbera, Zillah Oonao, stands on the high road; but the people say that there has never been any disease here.

LUCKNOW.

Village Aroonea, 14 miles south of Lucknow, visited 11th May 1870, 8 A. M.

Village stock. PREM CHURN SING, 65 years old, puttedar and agriculturist, says,—there are about 100 families in this village owning 300 head of cattle, of which number, however, 150 have died since (Kartik) October last of *pokna* (purging disease), such as has been seen by the Commission this morning. The disease at first appeared at Buntbra, the cattle of which village and the cattle of this place mix and graze together in the common pasture. Never saw this disease before; I have seen a disease called *chupka* in this village which has proved fatal among cattle. It came on 3 years ago and killed nearly 100 or 150 animals. This disease has occurred 3 or 4 times in my time. The symptoms of this malady are,—sore mouth, maggots therein; sometimes running from eyes, nose, and mouth; off feed and drink; rumination stopped; no eruptions on the skin; no purging; the affected animals died from 6 to 10 days. One-third of the number are buffaloes. *Chupka* attacks cattle and buffaloes alike. No sheep or goats in the village. The skins of the dead animals have been taken by chamars, who pay 10 annas for each skin to the owner; they take the skins to Cawnpore and Lucknow. I have lost 20 head of cattle; Sobha lost 3; Bhai Lail lost 3; Rughonundun lost 6; Beddinauth lost 2; Emamy Dabobee 4—all these (4) died in one day; Echha Sing 2; Juggernath 3; Moolah 2. All the cattle of the village graze together in the fields. Those which are very good are kept in the stall. Henibux Sookly, Mohun Sing, and Sudhory Sing did not lose any cattle. All their cattle have been all along grazing with the village cattle. When we had *chupka* some of our cattle recovered of this disease. I have lost cattle during the recent outbreak of *pokna* which had recovered from *chupka*. In cases of *chupka* the feet are not sore. Never have known of cattle poisoning; when cattle die, they die in numbers, and the disease of which they die is not only confined to this village, but spreads to the surrounding villages. We never even suspected any case of poisoning.

Source. Murrain in October 1869.

Chupka.

Symptoms.

Hides.

Losses.

Cattle poisoning.

Summary of Returns received from the District of Lucknow.

Tahsil, Pergunnah, or Talooqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
BUNDOOR	Buntbra	Lila—Cholera	Last year and Nov. 1869.	Jan. 14, 1870	600	100	70	.....	30	Cholera, diarrhoea, dysentery, &c., indicate rinderpest; foot and mouth disease appears also to have prevailed. The general result is— Attacked per cent. of stock ... 13- Died per cent. of stock ... 10-2 Died per cent. of attacked ... 78-9
	Bahadurnugger	Not known	Jan. to Nov. 1870	Jan. 21, 1870	70	55	50	5	.....	
	Pucham		Jan. 1869 to Jan. 1870.	Jan. 21, 1870	500	15	8	7	.....	
	Mathi				300	16	8	8	.....	
CHANDOWRA	Purnimpoura	Khavara	Oct. 18, 1870	Dec. 7, 1870	400	50	13	37	.....	
	Chandowra	Hyza or Cholera	June 2, 1870	June 28, 1870	32	12	10	.....	2	
	Nandowle	Dysentery	July 1, 1870	July 13, 1870	150	4	.....	.....	4	
	Deolapoor and Hos-senabad.	Looseness	August 1, 1870	Aug. 17, 1870	200	32	25	.....	7	
MONTNALLANGUNG	Ala Karowlee		July 15, 1870		150	65	36	.....	20	
	Kharee		" 1, 1870		77	4	4	.....	34	
	Gowah	Swelling of hoofs	" 30, 1870	Aug. 17, 1870	162	84	50	.....	.....	
	Jambrowlee		" 1, 1870		300	7	7	.....	.....	
MULLABAD	Dalia Kurzapur	Swelling of hoofs			360	20	20	.....	.....	
	Uchahkhera and Fakker Khara.	Swelling of hoofs and Dysentery	Nov. 8, 1870	Dec. 10, 1870	747	101	86	.....	15	
	Balgawon	Hoolka	July 27, 1870	Aug. 17, 1870	308	111	57	.....	54	
	Poompooor	Dysentery	June 1, 1870	Aug. 17, 1870	205	40	34	.....	6	
EROWNJAH	Mawry Sam	Bussing, Fits	28, 1870	Sep. 17, 1870	100	40	28	.....	12	
	Randaspore	Proth in mouth	May 1, 1870		758	69	63	.....	6	
	Chandowlee	Fever	August 13, 1870		288	15	13	.....	2	
	Ark Dunga	Looseness	July 1, 1870	Aug. 17, 1870	150	39	38	1	.....	
EROWNJAH	Dingarpur		May 25, 1870		246	33	33	.....	5	
	Sewar		" 15, 1870		260	11	6	.....	25	
	Besamohie		July 1, 1870		248	65	40	.....	2	
	Bhickaree		" 16, 1870		528	20	18	.....	.....	
	Behespur		" 22, 1870		123	2	2	.....	.....	
	Rac Sookpooor		" 30, 1870		58	6	5	.....	.....	
	Burreean		Ditto		126	4	4	.....	.....	
	Chuk Sagor		Ditto		189	12	12	.....	.....	
	Untrowa		Ditto		41	2	2	.....	.....	
	Mampoor		31, 1870		210	7	7	.....	.....	
	Omnee		Aug. 1, 1870	Nov. 16, 1870	68	2	2	.....	.....	
	Bahadurpooor	Gabouna	Ditto		134	7	7	.....	.....	
EROWNJAH	Sootanpooor		Ditto		171	75	75	.....	.....	
	Kanahpooor		Ditto		50	12	12	.....	.....	
	Padawar		Ditto		100	10	10	.....	.....	
	Madagawan		Ditto		150	20	20	.....	.....	
	Rajapoor		" 7, 1870		42	3	.....	.....	3	
	Doogra		" 10, 1870		270	75	75	.....	.....	
	Junklanwa		" 12, 1870		333	22	22	.....	.....	
	Gowmlaree		Ditto		363	139	139	.....	.....	
	Racpooor		" 25, 1870		60	2	2	.....	.....	
	Mohamedpooor	Poisoning	" 1, 1870		195	10	10	.....	.....	
					120	12	5	.....	.....	
TOTAL					14,972	1,429	1,175	58	243	

MADRAS PRESIDENCY.

HISTORICAL SKETCH.

The history of cattle murrain in the Madras Presidency is peculiarly interesting, because of the early notices which exist regarding cattle plagues; because in recent times the Madras Government took the initiative in investigating the subject, and stimulated an interest in the matter which has borne abundant fruits in other parts of India; because here a skilled agency was first employed to inquire into the subject and devise measures for the prevention and treatment of disease causing mortality among cattle; because a legislative enactment was devised for these purposes; and because, after three years' experience and continued attention to the subject by professional men and district officers, the application of the enactment so devised was authoritatively declared to be neither "expedient nor necessary," and the stamping out, limitation, and treatment of murrains were entrusted to the knowledge, the personal efforts, and influence of individuals.

These several points will be more fully brought out in the following remarks, which have designedly been made as brief as is consistent with clearness.

In 1791-92, severe murrain broke out among the cattle with the Army of Lord Cornwallis at Bunjator and Seringapatam. This fact is mentioned in a report by Dr. J. MacRae, dated 11th November 1868, appended to Dr. C. Macnamara's work on Cholera.

In 1811 cattle disease prevailed among the cattle of the depôt at Hoonsoor. It appears from the printed records (Selections from the Records of the Government of India, Home Department, No. 69) that murrain was very destructive in Mysore in that year. In order to prevent the infection of the reserve cattle, these were parcelled out into small portions, separated and distributed over the neighbouring pastures, while cattle returning from command were kept in quarantine. These measures, no doubt, saved a great number of the Government stock. Colonel John Hill, Commissary General, in reporting on the subject generally, states that "every means should be used to prevent the spread of the disease; *healthy cattle should, if possible, be moved from the neighbourhood of infected localities*: this proved particularly successful in Mysore, when the Amrut Mehal was in existence; and in seasons of sickness, when the casualties among private cattle which were not moved were counted by thousands, the Government herds very frequently escaped unscathed." The words italicised contain the principle of all that has been attempted in Madras for the prevention and limitation of cattle murrain, with what success will appear in the sequel. The nature of the disease is very manifest from the following terse description by Captain Harvey, Assistant Commissary General:—"a purulent discharge from the nostrils, eyes, mouth, and ears, excoriating and ulcerating the parts, and a violent diarrhœa." Lieutenant M. Curbon calls it a "violent dysentery." The disease was no doubt rinderpest. While the cattle in the depôt remained comparatively healthy, detachments for Bellary, Chittledoorg, Nundidoorg and Rayacottah, passing through affected places, were so severely seized that some of them were unable to proceed. This disease is called *burra azar*, or the great disease. Captain Harvey considers it to be the same as the "malignant epidemic fever which has so frequently ravaged the herds of the Continent of Europe." Stimulants, nutrition, and local disinfectants and astringents seem to have been the chief means of cure employed, and a heavy fall of rain appears to have put a stop to the disease.

In the year 1848 Dr. William Gilchrist published his "Practical Treatise" on the diseases of cattle, elephants, and camels. This excellent work was founded on personal observation and study at the Hoonsoor Cattle Farm, and has been, up to this time, a standard work of reference with Commissariat and Ordnance Officers, and others in charge of public stock. Murrain and foot and mouth disease hold a very prominent place in the category of cattle diseases, and the former is also described as one of the diseases to which camels are liable. Dr. Gilchrist's description of these diseases is reprinted below, and it is evident that the affection which he describes under the term 'murrain' is none other than that which has been so prominent in the preceding pages, and regarding which later experience has taught the same conclusion as was arrived at by Dr. Gilchrist, namely, that it is identical with the murrain of Europe.

The next notice of murrain is also from the training depôt at Hoonsoor.

1852. The disease is said to be the same as that described by Captain Harvey in 1811, and the same treatment, namely, frequent injections of a solution of sugar of lead into the nose and ears, applying alum water to ulcerated parts, and the use of camphorated oil, was employed "with the best results."

1863. In July 1863 Captain T. Nelson writes to the Collector of Kurnool, describing a murrain which had prevailed in that district during the preceding three months, and had carried off hundreds of cattle. He states that this murrain reduced herds by half, and describes as the symptoms,—refusal of food, ears drooping, eyes watering, purging, succeeded by a bloody flux, an eruption of large pustules covering the whole body, and death between the 5th and 10th days. He proposes *inoculation* as a protective measure. This letter is forwarded by Mr. J. Minchin, Collector of Kurnool, to the Board of Revenue, with a remark that "the disease is the cause of enormous losses to the agriculturists throughout the Presidency, and recommends the institution of experiments to test the value of inoculation. The Board of Revenue transmit the papers to Government, the Inspector General of Hospitals, and the Commissary General, and note "the serious diminution of stock which was brought to light by the last quinquennial returns." They "feel that the matter is not ripe for action," and suggest *Local Committees* of Medical, Commissariat, and Revenue Officers to collect and digest facts, and consider and propose remedies.

This latter important proposal has not been so frequently adopted as it ought; but the advantages of the measures are very apparent from the excellent results of the Benares Committee in 1869 (see Appendix, p. 348), which threw such light on the nature and origin of the disease raging in that station and district.

The Madras Government request the Commissary General to report whether similar disease has ever appeared at Hoonsoor. The result is given above. They also move the other Governments in India to inquire into the matter and consult the Medical Department as to inoculation, which, they consider, should be made the subject of experiment.

Later in the year (November) Assistant Surgeon G. Bidie, M. D., informs the Deputy Commissary General that the disease described by Captain Nelson is the *doddah rogah* or *burra azar*, "well known in Western Mysore—very fatal—destroying nearly all the stock in a village." He also states that the natives on its appearance adopt means of segregation, keeping their cattle away from attacked villages. He says that the causes are quite unknown, that the murrain is most virulent in the hot weather, and that fatigue, insufficient food or water, and whatever reduces the vital powers, predispose to an attack. The symptoms described are those characteristic of rinderpest; he notes that the body may, in advanced stages, become covered with pustules, and considers the murrain more like plague than small-pox.

The treatment he recommends is,—slight laxatives in early stages, and salines, cordials, and sedative astringents as the disease advances. He regards inoculation as dangerous, tending to increase rather than diminish the ravages of the disease.

The Government now appoint Veterinary Surgeon J. Thacker to investigate and report upon the disease, and Mr. Thacker contributes a valuable series of reports upon the nature and prevalence of murrain in this Presidency, and the measures adopted to check it, upon which the following remarks are founded. Mr. Thacker in the first instance visited the Kurnool District, and from January to April was employed in investigating the disease there, and applying remedies and measures to cure the sick and prevent the spread of the disease. His report, which appears to have been written in May, is full and interesting. The following are in short the main facts and considerations contained in it:—Mr. Thacker found the murrain at Boodacherla and Ravypad, in the Kurnool District, where he had abundant opportunities of studying it. The disease was called *pedda moosa rogum*. Mr. Thacker was confirmed in his opinion of its identity with the murrain of Europe. His description leaves no doubt on that point. He notes that he did not find the exanthematous or eruptive form of the murrain prevailing, and that this variety occurred during or after the rainy season. He found that without personal support from the civil authorities he could do little in the way of inducing the people to submit to any rules for treatment or prevention. He saved 33 out of 44 cases treated at Ravypad (75 per cent.). He prescribed the simple bazaar drugs easily procurable by the people,—camphor, nitre, opium, catechu, and datura, and places great stress on the continuous administration of nourishing gruel. He can assign no cause for the disease, but considers it infectious; this is acknowledged by the natives, but they take no means whatever to separate sick and healthy. He recommends cleanliness, disinfection, segregation, isolation of sick, and treatment. As to inoculation, he considers that it would only propagate a dangerous disease. He finally recommends the employment of a qualified officer to interest the ryots in treating the malady, and see that necessary measures are carried out.

The Collector of Kurnool, in forwarding the report to the Board of Revenue, is sanguine as to the success of medical treatment, and states that he intends translating, printing, and circulating widely Mr. Thacker's directions for treatment, &c. He thinks that nothing short of a special legal enactment will ensure the application of preventive and sanitary measures, in which he places his chief trust. He proposes an Act providing for the erection of hospital sheds, the cure of the sick, early report of disease under penalty, and disinfection of infected premises. He would have breaches of the Act made punishable under Sections 269 and 270, Indian Penal Code, and the Act made, not compulsory, but capable of application on the requisition of the local authorities. He estimates the yearly loss of cattle in the Kurnool District from murrain at 2,000. He supports the proposal to employ a qualified man for the special duty of repressing and treating cattle disease, and would place a staff of pupils under him to acquire veterinary knowledge.

The Board, in forwarding the above to Government, concur in the opinion as to the necessity of legislative action.

In June 1864 Mr. W. G. MacIvor, Superintendent of the Government Cinchona Plantations, sends a careful report of murrain which raged in the Nilgherry Hills to the Collector of Coimbatore. This report leaves no doubt that this murrain was a severe form of rinderpest,—an opinion recorded by Mr. Thacker in a letter dated 12th July 1864. The Madras Government, in considering these papers, receive the proposal to legislate favourably and ask the Board to submit a draft, approve of Mr. Thacker's special employment, and wish to have inoculation tested.

HISTORICAL SKETCH.

In June of this year Dr. Shortt described a disease of sheep, in which swelling under the jaw was the most prominent early symptom; and if the animals recovered from this, purging supervened on the 5th day, and death was the invariable result. He found no "flukes" in the animals examined; he attributed the disease to diet, and found that the only animals which escaped were fed on grain food. He recommends change of diet and salt, and considers the disease infectious. He also notes the prevalence of *komari*, or epizootic aphtha, among the cattle in the district (Coimbatore).

Mr. MacIvor reports further in July 1864 that rinderpest broke out on the hill in August 1863, and proved most virulent, not more than 2 per cent. recovering. He shows by personal experience the superior efficacy of removing the healthy to removing the sick, as a sanitary measure. In this opinion

1865.

Mr. Thacker concurs, pointing out at the same time the greater trouble and inconvenience of the former proceeding. The next notice of murrain is also from the hills. Mr. J. Anderson, Assistant Apothecary, Lawrence Asylum Works, Loredah, gives a most interesting account of an outbreak of rinderpest which took place in the months of July and August. The disease was imported from the plains by cattle which had been sent down to Coimbatore to fetch machinery. One of these was attacked eight days after their return, and thirteen others of the same lot were subsequently seized. Of the first five animals attacked, four died and only one recovered. Mr. Thacker's published directions for treatment were then adopted, and of thirteen attacked, four were saved in the early stage by the administration of slight laxatives and gruel, and eight were saved after diarrhoea had set in by giving camphor, datura, nitre, chiretta, and arrack in *suji* gruel; only one old, debilitated animal died. Mr. Thacker, in forwarding this report to the Collector of Coimbatore, states that the native cattle owners, on the outbreak of this disease, "immediately drove away their cattle many miles distant."

The Collector of Coimbatore forwards these papers to the Board of Revenue, and remarks that a good many cattle had died on the hills from the effects of sore-throat.

Cattle disease (rinderpest) is next reported from Mudumallai and Munsicoil in the Sigur Valley among the cattle belonging to the

1866.

Forest Department. The disease broke out on the 24th December 1865, and out of 150 bullocks, 31 were attacked, 12 died, and 19 recovered. The treatment pursued was similar to that adopted by Mr. Thacker, —chlorate of potash and gruel being given in the early stages, and opium and gruel in the later.

Mr. Thacker's next report is dated 2nd March 1866. He obtained personal experience of the disease in January at Ootacamund, and was confirmed in his opinion that it was the true rinderpest of Europe. He found also that the herds on the Nilgherry Hills had been periodically attacked with it, but that no definite information was to be obtained. The oral testimony of the inhabitants was to the effect that the disease was not known on the hills until Ootacamund became a European settlement. He ascertained that the Todas and Badaghars (hill tribes) established a vigorous quarantine on its appearance, and broke up their herds into detachments. They considered medical treatment of no avail, and declined it. He next details the causes, symptoms, and pathological appearances of the disease at length. These accord closely with the observations of this Commission. He gives a striking illustration of the contagiousness of the disease; under treatment, he cannot advise vaccination for want of experimental proof of its value. He inoculated three animals with rinderpest, two of which died, and while desirating further trials, adheres to his previously recorded opinion as to the danger of disseminating the disease by this proceeding. He considers segregation an established rule, and prescribes the treatment previously advised. In conclusion, he advocates the employment of a special agency and legislation on occasions of outbreaks;

the breaking up of herds into detachments; scrupulous segregation; cleanliness; *disuse of cowdung*; and burial with hides on.

In May of this year Dr. Shortt submitted another report on cattle disease which prevailed in Mangalore and Yercand on the Shevaroy Hills in April 1866.

He found that the disease was called *ummay* or small-pox, and describes most accurately the symptoms and *post-mortem* appearances of rinderpest from a careful examination of living and dead animals. He notes the ulcerated condition of the mucous membrane of the mouth and the congestion of the skin, and subcutaneous tissue causing a rough feeling of the skin. Dr. Shortt concludes that the disease so carefully observed by him is rinderpest. He found the mortality in two herds of 80 and 103 head of cattle to be 27.5 and 32.03 per cent. He noted the spread of the disease by means of common pasture grounds, and that a smart shower of rain seemed to put a stop to it. He also describes in Yercand another most important disease of cattle causing death, namely, hydatid cysts in the livers and lungs, causing emaciation, debility, and death. He attributes this condition to a bad system of feeding, and notes the case of one coffee plantation on which the cattle fed on the leaves of lime, orange, and pomelo trees, and were free of entozoa. Mr. Thacker's next report is dated 18th September 1866; he describes an outbreak of *tondinow* or malignant sore-throat in some villages of the Nilgherry Hills in May, and attributes it to cattle feeding on swampy pasture, owing to the unusual drought succeeding the early rain. The same disease, we are informed in a subsequent report, called also *domma pegooloo* (Telugu), broke out in the Kurnool District in December 1866. Mr. Thacker gives a careful description of it, and advises separation and change of pasture. He places little reliance on medical treatment. In December also, he describes a severe outbreak of foot and mouth disease (*kala jarah* and *bayi jarah*) at Kendal, near Ootacamund, which forms an exact parallel to the experience of the Commission at Darjeeling. The mortality was very great (14 per cent.), owing to the owners of cattle employing sick animals for work, because of the scarcity in the number of these required for draught purposes. He next gives particulars of an outbreak of rinderpest in Bellary and Kurnool in May and June. He obtained 48.27 per cent. of recoveries against 33.3 before his arrival. The healthy cattle were picketed out in detachments 200 yards distant from each other, a quarter of a mile away from the sick, and the effect was to "modify the type, and eventually exterminate the disease." Reports of cattle disease were received from South Arcot (rinderpest) and North Arcot (*nulli*—nature unknown).

This year is signalized by the passing of an Act (II of 1866) in the Madras Council for the prevention of the spread of cattle disease in the Madras Presidency. The application of the provisions of this Act is placed in the power of the Governor in Council. It provides for the establishment of *hospital pounds* under direction of the Magistrate of the District; inculcates, under penalty, the duty of the owner to report to the pound-keeper attack by contagious disease; directs the pound-keeper to examine the animal, order its removal to the hospital pound, and the disinfection of the shed in which it was kept; gives this official power to examine and inspect suspected animals and contaminated premises, and act as circumstances demand; provides that the expense of food and treatment may be defrayed by the Pound Fund or owner; gives the pound-keeper power to destroy diseased animals when advisable; directs burial, and does not admit compensation; renders the levy of fees for care and treatment lawful, and sale of the animal to realize them; prohibits the removal of diseased or suspected animals without a license from the pound-keeper; attaches a penalty to disobedience of the pound-keeper's orders, or opposing the seizure of cattle under the Act; provides a remedy for illegal or improper seizure; places fees and fines to the credit of the Cattle Pound Fund; and gives the Governor in Council power to enact bye-laws more effectually to prevent the spread of disease.

Mr. Thacker next reports (26th March 1867) on an outbreak of *vekkai* (rinderpest) in the North Arcot District, which commenced 12th December 1866. He resorted to the system of picketing healthy cattle out in detachments, and found the villagers willing to adopt this measure. To this system he attaches great importance, and suggests that the Cattle Plague Act should not be applied to the district. He continues the same method of treatment, and records a most striking fact with regard to the advantage of careful dieting. "I find that the cattle of the six prior villages have died to a larger extent, as of 300 attacked, 250 died and 50 only recovered; whereas in the village of Pallaveram, of 128 attacked, 65 recovered. Such a striking contrast I find to have arisen from the care and attention of the latter village people, having saved them by daily administering quantities of gruel."

In April Mr. Thacker found that the measure of segregation adopted at Pallaveram had "resulted in the extinction of the disease." He found the disease prevailing in other villages of the North Arcot District, and put in practice the same methods of sanitary and medical treatment, of whose success he writes in a very sanguine manner.

The next report is dated 12th September 1867. Mr. Thacker was informed of the existence of rinderpest in Conjeveram, Madras District, but failed to see the disease, which had subsided before his arrival. Cattle disease was reported from Trichinopoly (fever of a typhoid kind), from Bellary, and from Coimbatore. He visited Coonoor and found that cattle were dying from an impoverished condition, probably caused by a deficiency of salt, and ameliorated by an increased supply of it. He found rinderpest (*vekkai*) prevailing at Pulloor, in the Madras District, and again put in practice, with success, the methods of segregation and treatment above described. The District of Cuddapah was next visited, where many deaths had occurred from *saraku*, apparently a kind of rinderpest, and the usual plan of treatment advised. *Vekikai* (rinderpest) was found in another village of North Arcot; and at Kongiem, in the Coimbatore District, cattle and sheep were found suffering from an enzootic fever, owing to local and climatic causes, called *alari-noroo*. Another disease, *goonda-musara*, was reported from Cuddapah, but its nature does not appear. From Nellore the prevalence of seven different species of cattle disease was reported, among which Mr. Thacker was able to identify rinderpest, foot and mouth disease, and malignant sore-throat, and advised accordingly. Mr. Thacker's attention was next drawn to an epizootic among Government camels at Bangalore, which turned out to be caused by hydatids. He was next called to Coimbatore, where he found rinderpest (*kudinow* or *pytchinow*) raging in several villages, Kaity, Malleada, Kandal, &c. He found that the cattle of Kaity had caught the disease from an infected pasture, and gives an instance of a herd of 40 escaping the murrain by being separated and isolated. He recommends the continued employment of a Veterinary Surgeon, and remarks on the various types which the disease is apt to assume from variations of climate. In a letter to the Collector of Coimbatore, Mr. Thacker details measures by which rinderpest was stamped out among a herd of 50 buffaloes, by their being placed in isolated kraals. The Board of Revenue and Madras Government accept these reports as satisfactory, approve of his continued employment, and request him to prepare a simple manual on the subject of cattle diseases in the Presidency, and their treatment.

Mr. Thacker's next report is dated 9th September 1868. He gives a narrative of the reports of cattle disease submitted to him, and his personal experience in localities visited by him; but as the paper is curiously void of dates, it is difficult to know when the outbreaks described occurred. He finds very virulent rinderpest on the Nilgherries, and once again confirms the propriety of segregating. At Kotergherry and Coonoor segregation and treatment were again adopted with apparent success. At Hoonsoor an outbreak of *burra azar* was reported, but ceased before Mr. Thacker arrived. He then visited North Arcot, and found rinderpest

(*vekkai*) prevailing there. A most instructive instance is noted of disease having broken out afresh, in consequence of measures for isolation having been relaxed. Rinderpest was also reported from the Cuddapah District. Coimbatore was again visited, and rinderpest found prevailing. His attention was next drawn to the Madras District, where segregation and treatment were again adopted with apparent success. Disease continued to be reported from Salem, Coimbatore, North and South Arcot, and Cuddapah Districts, and an outbreak of foot and mouth disease occurred at Bangalore without any casualties.

In addition, reports of rinderpest were received from South Canara, Secundrabad, and Bellary, and of foot and mouth disease from the Salem District; from the Kistna and Kurnool Districts reports were received and medicines and instructions supplied. Mr. Thacker, in conclusion, insists upon the benefits of segregation, stating that, when carried out according to his instructions, he has never seen it fail. He defines the system as consisting in separating the healthy cattle into detachments picketed at 300 yards from the village and 200 yards distant from each other, treating the sick in the village and continuing the segregation for 15 days after cessation of disease. He states that the people have confidence in his medicine, and promises a manual.

Mr. Thacker's next report is dated 27th April 1869. In September 1868 he proceeded to Malabar, but found that cattle disease had ceased there. Disease was again reported from North Arcot and Kurnool. Rinderpest prevailed in October and November around the Sheveroy Hills and on the Nilgherries; at Yercand cases of black quarter, called *chuppanioru* or *thalorecnoru*, (Tamil) occurred. In December rinderpest prevailed in the Salem District, and outbreaks were then traced to animals purchased at markets. Reports were meantime received from Kurnool, Malabar, North Arcot, South Canara, and the Nilgherries.

In January Mr. Thacker visited the Kistna District, where he found rinderpest, but experienced some difficulty in getting his plan of segregation carried out. On his return to Madras he received reports of cattle disease from Kurnool, Coimbatore, and South Canara, and saw rinderpest in North Arcot and Coimbatore, in which latter place he found that his instructions had been carried out with gratifying success. Appended to this paper is a report from the Head Assistant Collector, Kistna District, showing the difficulties and advantages of Mr. Thacker's plan of segregation, and recommending the Act to be amended accordingly, but that the system, for success, should be carried out under efficient supervision. As to the advisability of applying the Act, the Collector of North Arcot earnestly deprecates the measure; the Collector of Coimbatore does not consider the introduction of the Act necessary, and considers that the people are ready to carry out measures for segregation and treatment; the Board of Revenue "recommend Government to continue the measures now in operation with so much success, in preference to appealing to the Legislature," and Government decide (24th June 1869) that the introduction of the Cattle Disease Act, or any similar enactment, is not called for at present.

Mr. Thacker's next report is dated 1st October 1869. Cattle disease was reported from Kurnool, Salem, Bellary, Nellore, North and South Arcot, South Canara, Malabar, and the Nilgherry Hills. Medicine was liberally supplied and segregation practised—in some instances with signal success. It is somewhat difficult from Mr. Thacker's, in many cases, giving local names of villages and talooks without indicating the district, and giving the vernacular name of the disease without explaining the symptoms or English synonym, to give a very clear summary of the information contained in this report; but it is manifest that attention was generally directed to cattle diseases throughout the Presidency; that much rinderpest prevailed all over it, and that measures of treatment and segregation were applied with energy and gratifying result.

As an illustration of its appreciation by the people, the Board quote the instance of a herd of buffaloes which was attacked with murrain near Kotagherry,

HISTORICAL SKETCH. where Mr. Thacker found that the people who had formerly been instructed in the system of segregation "had already adopted it; the healthy cattle had been removed, and the disease soon ceased." Disease also prevailed in Mysore during the official year 1869-70. The mortality is put down at 23,907 head, and the loss, at Rs. 20 per head, Rs. 4,78,140. The murrain is called *dod rogue*, and prevailed throughout the Hassan District of the Ashtagram Division. The symptoms of rinderpest are correctly given, and foot and mouth disease is also said to be very common. The next report from Mr. Thacker is dated 31st March 1870. Up to the end of 1869 his attention was principally drawn to Kurnool, Malabar, and Kandal on the Nilgherries.

In January 1870 murrain continued to rage in Malabar, South Kanara, and Kurnool.

The District of Nellore was visited and cattle treated with favorable results; but the people were averse to carrying out segregation as strictly as they were instructed, and the disease consequently lingered on. In another part of the district, however, they had voluntarily adopted the system, together with burial of carcasses without removing the hides, and this was followed by "marked success" in staying the progress of the disease. Subsequently murrain was reported from Kurnool, South Canara, North Arcot, Salem, and Bellary, and treated on the same principles. Government note, in commenting on this report, that the treatment employed has been generally successful, and the people are beginning to see the wholesome results of segregation.

A later report, dated 14th November 1870, for the half-year ending 30th September, details the prevalence of cattle disease in Malabar, Canara, the Nilgherries, Cuddapah, Bellary, Kurnool, Madura, Secundrabad, and Salem. The same principles of segregation, parcelling out herds, and treatment were adopted, and in all instances, when the plan was carefully carried out, with success. Mr. Thacker writes: "Segregation has been, whenever adopted, invariably successful in stopping outbreaks of disease. It is a preventive measure of incalculable value to the country. It would save the lives of thousands of cattle, and I exceedingly regret that, under present circumstances, it cannot at all times be carried out."

The general inferences to be drawn from the experience in Madras are—

1. That rinderpest, known most commonly by the names *vekkai*, *ummai*, *burra azar*, *doddah rogue*, *kudinow*, *saraku*, &c., is a well-known and widespread disease in the Presidency, and has prevailed extensively since inquiries began to be made into the subject.
2. That foot and mouth disease, swelled throat, black quarter, and cystic disease are also common forms of cattle sickness.
3. That for the prevention and treatment of rinderpest strict segregation and medical treatment have been found successful.
4. That the separating of the healthy is better than removing the sick.
5. That by carefully conducted segregative methods the disease may be effectually limited to a certain locality or number of cattle, and its further spread prevented.
6. That by suitable dieting and careful medical treatment a certain number of animals recover more than if they were left to nature.
7. That any legislative interference is considered strongly inadvisable in the Presidency, after careful and anxious attention has been bestowed upon the subject.
8. That by persuasion, example, and personal influence the people may be brought to adopt the necessary measures of prevention and treatment.

9. That the plan of protecting cattle by inoculation has not been entertained favorably, and all the thought and action adopted has tended to the opposite aim, namely, repression or stamping out.

A letter and narrative from Mr. Thacker, summarising his observations and experience in Madras, are printed below.

Extract from Dr. W. GILCHRIST'S *Practical Treatise*,—Hoonsoor, 1848.

Dr. W. Gilchrist.

SECTION 7.—MURRAIN OR EPIDEMIC DISEASE.

Burra Azar, HIND.; *Perriah Novoo*, TAM.; *Dhodrogah*, CAN.

History.—Of all diseases to which the bullock is subject, *burra* or *budda azar* is much the most important. It is the murrain of Europe, and during the epidemic visitation occasions as extensive a mortality amongst the herds of Asia as amongst those of the Western World. It may occur at any season, no one part of the year being more influential than another for its development.

Nature of the disease.—The interior side of the chest and of the abdomen, the inside of the skull and of the spine, the mouth, the nostrils, throat, the stomach and the intestines are all lined with membranes. The membranes lining the first four of the above named parts are of the kind called serous; those lining the last five named parts are of the kind called mucous. The nature of *burra azar* is an inflammation of one or more of these membranes, and the individual case of attack will vary, both as to symptoms and to severity, according to the kind of membrane and its situation, which is the seat of disease, as will be subsequently specifically detailed.

General symptoms.—These are,—drooping of the ears, which are cold, the hair on the body standing out as if it were on end; the animal is heavy and listless, and ceases to graze; the urine is scanty and reddish coloured; the pulse is quick, and is either weak or strong according to the kind of individual attack. A further stage of development of the disease occasions running at the nose and eyes, soon after which the symptoms indicative of the particular seat of the disease appear.

Particular symptoms. 1st.—If the membranes of the skull and spine be the seat of attack, the animal evinces symptoms of madness. The eyes are prominent and fiery, and from these organs, as also from the nose, there is much discharge, which is at first clear and watery, afterwards thick and yellowish coloured. The whole demeanour of the animal is one of madness, running about in a wild manner and attempting to attack the attendants. Sooner or later these symptoms give place to those of an apoplectic character—*vide* Chapter I, Section 3. The animal falls down, commences a snoring breathing, is little, if at all, sensible, and dies..

The epidemic of horned cattle is usually most severe at the commencement. It accordingly frequently happens at the outbreak of the epidemic seizure that this apoplectic state supervenes within a few hours after the attack, not being preceded by the madness above alluded to, and indeed by few or none of the general symptoms, except leaving off grazing and drooping and coldness of the ears. The animal is frequently so speedily overpowered by the disease, that it dies within two or three hours with well-defined symptoms of apoplexy. After ten days or a fortnight's continuance of the epidemic, this variety does not prove so rapidly fatal; the animal may continue in an insensible state with snoring breathing for two or even three days, but this variety, whether running its course speedily or more slowly, is generally fatal, and is almost certain to be so if early treatment be not adopted. Dissection most clearly indicates the cause of death, which results from fluid, more or less bloody, being secreted within the skull and making fatal pressure on the vital organ within, the brain, which is itself, as also its membranes, more or less inflamed. In the more protracted cases of this variety, the discharge from the nostrils consists of mucus mixed with blood, and is very fetid, attracting flies, which deposit eggs that become maggots in the space of a few hours.

2nd. **Chest and Lungs.**—When the membranes of the chest and lungs are the seat of the disease, there is cough and rapid breathing.

3rd. **Bowels.**—When the mucous membranes of the bowels are affected, the evacuations are loose and mixed with slime and blood; not infrequently, however, there is frequent watery purging with little slime, though the evacuations are very fetid. Sometimes the dung is hard at the commencement, dark coloured, and offensive. When the costive state of the bowels, just spoken of is conjoined with the affection of the head above alluded to, the name *buttee azar* is sometimes given to that variety of attack, also the name *bhao*. The cysts described under *dhoobla*—*vide* Chapter I, Section 6—are found occasionally in the lungs or liver of animals that have died of *burra azar*; but such cysts are in no way an essential condition of this epidemic.

It is not to be understood, however, that cases so completely insulated, as stated in the above history, are the ordinary manifestation of the disease, which is thus sub-divided for facility of description. On the contrary, few cases occur which do not exhibit a combination, more or less extensive, of the above symptoms, and the progress of the epidemic from outbreak to decline usually observes the order of symptoms above given, shading gradually from one group of symptoms into the other.

The causes, whether predisposing or immediate, of this epidemic are unknown. The ordinary condition of the seasons appears to have little influence over it, as it occurs equally frequent during all seasons. The theory of the natives as to the cause is, as might be expected, based on the most crude superstition apart from religious ideas; the only circumstance I have known them to name as productive of it is that of a tiger having urined in the vicinity of the herd.

[The treatment recommended by Dr. Gilchrist consists of firing, bleeding, aperients, fomentations, and warm nutritive and stimulant drenches.]

SECTION 5.—EPIDEMIC AFFECTION OF THE MOUTH AND FEET.

Moopaung, HIND.; *Comaree*, TAM.; *Baheejerrah*, CAN.

History.—This is another epidemic affection to which horned cattle are subject, and one which is not usually of serious importance in itself, but which, from neglect on the part of the attendants, may become one of considerable mischief, and even occasion death.

Moopaung consists of a vesicular eruption of the lining membrane of the mouth and nostrils, and also of that portion of the skin of the legs immediately above the hoof, as also of that between the hoofs. The animal on seizure becomes listless and leaves off grazing, apparently from tenderness of the mouth. After the lapse of three days there appears a running from the nose; the lower part of the legs swells, and little bladders or vesicles are found immediately above the hoofs.

About the fifth day from seizure these vesicles become small ulcers, which are to be seen on the tongue and inside of the mouth; the same also appears in the nostrils and above and between the hoofs. The animal walks limpingly. The general functions of the system are little, if at all, sensibly disturbed; but if the animal be neglected, maggots appear in the nostrils and about the feet. The foul ulcers resulting may produce permanent lameness or death from mortification within the nostrils.

Treatment.—Camphorette oil applied to the nostrils and feet speedily effects a cure, being curative as a means, while it prevents flies from depositing ova which speedily turn to maggots. The native treatment consists in causing the cattle to stand in soft mud; flies are thereby prevented access to the feet, and so far well, but the nostrils continue undefended. The application of camphorette oil, consisting of camphor eight tolas, dissolved in a quart bottleful of coconut oil, meets every requisite, and effects a speedy cure.

The following is an extract from a topographical report by Staff Surgeon G. B. MacDonell, which describes a variety of *moopaung* as it appeared in the Tenasserim Provinces in 1839:—

“The last warm season was considered unusually hot, and with it the cattle which came down in March brought with them a disease which spread extensively among the Moulmein cattle and proved exceedingly destructive. It appears that this epidemic was present in the Shan country, and very destructive; and as it abated there, it became apparent on the coast and it is very doubtful whether it could be considered infectious.

“It is more rational to attribute it to some hidden epidemic constitution of the atmosphere having the same laws as other epidemics, than to contagion; the cattle in the town were in no way exposed to contact with the Shan cattle, and were, moreover, in excellent condition, while the others were thin from long travel, yet all suffered.

“It showed itself in a most insidious manner, and to the inexperienced eye was not obvious; but the cattle drivers in their diagnosis were always right. At first the animal appeared dull, then the feet between the hoofs were seen to swell, and the heels became spongy; next the breath was observed to be offensive, the gums became spongy, and the mouth poured out a frothy discharge; at this stage the feet became much diseased, the toes extended, the foot swelled, and the animal could hardly walk; emaciation gradually came on; the animal appeared never to lose its appetite, but was prevented from feeding by the state of its gums; the bowels were generally confined, and the pulse quick; the disease in the course of three weeks from its first commencement generally proved fatal. From this disease some 700 or 800 head of cattle died.

“To ascertain the effects of the disease, a series of *post-mortem* examinations was instituted; and save in a few instances, which showed ulceration and softening of the mucous membrane of the stomach, the disease might be called bronchitis, extending to the substance of the lungs. From this view of the subject, the treatment I suggested was to bleed copiously, in the first instance, to relieve the bowels with Glauber salts and tartar emetic.”

SECTION 15.—EPIDEMIC AFFECTION OF THE CAMEL.

Pupday, *Papedah*, *Papasa Ka Murza*, *Budda Bhao*, *Bhao*, *Ahren Bhao*, *Pakdar*.—The first six of these terms are in common use in Peninsular India, as well to indicate occasional individual attacks of the ailments described under those heads—*vide* Chapter II, Sections 2 and 12—as to indicate the same affections when prevailing epidemically. The seventh term is the Bengalee name for the variety of *Papasa Ka Murza* when prevailing epidemically.

History.—The *Budda Azar* (the murrain of Europe) is described in Part III, Chapter I, Section 7—an epidemic affection to which the bullock is subject. That the camel is subject to a similar disease has been satisfactorily determined, and indeed it has prevailed to a considerable extent amongst the camels of the Public Cattle Establishment during the current year (1848). The serous and mucous membranes of the head, lungs, and bowels are the seats of the affection. The lungs and air passages are the most commonly affected; and for the purpose of description and for giving a convenient view of the symptoms of the epidemic, these may be stated under distinct heads; but it will be readily understood that during an epidemic seizure, some only of the symptoms named will show themselves; while, on the other hand, cases will present themselves in which the varieties shade one into the other, as, for instance, one case may show more symptoms of affection of the head than that of the lungs or bowels, another more derangement of the lungs, a third may show symptoms of more or less affection of the abdominal organs.

First.—*Head*.—When the membranes enveloping the brain are affected, the symptoms detailed under the head of *Bhao Ka Murza* are developed—*vide* Chapter II, Section 2. During the existence of inflammation of the brains and its membranes, called by the Serwans *Ahren Bhao*, the animal shows prominent symptoms of delirium, attempts to bite the attendants and to get loose, and has altogether a wild demeanour, which sooner or later, however, abates; the animal falls down, breathes stertorously for a time, and dies. On some occasions the apoplectic symptoms set in almost at the commencement of the attack; the animal is lethargic; it has a confused demeanour, walking round and round its picket; attempts to lie down, but does not carry its intention into effect. At length the lethargic symptoms increase, the animal lies down heavily, breathes stertorously, and dies from marked symptoms of effusion within the skull, producing fatal pressure on the brain. This is the *Bhao* of the Serwans—*vide* Chapter II, Section 2.

Second.—*Membranes lining the nostrils, throat, air passages, and lungs*.—When the nostrils are affected, the mucus secreted by the lining membrane of those passages assumes a thicker consistency and yellow colour, and the animal frequently rubs its nose against the ground, post, or wall. It is restless, and makes the guttural sound indicative of uneasiness—*vide* *Koodkay* or *Surdhee*, Chapter II, Section 11.

When the lining membrane of the pharynx, or top of the throat, is affected, this part, as also the uvula, is red and swollen—*vide* *Choodee*, Section 4, and *Gahasha*, Section 5, of Chapter II. There is difficulty of swallowing, and the animal shows unmistakable signs of tenderness in these parts when pressure over them is made.

The symptoms that indicate affection of the wind-pipe and lungs are detailed under *Papasa Ka Murz*—*vide* Chapter II, Section 12.

Third.—When the bowels are affected there is usually watery purging, the evacuations being very fetid, and frequently mixed with slime, sometimes with blood. The belly is swollen; there is great rumbling of the bowels, the tongue is pale and dry; the animal is pale and restless and leaves off eating. Dissection shows either effusion on the brain, inflammation of the lungs, sanguineous engorgement of those organs, or inflammation and thickening of the bowels, according to the seat of the attack.

J. H. B. Hallen, Esq. *From J. H. B. HALLEN, Esq., President, Cattle Plague Commission, to the Secretary to the Government of India, Home Department,—(No. 372, dated Sahibgunge, the 14th June 1870).*

The Commission, with a view of making their inquiry into the subject of cattle murrains, past and present, as complete as possible, are anxious to obtain information on the points noted below from Bombay, Madras, Central Provinces, and British Burmah; but as these places are not within the sphere of their inquiry, I should deem it a favor if you would, with the permission of His Excellency the Governor General in Council, address the Governments of the two Presidencies and the two Chief Commissioners in the matter, and request them to have the information required forwarded to me at No. 1, Sudder Street, Calcutta.

1st.—Has any disease of an epizootic nature prevailed among the cattle in any part of the Presidency of Bombay, Madras, Central Provinces, or British Burmah? And is it now prevailing?

2nd.—Name of the disease as called by the natives of the country and the symptoms, also duration of the attack.

3rd.—*Post-mortem* appearances.

4th.—Name of the districts affected, their situation, and the nature of the soil.

5th.—Number of cattle attacked, number recovered, and number still ill.

J. Thacker, Esq.

From J. THACKER, Esq., Veterinary Surgeon, to the Acting Secretary to the Board of Revenue,—(dated Coonoor, 5th November 1870).

In compliance with the request of the Board of Revenue, I have the honour to forward the information desired by the President of the Cattle Plague Commission in his letter to the Secretary to the Government of India, Home Department, dated Sahibgunge, 14th June 1870, No. 372.

2. REPLY No. 1.—Disease in an epizootic form has prevailed among cattle in almost every Collectorate of this Presidency from as remote a period as can be ascertained. It still prevails at various seasons with greater or less virulence.

3. REPLY No. 2.—The names given to the disease by the natives of the country are *Pedda Moosa Rogum, Vekkai, Peria Novoo, Pytchinow, Dodda Rogu, Vasuri, Thukam, &c.*

4. SYMPTOMS—*First stage*.—The attack is insidious, making considerable progress before outward signs lead to a recognition of the complaint. The first marked sign is a peculiar twitching of the muscles of the front of the chest and lower part of the neck; the temperature of the body, observable by a clinical thermometer, rises to as high as 105°; the pulse at first is little disturbed, but with the development of the disease in this and the second stage it increases to 100° or more, becoming smaller and weaker in tone; the respiration is somewhat quickened; the appetite is but little affected during the first three or four days; there is dulness; a rough staring coat; drooping ears; slight congestion of the visible mucous membranes; bowels somewhat costive.

5. *Second stage*.—The appetite ceases; muzzle dry; visible mucous membranes highly congested; discharge of mucus from nostrils and eyes,—the latter has in it sometimes peculiar filamentous streaks of lymph; aphthous sores on the gums and lining of the lips; purging commences at first of an ordinary kind, but it soon assumes a characteristic offensive, putrid smell, is very watery, mixed with undigested food and streaks of mucus.

6. *Third stage*.—Great prostration, the animal mostly lying down; temperature of the body falls to sometimes as low as 88°; evacuations are mixed with blood, passed frequently in small quantities with great pain and straining; pulse rapid, and so weak as to be scarcely felt; surface of the body and extremities cold; eyes sunken; respiration quick.

7. The duration of the attack varies from five to ten days.

8. REPLY No. 3.—*Post-mortem* appearances. The pathological appearances are principally confined to the digestive mucous membrane; the lips and gums excoriated: the back part of the mouth, fauces, and pharynx present a dark-red congested appearance, with occasional ecchymosed spots and small superficial ulcers; the mucous membrane of the larynx has a similar appearance; the trachea is slightly heightened in colour, which gradually diminishes as it approaches the lungs. The œsophagus, rumen, and reticulum are healthy; the rumen is remarkably full of food, of a natural appearance; the omasum is full of hard dry food, but its structure is generally healthy; sometimes the mucous membrane peels off readily. The most striking character of the disease is in the abomasum, or true stomach, which presents in some places a dark purple appearance, and in others a dirty grey or brown, with small spots of black pigment scattered over its entire surface; here and there are patches of superficial ulceration, rather less than a quarter of an inch in diameter. The small intestines have a similar character; the anterior part or duodenum is similarly congested, and in addition has occasional

yellow patches of exuded lymph; these patches are attached by their centres to the mucous membrane, the circumference being loose; when removed the portion of the mucous membrane to which they have been attached is either highly congested or ulcerated; the jejunum is less affected. The ileum presents less general congestion, but is to a greater extent even than the duodenum covered with patches of exuded lymph, concealing ulceration; these increase in number as the cœcum is approached; they are quite superficial, in no case penetrating the mucous membrane; there are also at intervals patches of black discoloration surrounded by inflammatory congestion. The cœcum shows the ulceration in its greatest extent, almost its entire surface being covered with it; from this point it gradually diminishes, and the rectum is generally healthy. The liver is healthy; the gall-bladder is generally distended, and its mucous surface sometimes shows an appearance similar to that of the cœcum. The blood contains less fibrine than usual, being seldom found coagulated, except occasionally in the right ventricle; its colour is natural, and there is no perceptible diminution in the number of the blood corpuscles. Occasionally the serous membrane, lining the interior of the heart, is of a dull red colour with ecchymosed spots near the origin of the pulmonary artery; the portion of the pericardium lining the heart shows dark-red spots over its entire surface. The lungs are sometimes emphysematous.

9. REPLY No. 4.—The disease has been confined to no particular district. It has existed more or less in all the Collectorates of this Presidency.

10. REPLY No. 5.—Thousands of cattle are attacked annually. Many of these are treated with medicine distributed by me through the Revenue Officers, with an average of 50 per cent. of cures. Of 2,541 cases carefully watched and treated by myself, 1,763 recovered and 778 died, giving about 70 per cent. of cures. When the animals are left without any kind of treatment, the recoveries are not more than 10 or 20 per cent.

11. Several of my Reports to the Madras Government on Cattle Diseases I find have been selected and published in the Records of the Government of India, Home Department, No. 69. I, therefore, now venture to annex a simple narrative prepared for the ryots here, in the hope that it may not be without interest to the Commission, illustrating as it does the exceeding great advantages of the system of segregation. It has been invariably successful in preventing the spread of cattle epizootic disease, and I beg most earnestly to commend it to the consideration of the Commission. It is simple, costless, and attended with little trouble. Were it thoroughly understood and carried out by the people, I feel confident it would be a priceless boon to the country.

A narrative account of Cattle Disease.

The losses sustained by the people of this country through cattle diseases have been enormous. In 1866 the Government, in the interests of the people, appointed an officer specially for the investigation of these diseases, with a view to ascertain the best mode of preventing and curing them. A manual of these has been published.

The chief disease to which I would refer, and which prevails throughout this part of India, is murrain. It is known to the people in different districts by various names, such as,—*Pedda Moosera Rogum, Vekkai, Peria Novoo, Dodda Rogum, Vasuri, Thukam, &c.*

Many thousands of cattle suffering under this disease have been cured by medicine distributed to the different Collectorates. In nearly 200 outbreaks it has been examined by me personally, and I have carefully watched and treated, through the different stages of the disease, 2,541 cases. Of these, 1,763 recovered and 778 died, showing only about 30 per cent. of casualties. When the animals are left without proper treatment, the deaths will amount to from 80 to 90 per cent.

The following are some of the ways in which this disease is propagated and carried about:—

On one occasion, when sickness had broken out in a herd of cattle, I advised the owner to remove the healthy animals. One of these was sent about 15 miles away, and unfortunately put in a herd of 120, all in apparent health. Within a fortnight 70 were attacked with murrain. The disease was thus communicated by this cow carrying in some way the infection about her, though she herself was never sick.

Fairs and markets are often the means by which the sickness is spread. Cattle are brought to them from infected villages or herds for sale, and thus the disease is conveyed to other places.

Another and very common way in which I have seen the disease propagated is by allowing healthy animals to graze on pasture grounds previously occupied by diseased cattle.

J. Thacker, Esq.

The very contagious nature of this disease is well known to the people of this country, but no effort is made towards prevention, and the isolation of sick animals is never attempted. I have seen a miserable buffalo calf, not worth five rupees, suffering under this disease in close contact with a healthy bullock, thus risking the life of an animal worth 100 rupees. Many more instances such as this might be related.

This is the more surprising when it has been seen what an invaluable preventive we have in segregation, so simple, so costless, and attended with so little trouble.

It is impossible to say what has been the loss of cattle from the apathy and indifference of the people in not taking advantage of this preventive. On the other hand, where the system has been carried out, it has been thoroughly effective in saving many herds.

In a village of the Salem District, murrain attacked some animals in a herd of 3,000 cattle. The sick were removed and the rest of the herd fully and systematically segregated, after which there was not another case of sickness.

Again, in a village in South Arcot District, disease appeared in a herd of 400 cattle. When I visited them, 52 had already died and 40 were sick. The healthy cattle were segregated and not another animal was attacked, and in twenty days the sickness had entirely ceased.

The removal of healthy cattle from a village has also a most beneficial effect in mitigating the type of the sickness. I would quote, as an instance of this, that of the 40 sick animals above-mentioned only five died.

At a village in Kurnool District disease broke out in a herd of 500 cattle. After these were segregated only two animals were attacked.

In another village of the same district this disease destroyed in a few days 32 animals in a herd of 350. From the time the people were induced to segregate their healthy cattle, not another case of sickness occurred.

The disease is recognised by the following symptoms:—

First stage.—The attack is insidious, making considerable progress before outward signs lead to a recognition of the complaint. The appetite is but little affected during the first three or four days. Dulness, rough staring coat, and drooping ears are the premonitory signs, followed by shivering in the colder parts of the day, with a continuous peculiar twitching of the muscles of the neck and flank; eruption on the gums and inside of lips.

Second stage.—The appetite ceases; muzzle dry; visible mucous membranes congested; discharge of mucus from nostrils and eyes; purging commences, at first of an ordinary character, but which soon assumes a peculiar characteristic offensive, putrid smell, is very watery, and is mixed with undigested food and mucus.

Third stage.—Great prostration, the animal constantly lying down; the evacuations are mixed with blood and passed frequently in small quantities with great pain and straining; the pulse is quick, and so weak as to be scarcely felt; the surface of the body and extremities cold, eye sunken, and respiration quick.

Treatment, preventive.—An average period of four days elapses from the time the disease has actually commenced in the system before any symptoms are noticed by ordinary observers. A number of animals in a herd thus become infected with the disease, and are a source of contamination to the remainder before it is detected. On an unmistakeable case occurring, the healthy cattle should be removed 300 yards from the village and picketed in detachments of 20, at intervals of 300 yards. The sick animals must be kept in confinement for treatment. This segregation is to be continued for fifteen days after the sickness has ceased. Whenever more convenient to the ryots, they might remove their cattle to their own fields and there divide them. Those who attend upon the sick animals should be careful to keep aloof from the healthy ones.

Treatment, curative.—From its low typhoid tendency, and the accompanying debilitating diarrhoea, care and moderation should be observed in the use of medicine. The main object is to support the strength and assist the powers of nature. In the first stage, if there is no purging, the following medicine may be given morning and evening:—

Camphor,	2 drachms	=	($\frac{2}{3}$ rds of a rupee weight).
Nitre,	2	„	= ($\frac{2}{3}$ rds of do.).
Datura,	1	„	= ($\frac{1}{3}$ rd of do.).
Chiretta,	2	„	= ($\frac{2}{3}$ rds of do.).
Arrack,	4 ounces	=	($\frac{4}{3}$ rds of do.).

Dissolve the camphor in the arrack, powder and mix the other ingredients, then add two quarts (three bottles) of gruel, and carefully pour down the animal's throat with a drenching horn.

J. Thacker, Esq.

In the second stage, when the diarrhoea commences, it is not desirable to attempt suddenly to arrest it, as it is an effort of nature to relieve the system; but if allowed to go on to any large amount, the debility produced would impede recovery, so that, after it has existed about twenty-four hours, the following, finely powdered, may be added to the preceding prescription:—

Gall-nut, 2 drachms = ($\frac{2}{3}$ rds of a rupee weight). As soon as there are symptoms of improvement, the medicine should be diminished or discontinued, as the recovery is generally very rapid and requires nothing beyond supporting the strength with gruel, to which may be added the dose of arrack in extreme weakness. As soon as the animal shows the slightest inclination for food, it should be frequently supplied with small quantities of green grass, *raggy*, sugar-cane, or *cholum*.

Acc. no.
45636

BOMBAY PRESIDENCY.

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HISTORICAL SKETCH.

In compliance with a letter from the Government of India (No. 3153, dated 30th June 1870), forwarding a communication from the President of the Cattle Plague Commission (No. 372, dated 14th June 1870), requesting information on the subject of cattle murrains, past and present, the Bombay Government forwarded (letter No. 3645, dated 30th July 1870) all the papers which had been collected upon the subject up to the date of this communication.

On the receipt of a letter from the Madras Government (dated 27th October 1863), accompanied by a copy of the reports of cattle disease in the Kurnool District, and asking for information, inquiries were made through the Civil and Medical Officers of the Presidency. These produced a series of reports from Collectors, of which the following is a summary:—

1864. The reports of Collectors of the Southern Division were forwarded to Government on the 16th April 1864.

AHMEDNUGGUR.—The Collector reports that cattle disease is not known in the district.

DHARWAR.—Cattle disease—*hirey biale*—or the great disease exists; cause not known; symptoms not described; native remedies given, but almost invariably without success.

SHOLAPOOR.—Cattle disease similar to the Madras murrain prevailed two and four years ago (1860 and 1862); cause unknown; treatment said not to be efficacious; sugar, ghee, boiled rice, and *toordall* given.

SATTARA.—The disease has occurred in some talookas of this district; disease attributed to heat and venomous snakes; native methods of treatment described.

POONA.—Disease similar to the Madras disease known; very fatal; called *bhool*, *chandia*, *bhewanee*, *keermee*, *khaprya*; *khoorkhoot*, a disease of the feet, also known; *wara* and *rog* are other names given; native remedies are described.

BELGAUM.—Disease known in this district, called *hecrey byanee*, the worst of diseases, and *matha rog*; native remedies described.

CANARA.—Cattle disease, called *dhod rog* (the Madras name), known in the district; contagious; gives native cures, but states that no more than 5 per cent. recover.

RUTNAGHERRY.—Disease called *moosulwada* known; not unlike cholera; gives 32 native modes of treatment; among them elephant's dung mixed with water, and levigated tongue of a tiger.

COLLECTORS OF NORTHERN DIVISION.

AHMEDABAD.—Small-pox prevailed in June and October; was very virulent last year (1863) and 9 or 10 years before that (1854); little done in the way of treatment; disease ascribed to *seetla matah*.

SURAT.—Disease occasionally appears similar to the Madras disease; treatment not applied systematically.

TANNA.—Disease known under the same name as the natives give to small pox—*devi*; segregation practised as far as possible; percentage of recoveries 5 to 25; symptoms described as an eruption of pustules, diarrhoea, emaciation, and death; no remedy known.

KHANDEISH.—Disease similar to the Madras murrain, known in the district by the same names as human small-pox; no treatment known.

KAIRA.—No report.

On this the Bombay Government circulates the information obtained and forwards the reports to Captain W. A. Neale, Superintendent of the Government

HISTORICAL SKETCH. Cattle Farm, Malligaum, Mr. Hallen, Staff Veterinary Surgeon at Kirkee, and the Inspector General of Hospitals, Medical Department.

Captain Neale states (18th October 1864) that the disease is familiar to him, and occurred at Sholapoor in 1859, and at Malligaum in 1863. He treated by purging, blistering, common salt, and no water. Two sick cattle which escaped and went to the river were found dead next morning. States that the disease is highly contagious, and recommends segregation. Notes the prevalence of *variola ovis*, and describes from personal experience the advantage of inoculation in that disease. Captain Neale inoculated many hundred sheep with perfect success, and is fully convinced that sheep properly inoculated are perfectly free from contagion.

Mr. Hallen concurs with Veterinary Surgeon Thacker in his views regarding the disease.

The Inspector General of Hospitals forwards (30th November 1864) a series of valuable reports from Medical Officers, which may be summarised as follows:—

TANNA.—Assistant Surgeon Asher comments on the Madras and Bombay papers, and would attribute the diseases noted to bad climate and diet, but it does not appear that he had any practical knowledge or experience on the subject.

Assistant Surgeon Plumtre, Superintendent of Vaccination, Southern Circle, comments on the modes of treatment detailed, and considers them either harmless and useless or likely to increase mortality, or actually cruel.

Assistant Surgeon Dick, Superintendent of Vaccination, Northern Circle, has had little or no practical experience. He draws a parallel between sheep pox and cattle murrain, and doubts whether vaccination will be held protective against the latter, as it is *not* against the former.

SATTARA.—Assistant Surgeon H. V. Carter also alludes to sheep pox, and recommends segregation and slaughter in cattle murrain. From the evidence of natives, it appears that among sheep and goats, small-pox (*moi*, *phorya*, *man-moræ*) is a common and fatal disease; about 50 per cent. die. It is an eruptive disease of the hot weather and very contagious.

Among buffaloes and cows, murrain—*rog* (evidently rinderpest)—is of yearly occurrence, and occurred in 1864. Abscesses of the liver (*echinococcus cysts*?) also cause deaths.

RUTNAGHERRY.—Three diseases are known:—*paie*—apparently hydatid cysts of the liver—treated by driving a red-hot nail into the swelling; *koond*—apparently hoven—“caused by bad or unsuitable food, and treated by firing indiscriminately,” and placing substances in the nostrils to cause sneezing; and *paie laig*—apparently foot and mouth disease—treated by tar, oil of blackwood and teakwood, and tobacco and chunam.

VINGORLA.—Two diseases described—*moosla boolki*, diarrhoea and cutaneous ulcers, and *lagg*, foot and mouth disease.

SAWUNTWAREE.—Three diseases known, namely, *lagg*, foot and mouth disease, *moosla boolki* or cholera, diarrhoea and appearance of worms on the surface, and *devi* or small-pox—rinderpest. The latter is well described.

AHMEDABAD.—Disease similar to the Madras disease is of ordinary occurrence in the autumnal months; was severe last year (1863). The prevalence of pleuro-pneumonia during the cold weather is also noted.

REWA KANTA AND PUNCH MEHALS.—Cattle disease extremely fatal, occurring three or four times a year.

KATTYWAR.—Civil Surgeon describes three diseases,—*malvee*, apparently hoven, *khoriwa*, foot and mouth disease, and *silla* or small-pox—rinderpest—correctly described.

SHIKARPOOR, UPPER SIND.—The Civil Surgeon submits a very careful statement, which is appended in full. It is remarkable that foot and mouth disease is omitted from this list.

CANARA.—The Civil Surgeon gives a very careful description of rinderpest, which prevails in the months of May and September. It is said that the rate of mortality is twice as great in May as it is in September. The mortality is put down at about 75 per cent. Filth is said to intensify the disease, and segregation is stated to be seldom practised by the natives.

The disease is considered to be the murrain of Europe modified by climate. A method of treatment by saline purges followed by warm mash and cordial drenches is detailed, and entire segregation and fumigation prescribed as sanitary measures. This paper is also, on account of its careful description of the disease, given *in extenso*.

The last notice of cattle disease in the Presidency is contained in the report of the Forest Ranger in Sind for the year 1866-67. The grazing fees were not realized in full on account of losses from cattle disease. Dr. Pinkerton, Superintendent of Vaccination in Sind, gives a very accurate account of the disease, which is evidently rinderpest, called by the natives *seor*, small-pox, and *thudee* (cold). Of 207 cases, 64 died, 47 recovered, and 7 remained sick. This result of itself would go to show that the disease is the same as the *gootee* or *matak* of the Bengal Presidency.

The letter above referred to (No. 153, dated 30th June 1870) elicited a second series of reports from the Collectors of the Districts of this Presidency. These were forwarded by the Government of Bombay on the 28th December 1870 (Sind and Northern Division) and 9th January 1871 (Southern Division). These papers contain much valuable information and are printed below, the diseases which cannot be identified being omitted. It is obvious that a catalogue of names and descriptions, when the morbid states which they are intended to represent cannot be fixed, is rather confusing than otherwise, and the necessity of skilled inquiry and report is as obvious in this as in the sister Presidencies. The information contained in these papers may be summarised as follows:—

NORTHERN DIVISION.

COLABA.—Several distinct epizootics are known, and 200 cattle were ill in September 1870, of *phansee*, in the Mangaon Talooka. *Mooslya* and *debee* are described, and seem to be varieties of rinderpest.

TANNA.—Cow-pox and *khoorkhoot* (foot and mouth disease) are known.

PUNCH MEHALS.—*Balia*, small-pox (? rinderpest), and *mowaso* or *khurwalo*, foot and mouth disease, are known. Cattle diseases have been destructive in these mehals since 1864.

BROACH.—*Sitlah* (cow-pox), rinderpest, and *mowaso* are common, but have not appeared for the last 4 or 5 years. They are considered contagious.

SURAT.—*Sitlah* and *mowaso* are occasionally prevalent.

KHANDEISH.—*Popsha*, apparently rinderpest, prevailed in 1862 and 1865. It is said to recur every 5 or 10 years and carry off two-thirds of the cattle. In Jumna Talooka it occurs every two or three years; cattle are said to die in one or two days. The disease is said to carry off seven-eighths of the stock. It had not occurred since 1865-66.

NASSICK.—Murrain prevails from time to time; is now (October 1870) prevailing in the Baglan and Dindooree Talooks. From the symptoms described, both rinderpest and foot and mouth disease evidently occur.

AHMEDABAD.—Murrains have been known to prevail on several occasions since 1860 in Goozerat, and diseases of cattle,—*sitlah*, *khoriwa*, &c.,—were prevalent when the letter was written (October).

KAIRA.—Murrains are known in the district and prevailed in 1870; 2,909 cattle are said to have died. *Bulia* and *matak* are named, and appear to refer to rinderpest.

SIND.

HISTORICAL SKETCH.

KURRACHEE.—Murrain prevailed in the Tatta Talooka of the Jerruck Division in 1862; again in the Tatta and Ghorabaree Talookas in 1866-67; 6,828 cattle died in the former, and 1,100 in the latter. The disease is called *thudee* and *guttia*, and appears to have been rinderpest. In 1869 foot and mouth disease, known as *summara*, prevailed in the Sehwan Division; 500 were attacked and 5 per cent. died, and in this year 500 camels, out of 1,000 attacked, are said to have died of *thudee*, a discharge of offensive blood from the anus, in the Kotree and Dadoo Talookas of this Division. In 1869, also, cattle disease occurred in the Shahbunder Division. The diseases named are *guttia*, *thudee*, *pheepree*, &c. Murrain was also prevalent in the Beyla and Meerpoor Battora Talookas of the Shahbunder Division. In the latter 1,270 animals were attacked and 26 recovered, and in Talooka Jattee, 70 and 22.

In 1870 *seeor*, small-pox, was prevalent in the Dadoo Talooka of the Sehwan Division.

HYDRABAD.—Cattle are said to have died in large numbers from want of food in 1864 and 1866. *Thudee* or *seeor* is known, and appears to be rinderpest.

SHIKARPOOR.—Disease of some kind is said never to be absent. It sometimes appears in one part, sometimes in another, with different degrees of virulence; *seeor* and *pheepree* are mentioned.

FRONTIER, UPPER SIND.—*Seeor* is said to have prevailed among cows, buffaloes, and camels in the Thool Talooka during the years 1869-70. The symptoms are well described, and are evidently those of rinderpest; 368 cattle are said to have died among 436 attacked.

In Kusmore Talooka *silt* and *ghutt* (probably rinderpest, from the symptoms) prevailed also in 1869 and 1870; 800 deaths occurred among 1,150 attacked.

THURR AND PARKUR.—Plague was very severe in 1860, and about nine-tenths of the cattle attacked died. A variety of diseases of cattle are known by the natives, but small-pox has caused the greatest mortality.

SOUTHERN DIVISION.

CANARA.—Three forms of cattle disease are said to have been prevalent in the Coompta, Honore, Sircy, Siddapore, Yellapore, and Soopa Talookas during the past year, namely, *laga roga*, foot and mouth disease, and *maha roga* and *chendoo roga*, apparently forms of rinderpest; 814 cattle had died among 1,178 attacked, or 68 per cent.

DHARWAR.—*Hirey byanee*, evidently rinderpest, prevalent in the district most severely in the hot weather.

A monthly return from March 1869 to December gives 1,430 attacked and 969 died, or 67 per cent., and from January to July 458 attacked and 206 died, or 45 per cent. Measures were adopted to check the disease, but what these were does not appear.

KULADGHEE.—No epizootic is said to prevail or to have prevailed in this district.

AHMEDNUGGUR.—No disease prevailed in September. The diseases *haolia rog*, evidently rinderpest, *khoorkhoot*, foot and mouth disease, and others which can't be identified are described.

RUTNAGHERRY.—No disease prevailed in October, but a tabular statement is submitted giving statistics of murrain (rinderpest, from the symptoms described), called *moo-solwada*, from January 1869 to August 1870. This statement shows 8,887 deaths among 10,759 attacked, or 82 per cent.

Another disease, called *peya*, existed in the district during the rains; nature not obvious; 2,056 died in 2,703 attacked, or 76 per cent., during the same period.

HISTORICAL SKETCH.

POONA.—No positive information was obtained from this district.

BELGAUM.—Malignant cattle disease prevailed in 1870. The disease is called *heriberri*. All the symptoms assigned are those of rinderpest. *Kalberri* seems to be the local name for foot and mouth disease. A considerable mortality had occurred in several parts of the district.

SHOLAPOOR.—Cattle disease prevailed in October, and had prevailed for some time previously; 988 cattle had died during the last year. The most fatal disease is *mota rog* or *waryacha rog*, apparently rinderpest. *Khoorkhoot* is known, and some other diseases are noted.

SATTARA.—Diseases of an epizootic nature are said to prevail to a considerable extent, and from some of the symptoms recorded, most probably rinderpest and foot and mouth disease are the principal.

The general inferences from the information above summarised are :—

1. That though very exact data as to the history and prevalence of rinderpest in the Bombay Presidency are wanting, the papers furnished prove that it is a well-known and widespread disease, causing occasionally much loss of cattle;

2. That the other diseases of horned stock known and described in the Madras and Bengal Presidencies,—foot and mouth disease, hoven, swelled throat, and pleuro-pneumonia,—are also known in Bombay;

3. That no successful method of prophylaxis or treatment is practised; and

4. That no step, legislative or otherwise, has been adopted with a view to the limitation or extirpation of the disease.

Some of the reporters, recognising the imperfection of the usual method and result of collecting information on this subject, urge the propriety of inquiry by a skilled agent. Most of them express doubts of the accuracy of both facts and figures, but excluding much which cannot be understood, or elucidated by comparison, sufficient remains to demonstrate these inferences satisfactorily.

Report by the Civil Surgeon, Shikarpoor, on the Diseases prevalent among Cattle and Grazing Stock in Upper Sind,—dated 16th October 1864.

In submitting the following report of diseases prevalent among cattle and grazing stock in Upper Sind, I beg to remark that I have had no opportunity of observing the progress of any of the diseases enumerated, and that nearly the whole of my information has been received from native herdsmen who profess to cure sick cattle. Their treatment and that in vogue among the people is given, but of medical treatment, or remedies properly so-called, they appear to have no knowledge.

The most fatal disease is called *mohara*. When prevalent, it is represented as destroying whole herds and causing enormous losses, but I am unable to procure correct data to illustrate this point. The large flocks and herds which always suffer most from epizootic disease are scattered over miles of country wherever pasturage is to be found, so that the disease rarely falls under the observation of persons likely to investigate it. However, the people generally, and the herdsmen particularly, appear to have tolerably correct notions on some points. They describe the signs, progress, and cause of death minutely; and, believing that many of the diseases enumerated are infectious, they recognize the importance of separating the sick from the healthy animals. In regard to the "practice," little need be said; in most cases it is negative, and the animal is left to nature; and if in some instances it is inert and harmless, in others it is rude, cruel, and worse than useless.

The diseases are arranged in the order of their frequency.

MAI.

Hind., matah; *Sind*, mai; *English*, small-pox.

Definition.—A malignant pustular disease, setting in with severe febrile disturbance.

Physical signs.—The animal leaves off feeding and lies down, runs at the nose and eyes, and in the course of a few days its whole body becomes covered with large pimples, which gradually become vesicular with a depressed centre, ultimately pustular, resembling "small-pox."

Cause.—Not known, but believed to be a specific infection. The disease originates in quadrupeds, and is epizootic in cold, sickly seasons. No experiments have been made with a view to induce the disease in healthy animals by inoculation, or establish its identity with small-pox. This is strange, inasmuch as the Mussulmans of Sind are well acquainted with the protective power of inoculation, and have practised it among themselves for ages. If it is indeed small-pox, it is, to say the least, much more virulent than that usually met with among cattle in Europe.

Progress.—The pustules burst, discharge their contents, and are covered with a scab; and the animal, if not carried off by colliquative diarrhoea, and if the attack has not been very severe, ultimately recovers; but when the disease is very prevalent, and the season is cold and sickly, nearly all attacked perish.

Mortality.—The mortality is not accurately known, but believed to be about two-thirds of all attacked.

Treatment.—The animal is fed with conjee prepared with wheat flour, anise seed, and molasses, or with buttermilk. As the object is to support the animal's strength and keep it alive until the disease has run its course, this treatment appears rational.

MOHARA.

Hind., mooh pukka; *Sind*, mohara; *English*, sore mouth.

Definition.—Acute inflammation of the mouth, tongue, throat, and salivary glands, setting in with febrile symptoms.

Physical signs.—In this disease also the first sign of sickness is the animal refusing its food; the jaws swell, the tongue protrudes a little from the half-opened mouth, and the saliva escapes and falls upon the ground, the animal having lost the faculty of swallowing.

Cause.—Not known. Its attacks are not limited to any season. Sheep, goats, and horned cattle are most obnoxious, but other animals are also liable, and it has been frequently seen in dogs.

It resembles the disease called "Strangles" in the secondary affection of the salivary glands, but differs from it in its fatality and inflammation of the mouth and mucous glands near the root of the tongue.

Progress.—The progress is very rapid, and always terminates fatally. The inflammation extends to the base of the tongue, respiration is impeded, and the animal perishes from apnoea or suffocation.

Mortality.—All attacked perish; but I can find no statistics to enable me to arrive at an approximation of the percentage attacked.

Treatment.—Unless the cruel and useless operation of firing may be called "treatment," there is none practised.

PHEEPREE.

Hind., zalooljumb; *Sind*, pheepree; *English*, pneumonia.

Definition.—Inflammation of the lungs. When the disease is limited to one lung it is called *pheepree*; when both are implicated it is called *ghoghe*. The herdsmen are able to diagnose either, but consider them different diseases.

Physical signs.—Sudden and intense febrile disturbance, short cough, and hurried respiration. The nose and surface of the body feel hot and dry to the touch, and the animal leaves off feeding, and will not move unless pushed along. If left to itself, it remains standing until it falls through weakness.

Cause.—Inflammation of the lungs, caused by cold or certain conditions of the atmosphere. The disease is most prevalent in the winter and spring months, when the difference between the temperature of the day and night is greatest, and it appears suddenly in several animals at the same time.

Progress.—The appearances found after death tend to confirm the inference that, as in the human subject, the lung passes through the several stages of congestion, consolidation, and purulent infiltration.

The most usual morbid appearance is consolidation and discoloration of the lung. Purulent infiltration has been found but rarely, probably because it was not sought for.

The disease proceeds rapidly towards a fatal termination, the animal usually dying within the first three days; the result being doubtless hastened by neglect and exposure.

Treatment.—None practised. *Muntras* and prayers are performed and the animal left to nature.

The two following diseases are met with mostly among horned cattle:—

KAREVAO.

Hind., seemuk; *Sind*, karevao; *English*, black wind.

Definition.—Asphyxia, caused by poisonous winds or exhalations.

Physical signs.—The animal suddenly falls down and expires, without any previous warning.

Cause.—The popular belief is that it is caused by poisonous winds, all the animals in one particular direction being attacked at the same time.

Progress.—Generally and rapidly to a fatal result, but a considerable number recover; and as the attacks are not of very frequent occurrence, the mortality under this head is comparatively light.

Treatment.—Bleeding the animal from the ears.

APRI.

Hind., badee; *Sind*, apri; *English*, swelled belly.

Definition.—This disease is simply "surfeit" from over-eating. As it is avoidable, and of comparatively rare occurrence, it demands no special remarks. The native remedies are drenching the animal with oil and "firing."

The two following diseases are met with mostly among goats and sheep:—

ZARDOZI.

Hind., kuluji-ka-durd; *Sind*, zardozi; *English*, embroidery.

Definition.—Chronic disease of the liver.

Physical signs.—Not well marked. The animal loses flesh and becomes sickly, and in many cases the true character of the disease is not discovered until after death.

Causes.—Chronic disease of the liver, probably cystic or hydatid.

Progress.—Obscure, from the reasons above stated.

Treatment.—None practised.

BIRKI.

Hind., mirgee; *Sind*, birki; *English*, epilepsy.

Physical signs.—The animal runs round in a circle, cries out, and falls down in convulsions.

Cause.—Unknown, possibly insolation.

Progress.—Usually to a fatal termination.

Mortality.—Considerable, but not accurately known.

Treatment.—None practised.

Said to be a disease resembling cholera. The animal is suddenly attacked with diarrhoea and dies within twenty-four hours. It is not limited to any season, and is of comparatively rare occurrence.

The native treatment is to cover the animal with blankets and *numdahs*, keep it for about four hours in a room heated artificially with burning grass and rubbish; if it survives this treatment, it is allowed to cool and kept separate from the other cattle until recovery.

If reviewed in relation to the losses entailed by the ravages of the several diseases described, only three appear, from their great frequency and mortality, to demand special attention, viz., small-pox, sore mouth, and inflammation of the lungs, and fortunately they are diseases which hold out some hope of success to prophylactic measures and remedial treatment.

Taking them in the order enumerated (which is also the order of their frequency), I should suggest the propriety of taking steps to prove the identity or otherwise of the disease called *mai* with "small-pox." In stations where vaccination is kept up throughout the year, this test can be put in practice at once, and if found to give any protection against the disease, or modify the virulence of its attacks, the people will adopt the practice most willingly, but I don't believe they will of their own accord take it up experimentally.

Where the disease is at present raging, and no better means at hand, I should try the effect of inducing the disease artificially in the healthy animals by inoculation.

In reference to the disease called *mohara* or "sore-mouth," I have not much to remark, having seen the disease only once, and then in the last stage, and modified to some extent by previous interference. There was a good deal of swelling about the neck and throat, with a peculiar croupy respiration, which led me to infer the presence of fibrinous exudation; the breath was very offensive, and the animal appeared to have lost the power of moving its tongue. I was not aware of the importance of the disease at the time, and made no *post-mortem* examination; but, if I may venture an opinion on what I then observed, and have since heard described, I should say it is the analogue of the disease called "diphtheria." A disease of this character would be most difficult to treat in an animal. Any remedies prescribed should be of the most simple description to ensure their correct application in the hands of natives. In the absence of approved remedies, I think sulphate of soda, or even a strong solution of common salt, deserves a trial.

Pneumonia is a well-known disease among cattle in Europe, and many remedies have from time to time been in vogue for its treatment. Powders containing tartarized antimony, calomel, and digitalis have been employed successfully in the early stage of the disease, and I apprehend a similar combination might be tried in India with some prospect of success.

Extract from the Report of the Civil Surgeon, Canara.

The first symptom observable is that the tail is kept tight closed in between the hind legs, the ears fall, the eye becomes listless, and the animal refuses both food and water; trembles and shivers perceptibly. The ears are cold. Shortly, the other symptoms continuing, the skin of the body becomes very hot and dry to the touch, which produces no irritation whatever in that usually sensitive surface, the panniculus carnosus never being brought into action. The day after, or at most two days after these symptoms commence, the tongue and the salivary glands become swollen, and mucus exudation, mixed apparently with saliva, pours from the mouth. The throat is seen visibly swollen from the exterior, and the animal can no longer swallow. The feverish symptoms still continue, and after from 36 to 48 hours from the onset of the disease, purging sets in, with motions at first of a blackish color, with a watery consistence and a very bad stench, afterwards consisting almost solely of mucus and blood. The breath about the same time, or before, acquires a very bad smell, and on the third or fourth day the dysenteric purging still continuing the foot cracks between the hoofs to such an extent sometimes as literally to split up, and emits a very bad smell. No urine during this time is passed. On the fourth day a small pustular eruption appears over the body and great thirst sets in, and the animal wishes, but is not allowed by the custom of the natives, to drink. About the eighth day the animal either dies or gets better. In the latter case the swelling of the tongue, of the salivary glands, and of the fauces gets less; the stools become of a more natural character; saliva and the mucus exudation are poured forth less freely, and the stench emitted gradually disappears. The animal looks round for food. It lifts its ears; its tail, instead of being tightly pressed in between its legs, hangs easily, and is moved about; and the animal gradually recovers its appetite and health, with the loss, however, after a few days, of most of its hair, in the falling of which numerous minute scars, covered generally with small scabs, are seen. If the sick animal dies, the hair and epidermis, if touched even lightly, fall off, or may even be blown off by the wind. The disease is equally prevalent among cows and buffaloes.

2. In the month of September and in the month of May, just before the monsoon, it is prevalent (more at the former than at the latter period), although isolated cases occur (just, as several of the natives whom I questioned on the subject said, like small-pox) throughout the year. Although it is more prevalent towards the close of the monsoon (in September) than just before setting-in (in May), it does not then assume so fatal a character. Of the animals attacked in May, nearly twice the number in proportion die of those attacked in September.

3. In the Balaghat the disease is not only more prevalent, but also more fatal, than on the coast parts,—about two-thirds of those attacked dying below the Ghats, and over three-fourths above. The disease is stated by the natives to be very infectious, although, from apathy, segregation of those attacked is seldom practised.

4. I have remarked, and otherwise ascertained, that the more filthily and the more crowded the animals are stabled, the more prevalent and fatal is the disease. I would have said that the cleaner the cow-houses are kept, the greater the space allowed to each animal, and the more perfect the ventilation, the less prevalent and less fatal is the disease,—were it not that such terms as "clean" and "ventilation" can in no way be used with reference to a native's cow-house in North Canara. The animals crowded as closely as they can be packed, with, beneath their feet, and forming their bed, the accumulated dung and manure of months, the mud floor saturated with the urine of years, perhaps of generations, with often no space by which the fresh air can find inlet, or the foul outlet,—often this mess in the crowded, low, unventilated, mud walled rooms, in which the inhabitants themselves live (as in Hullial), a cow-house in North Canara presents such a glomeration of filth and evil smells that one's wonder is raised that any animal can exist in it for a single day, while it seems impossible that it should leave it in health. Little wonder that the breed is stunted, and characterised by listless expressions and unhealthy leprosy-looking skins; that the scanty watery milk is foul smelling; and that so many of the wretched animals are released from a miserable existence by fatal and prevalent epidemics. When we add to this that the wretched animals when released from their nightly durance flock eagerly to the *place d'aisance* frequented by their masters, there to feed greedily off the human ordure, I need add nothing more to the causes which combine to render the murrain and other forms of loathsome disease among the cattle prevalent.

5. As an instance of what the opposite mode of treatment may effect, I could not ascertain, after careful inquiry, that a single case of this so-called murrain has ever been known among the cattle of the European inhabitants, each of whom keeps, as a rule, from two to five cows and buffaloes. I suspected it in one case in a buffalo belonging to myself, but, if it was this disease which was extremely prevalent around at the time, it occurred in an extraordinary mild and modified form; the dysenteric symptoms and the general fetor being almost absent, the suppression of urine very temporary, and the eruption slightly marked.

6. The mode of treating the disease employed by the natives of this district is on the third or fourth day, if the animal will swallow, to give the dried leaves of the *cagelly* plank shrub, which possesses tonic and astringent properties, which I have been unable as yet—to this is not the flowering season—to identify botanically. About half a tola of the dried leaves is powdered, mixed with boiled rice, and given to the animal as a bolus twice daily. Afterwards, about the sixth day, a decoction of the *cooksia* leaves (which possess diuretic properties), in the proportion of about four tolas of the leaves to two pints of water, is made and given twice or thrice daily in doses of a third of a pint.

7. As far as I can ascertain, these remedies have little or no effect.

8. The appearances observed on *post-mortem* examination are congestion of the principal viscera, especially of the liver, which is often filled with small abscesses. The gall-bladder is usually full of green foetid bile; the whole mucous surface of the digestive system is highly inflamed, excoriated and ulcerated. The kidneys are sometimes disorganised. The urinary bladder is inflamed, as is the urethral passage; the former sometimes contains a little very highly-colored and foetid urine, but is often empty. The blood is dark-colored; the blood globules, in the cases examined by the microscope, mostly broken down. The small pustules contain a putrid pus.

9. The foetid stench from the whole body is overpowering, and the structures cut very much like dough.

10. The whole course of the disease much resembles murrain, as it appears in Europe; in fact, I believe the disease, slightly modified by climate, to be identical.

11. Having had occasion to study the disease in Scotland, and having met with considerable success in its treatment, I will here detail the mode of treatment which I found most successful. On the first appearance of the disease, the animal was immediately segregated in a hammel (a small shed with open yard in front), of which several which were isolated were set aside for the purpose. A saline purge, consisting of a solution of ten or fifteen ounces of epsom salts, with four or five grains of tartar emetic, in a quart of barley

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water, was given immediately, and the animal was clystered with eight ounces of castor oil and five of turpentine in a quart of barley water. The purges were repeated in half quantities with fifteen-grain doses of calomel, and a large ammonia blister was applied underneath and on the right side of the chest and hypochondrium. Fomentations to the throat were very useful. The latter were changed very frequently, and the utmost cleanliness was observed. The sick hammels were frequently fumigated and the stall-fed animals were turned out to pasture, which was frequently changed. As soon as the animal was able to eat, warm mashies were given, and to the convalescents cordial drenches. The animals were allowed to drink freely whenever they would. The animals which died were buried to some depth at a distance, and the hammels they had occupied were well fumigated, and not used again for some time. The byres and cattle-sheds were also well and frequently fumigated, and the litter was often renewed.

12. I believe this plan of treatment, both from its success and from a consideration of the pathology of the disease, to be, with such modifications as may suit individual cases, as good a one as could well be adopted.

13. I do not think bleeding likely to be of much or any service, except perhaps to a slight extent at the commencement to relieve local congestions; but I believe it to be very injurious if practised at a later period, or to a greater extent.

14. Regarding the prevention of the disease, I am inclined to place more reliance on continued cleanliness and good feeding, with, when the epidemic commences, entire segregation of the afflicted animals, and frequent fumigation of the cattle-sheds and great cleanliness, than an inoculation, which, I fear, would only tend to spread the epidemic to where it would otherwise be unknown. At the same time I believe that inoculation might possibly be practised from animals in which the disease may have occurred in a modified and mild form.

BOMBAY. From H. E. JACOMB, Esq., Acting Chief Secretary to Government of Bombay, to the President, Cattle Plague Commission,—(No. 6378, dated 28th December 1870).

With reference to the letter from this Government, No. 3645 of the 30th July last, I am directed to forward the accompanying reports* with accompaniments received from the Commissioner in Sind and the Revenue Commissioner, Northern Division, furnishing the information required by the Cattle Plague Commission on the points noted in your letter to the Government of India, No. 372, dated 14th June last.

2. I am to add that the report of the Revenue Commissioner, Southern Division, will be communicated when received.

NORTHERN DIVISION. From A. ROGERS, Esq., Revenue Commissioner, Northern Division, to the Secretary to Government of Bombay,—(No. 6219, dated 24th November 1870).

I have the honor, as required in Government Resolution No. 3644, dated 30th July last, to submit the replies of the several Collectors of this Division containing the information required by the Cattle Plague Commission.

COLABA. From A. G. J. DUFF, Esq., Collector of Colaba, to the Revenue Commissioner, Northern Division,—(No. 1735, dated 3rd September 1870).

I have the honor to submit the following report, as called for in your endorsement No. 4120 of 4th August 1870.

2. Several distinct diseases of an epizootic or pestilential nature are known in this district. There are now about 200 cattle sick with the disease called *phansee* in the Mangaon Talooka.

3. The diseases, with symptoms and duration of each, are as follows:—

1st.—*Mooslya* मुसलिया.

Symptoms.—Severe purging; blood passed; body feverish and feeble; animal refuses food and water; coat stares; mouth breaks out in sores full of maggots; dung very offensive; what appear pieces of entrail are passed.

Duration.—Sometimes fatal in 12 hours; oftener lasts 2 to 4 days.

* * * * *

2nd.—*Devi* देवी.

Symptoms.—Body feverish; eyes red; refusal of food and drink; eruption on body; the vesicles burst.

Duration.—Four days.

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Post-mortem appearances.—General inflammation.

The above diseases are said to be all known throughout the district, which lies below the Ghauts, partly on the sea coast and partly inland; the soil is rice land in many parts, and red soil in others.

4. I think it very probable that some of these diseases, if properly described by a scientific man, would be at once recognized as well known diseases, capable of easy and sure treatment.

From G. F. SHEPPARD, Esq., Acting Collector, to the Revenue Commissioner, Northern Division, Tanna,—(No. 3068, dated 5th September 1870.)

TANNA.
G. F. Sheppard, Esq.

In reply to your No. 4120 of 4th ultimo, I have the honor to report that the information on the subject received from the district officers is as yet incomplete. In compliance, however, with your memo. of the 24th ultimo, I submit such detail as I am in possession of.

2. The principal cattle diseases of this part of the country appear to be known as *fushi* and *khoorkhoot*; whether these are strictly epizootic or not is, I believe, a disputed point among the natives. The former is common in the hot weather, the latter only known during or immediately after the rains. The usual symptoms appear to be such as would naturally be expected under these circumstances.

* * * * *

In *khoorkhoot* both feet and mouth are generally affected, and the odour from both is offensive; it does not, however, appear to be so generally fatal as the former. The application of teakwood oil and causing the animal affected to stand in mud are the ordinary remedies.

3. Cow-pox is also known.

* * * * *

4. I shall hereafter submit the further information required.

From A. C. JERVOISE, Esq., Acting Extra First Assistant Collector in charge Punch Mehals, to the Revenue Commissioner, Northern Division,—(No. 936, dated 7th September 1870).

PUNCH MEHALS.
A. C. Jervoise, Esq.

I have the honor to reply to your endorsement No. 4120, dated the 4th ultimo, on a copy of Government Resolution No. 3644 of the 30th July last, on the subject of the prevalence of "epizootic diseases."

2. There being no record bearing on the subject in this district, the following information has been collected from natives who are supposed to have a knowledge of cattle diseases.

* * * * *

3. The disease which the people of the district call by the name of *balia* (small-pox) is common in the Punch Mehals, and its symptoms, &c., are described thus:—

Symptoms.—Refusal of food, purging, and eyes run with water. *Post-mortem* appearances (not mentioned). Duration 10 to 12 days. Percentage of deaths 10 to 50, according to the virulence of the disease.

4. *Mowaso* or *khurwalo* is not an uncommon disease in the district, but it is not reported to be fatal, and its symptoms, &c., are refusal of food, mouth runs with water, and after two or three days the feet get swollen.

5. The Mahulkury of Jambooghora reports that there prevailed a disease in that district about the year 1864-65, to which the people have been unable to give any name, but that it was so fatal that, of the cattle which fell victims to it, not a single head escaped death.

* * * * *

6. The Jhalode Mahulkury states that his pergunnah has a peculiar disease of its own which makes its appearance annually or biennially, and which he describes as under:—

Symptoms.—Swelling of the mouth, throat, and the upper part of the hind legs; mouth runs with water; difficulty in breathing. Duration 16 to 24 hours. *Post-mortem* appearances: Colour of the body as though mortified, and the body, immediately after death, smells offensively; the lungs have been found swollen.

This disease is called *avroe* by the natives.

7. The geographical position of the Punch Mehals is nowhere accurately stated, but they may be said to lie within latitude 22° 30' and 23° 10' north, and longitude 73° 35' and 74° 10' east.

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BROACH.

J. G. White, Esq.

From J. G. WHITE, Esq., Acting Collector of Broach, to the Revenue Commissioner, Northern Division,—(No. 1745, dated 15th September 1870).

With reference to your endorsement No. 4120 of the 4th ultimo, on Government Resolution No. 3644 of the 30th July last, I have the honor to report upon the cattle diseases that prevail from time to time, and usually at long intervals, in this district. They are known under the names of *seetlah* or *seelee* (cow-pox), *mowaso*, *khurchun* and *roomro*, and for the most part appear to be contagious, being produced by cattle being tied in contiguity to each other and by using the same fodder. To these may be added the *malvee rog* or *galsundee*, and *jepbaj*.

The symptoms of *seetlah* or *seelee* would appear to be purging, discharge from the mouth, and refusal of food. Its duration would seem to vary from 8 to 15 days, or even a month.

The symptoms of *mowaso* and *khurchun*, which appear to be identical, are, running from the mouth and formation of matter in the hoofs. They are not generally very destructive nor of long duration, being cured with babool leaves and other cooling medicines within 10 or 15 days. *Roomro* affects the chests of cattle, causing their breathing to be labored, and preventing their eating. This disease is much more fatal than the last named.

The *malvee rog* or *galsundee* is characterized by swelling of the throat and belly, and staring eyes. It usually lasts three days, and is known in the northern talookas; whereas the other diseases above named (with the exception of cow-pox) appear to be chiefly, if not exclusively, known in the Talookas of Unklesur and Hansote.

The *jepbaj* is characterized by swelling of the throat and refusal of food, and prevailed slightly, quite recently, in a few villages of the Broach Talooka. The *malvee rog* also prevailed recently in the Wugra Talooka to a slight extent. The other diseases have not appeared for the last four or five years.

No record has been kept in this Collectorate as to the number of cattle which have been attacked, and as to the proportion of deaths and recoveries, and therefore I am unable to furnish you with information on these points. Indeed, the information already supplied, obtained, as it has been, from the crude statements of the cultivators, can be regarded as only approximately correct.

SURAT.

T. C. Hope, Esq.

From T. C. HOPE, Esq., Collector of Surat, to the Revenue Commissioner, Northern Division,—(No. 1764, dated 30th September 1870).

In compliance with your No. 4120, dated the 4th ultimo, I have the honor to report that there is no cattle disease at present prevailing in this Collectorate, except one in Walore, which will be mentioned below.

2. The following is a description of the diseases occasionally prevalent in the different Talookas:—

OOLPAR AND CHORASER.

- I. *Mowaso* or *khurchun*.—The symptoms of this disease are,—trickling at the mouth, lasting for two or three days, after which the hoofs begin to get rotten. It is not generally fatal, the animal attacked usually recovering after 20 days or so. No *post-mortem* appearances ascertainable. Situation or difference of soil not believed to affect the course of the disease generally. Prevails chiefly in the hot season. No statistics procurable.
- II. *Seelee* or *seetlah* (small-pox).—Symptoms,—trickling at the mouth, followed by diarrhoea. Recovery far less frequent than in No. I. Reported to be more virulent in the neighbourhood of the sea or salt water. Other particulars as in No. I.
- III. *Unchalio*.—Very fatal and catching, violent diarrhoea, followed generally by death within 8 or 9 hours. Mortality 50 to 75 per cent. Other particulars as in No. I.

SOOPA, BULSAR, CHICKLER, AND PARDEE.

- I. *Khurmund mowaso*.—Inflammation of the mouth, food refused, running water from the mouth, sores in the feet.
- II. *Seetlah* (small-pox).—Inflammation of the mouth.

* * * * *

MAUDVEE.

- I. *Roomdo*.—Diarrhoea and dropping of saliva from the mouth, caused by the stoppage of the passage down the throat; infectious and contagious; lasts from two to four days, and is generally fatal. After death skin becomes black and the body looks dried up. Not affected by soil or situation. Statistics not procurable.

BARDOLEE.

SURAT.

- I. *Khurmund mowaso*.—Running at the mouth; animal soon ceases to eat; legs give way, and the animal falls down; infectious; not fatal always. Not affected by soil or situation. Statistics not procurable.
- II. *Seetlah*.—Suppuration beneath the skin, but in the case of buffaloes it sometimes appears on the surface. Food soon refused; continual easing; infectious; no chewing of the cud; not always fatal. Not affected by soil or situation. Statistics not procurable.

WALORE.

- I. *Odoro*.—At present prevailing; swelling of the throat. The animal dies or recovers usually after three days. Body swells after death. The ground about the village is level, fertile, and well planted with trees. Out of 15 animals attacked, 3 recovered and 12 died.

From L. R. ASHBURNER, Esq., Collector of Khandeish, to the Revenue Commissioner, Northern Division,—(No. 12-3097, dated 8th October 1870).

KHANDEISH.

L. R. Ashburner, Esq.

With reference to your No. 4120 of 4th August 1870, I have the honor to report that Epizootic disease among cattle in there has been no epizootic disease among the cattle of late Khandeish. years, though in the year 1865, and again in 1862, a disease prevailed in Khandeish which the natives called *popsha*. The symptoms as described by the natives were as follows:—The faces thin and watery and very offensive to the smell, the tongue rough and sore, sticky fluid from the mouth and eyes, the animals refuse food and drink, and when dying, blood streamed from the anus. This disease is said to recur every 5 or 10 years, and carries off two-thirds of the cattle. The duration of the disease is one or two days.

In Jumnaire there has been no disease this year, but the Mamlutdar reports that every second or third year there appears a disease in different parts of the talooka corresponding to that described above, but not known by any particular name. Its attacks are irregular, and the contagion does not appear to extend beyond a circle of a few villages in any one year, but where it does appear it is very virulent and carries off seven-eighths of those attacked. The diseased animals die in one day after the attack. They sit and roll about in the water.

Since 1865-66 there has been no epizootic disease known in Pachora, Seerpore, Veerdale, Amulnair, Chopra, Erundole, Nusseerabad, Sowda, Bhosawal, Pinpurnair, Nundoorbar, Tulloda, Shada, Dhoolia and Challeigam.

The cause of the disease is supposed to be the sudden change from starvation in the hot season, to unlimited feeding on fresh green grass, &c., in the monsoon. No reliable statistics can be had here, and the greater portion of the information is necessarily vague and founded on hearsay.

From H. U. B. ERSKINE, Esq., Collector of Nassick, to the Revenue Commissioner, Northern Division,—(No. 2871, dated 5th October 1870).

NASSICK.

H. U. B. Erskine, Esq.

With reference to your endorsement No. 4120, dated 4th August 1870, I have the honor to forward such information as I have been able to procure on the subject of cattle disease in these districts.

2. Cattle plague undoubtedly does from time to time prevail more or less in every part of this Collectorate, but it seems to be more frequent and more virulent in form in the Dang villages and these near the Ghauts than in the villages further to the eastward.

3. Cattle disease prevails at present in two or three talookas, especially in the Baglan and Dindoree Talookas, and slightly in Nassick also.

4. From the reports received, the disease seems to bear different names in the several talookas. Mr. Hamnick, writing of the Nassick and Sinnur Talookas, remarks—"The natives of the country call the disease *serpan* (सरपान). The animal on being attacked assumes a dark colour, accompanied by a generally depressed appearance and loss of appetite. Death generally follows after from 2 to 4 days' illness; but if the animal survives the fourth day, its ultimate recovery may be hoped for."

5. The Second Assistant Collector, Mr. Mackenzie, in charge of Egutpoora, Dindoree, and Niphar, states—"The name of the disease is (हावलि) *hávali* or (भलकानदा) *bhulkandya*. It commences by copious faecal discharges, at first of a natural colour, but shortly changing to a very dark colour, and having a very foul smell. The animal refuses all food and water,

NASSICK.
H. U. B. Erskine,
Esq.

rapidly becomes weak, and dies in the course of three days almost. Should it survive the third day, there is a strong probability of its recovery."

6. Mr. MacFarlan, writing from Malligaum, remarks as follows:—

"From the symptoms described by the Mamlutdars, it is difficult to distinguish between common inflammatory and other diseases not common to cattle and those to which they are peculiarly liable. I can only make out two, viz., 1st, murrain, called in the vernacular *phopsa* and *mahamari*; and 2nd, foot and mouth disease, called *lall*. The symptoms of the former are described in the accompaniment to the printed report, herewith sent, and of the latter in the following extract from the treatise on the diseases of cattle published in Madras by Dr. Gilchrist, and lent to me by Captain Reid, Bazaar Master here.

"*Moopaung* consists of a vesicular eruption of the lining membrane of the mouth and nostrils, and also of that portion of the skin of the legs immediately above the hoof, as also of that between the hoofs. The animal on seizure becomes listless and leaves off grazing, apparently from tenderness of the mouth. After the lapse of three days there appears a running from the nose, the lower part of the legs swells, and little bladders or vesicles are found immediately above the hoofs. About the fifth day from seizure, these vesicles become small ulcers, which are to be seen on the tongue and inside of the mouth; the same also appears in the nostril and above and between the hoofs. The animal walks limpingly. The general functions of the system are little, if at all, sensibly disturbed; but if the animal be neglected, maggots appear in the nostrils and about the feet. The foul ulcers resulting may produce permanent lameness or death from mortification within the nostrils.

"To ascertain the effects of the disease, a series of *post-mortem* examinations was instituted; and, save in a few instances which showed ulceration and softening of the mucous membrane of the stomach, the disease might be called bronchitis extending to the substance of the lungs. From this view of the subject, the treatment I suggested was to bleed copiously in the first instance, and to relieve the bowels with Glauber's salts and tartar emetic."

7. Mr. Mackenzie remarks, "after death the entrails appear inflamed and swollen, and the liver is covered with pustules, at least so the Mamlutdars of Dindoree and Niphar respectively report." The other assistants were unable to procure details, nor have I been able to ascertain anything of a sufficiently reliable nature to enter it here.

8. All the Nassick Collectorate seems at times subject to attack, but it seems generally worse near the Ghauts and less frequent in the eastern districts, which, as a rule, are open plains of black soil. Mr. MacFarlan, however, states that he has been unable to ascertain that "conditions of soil affect these different forms of disease either as regards the intensity of attacks or liability to them."

9. Mr. Mackenzie states that the disease was worst at a place called Wunarwadi, a village situate "in an open plain with brown soil and good garden lands."

10. It has not been possible to secure any information on this head in the least degree reliable. Mr. Hammick states that it has been reported to him that 1,000 head of cattle have died in the Nassick Talooka during the year, and about 100 of those attacked recovered. There are said to be about 150 now ill.

11. At Wunarwadi, the village already referred to, the number attacked in the late outbreak is reported to have been 125. Of these, 90 died and 35 recovered. Mr. Mackenzie states that he had just received information of a fresh outbreak in a place called Wanaree. "It began seven days ago, and up to the date of the report (19th September) 25 animals were attacked; of these 15 have died. Wanaree is a small hill village 8 koss from Dindoree; the soil is red and rocky."

12. I do not think statistics collected in the loose way these have been could ever be really valuable. More would be learnt from the visit for a week of a Veterinary Surgeon to a village in which the disease prevailed than by any number of returns and reports by Collectors.

AHMEDABAD.
A. A. Borradaile, Esq.

From A. A. BORRADAILE, Esq., Collector of Ahmedabad, to the Revenue Commissioner, Northern Division,—(No. 1814, dated 22nd October 1870).

In reply to the Government Resolution No. 3644, dated 30th July 1870, in the Revenue Department, received with your endorsement No. 4120, dated 4th August last, I have the honor to report as under on the cattle disease in this district, on each point mooted by Dr. Hallen.

1st.—The diseases alluded to are reported to have prevailed on several occasions in various parts of the Collectorate and Goozerat generally, and some of them are also now prevailing to some extent.

2nd.—The names of the diseases, as called by the natives of the country, are given below:—

I.—*Bulia* or *seetlah* (small-pox).

II.—*Mowassa* or *khoriwa* (disease of the throat and hoofs).

* * * * *

The symptoms and duration of each disease are described below:—

I. *Bulia*.—The animal declines fodder and grain, and even water, for some days, and purges; this lasts for about a week or so.

II. *Mowassa*.—The animal foams at the mouth and declines fodder and grain; small worms are to be found in the hoofs. The disease lasts for four or five days.

* * * * *

Memorandum by COLONEL SIR W. L. MEREWETHER, Commissioner in Sind,—(No. 3563, dated 9th December 1870).

Letter from the Acting Collector of Kurrachee, No. 4368, dated 17th November 1870, with accompaniments.

Letter from the Collector of Hyderabad, No. 2342, dated 3rd October 1870.

Letter from the Acting Collector of Shikarpoor, No. 3221, dated 30th November 1870, with statement.

Letter from the Political Superintendent, Frontier, Upper Sind, No. 1371, dated 20th September 1870.

Letter from the Political Superintendent, Thurr and Parkur, No. 604, dated 2nd November 1870, and accompaniment.

The accompanying original reports, embodying the information required by the Cattle Plague Commission, are submitted to Government in compliance with their Resolution No. 3644 of the 30th July 1870.

From MAJOR L. D'A. DUNSTERVILLE, Acting Collector of Kurrachee, to the Commissioner in Sind,—(No. 4868, dated 17th November 1870).

With reference to your endorsement No. 2234, dated 9th August last, I have the honor to forward copies of reports, as per margin, from Messrs. James and Walker, C. S., containing the information required by the Cattle Plague Commission in regard to the diseases prevalent amongst the cattle in the Sehwan, Jerruck, and Shahbunder Divisions.

From E. JAMES, Esq., Deputy Collector of Sehwan, to the Collector of Kurrachee,—(No. 390, dated 20th September 1870).

In reply to your Circular No. 3071 of the 10th ultimo, I have the honor to inform you that the following diseases afflict cattle in the Sehwan Division:—

1. *Summaro*.—This disease afflicts cows and buffaloes. The symptoms are as follows:—The hoofs split and blood issues from them. The lips and throat become sore, and foam gathers on the mouth. It is of constant occurrence in the Kotree Talooka on the banks of the Indus, where the soil is an alluvial deposit. The duration of the disease is not stated; and no peculiar *post-mortem* appearances have been observed. It is not prevalent at present. Last year 500 cattle were attacked in two months, of which about 5 per cent. died.

2. *Thuddee*.—This afflicts camels as well as cattle. Offensively smelling blood issues from the anus; about 1,000 were seized with it in the Kotree and Dadoo Talookas in March and April last, of which about 500 died; no remedy is known for it. The body after death assumes a black appearance. The duration of the attack is not stated. This disease is not prevalent now.

3. *Seeor*.—This is a disease which is still slightly prevalent in the Dadoo Talooka, and has been so for two months. The symptoms are like those of small-pox, and last for 8 days. The body assumes a black appearance after death. Thirty-five have been attacked, of which twenty-nine cases have proved fatal.

Memorandum by J. W. WALKER, Esq., Deputy Collector of Jerruck,—(No. 424, dated 26th October 1870).

The Deputy Collector of Jerruck begs to forward the information called for by the Collector's No. 3071 of the 10th August last.

1st.—Cattle murrains prevailed in the Tatta and Ghorabaree Talookas during the years 1866-67, and also in the Tatta Talooka about the year 1862.

AHMEDABAD.
A. A. Borradaile, Esq.

SIND.
Colonel Sir W. L.
Merewether.

KURRACHEE.
Major L. D'A.
Dunster ville.

SEHWAN.
E. James, Esq.

JERRUCK.
J. W. Walker, Esq.

JERRUCK.
J. W. Walker, Esq.

2nd.—The name of the disease in Sindhee is *thudee*. A form of the disease is known as *ghuttiar*. Symptoms of *thudee*:—wasting of the body; severe purging; eyes blood-shot, and often with a watery discharge; shivering fits; skin on the neck and back dries and cracks; eruptions as in small-pox; retention of urine; discharge of blood from the nose; foaming and fetid breath; skin discoloured.

Symptoms of ghuttiar.—Swelling of the glands of the throat; inability to swallow or respire freely.

Duration of attack.—From one day to ten.

3rd.—*Post-mortem* appearances are not known.

4th.—*Names of districts affected*.—The disease has prevailed in all the three talookas, but especially in the Tatta and Ghorabaree Talookas. In the Ghorabaree Talooka the soil is impregnated with salt, and during 1866-67 was unusually flooded. In the Tatta Talooka the disease prevailed chiefly in the *beylas* and flooded lands.

5. *Cattle which were attacked and died*.

Talooka Tatta	...	...	...	...	6,828
" Ghorabaree	...	...	...	...	11,001

In detail.—Talooka Tatta,—buffaloes 2,829; bullocks and cows 3,518; camels 20; horses 13; donkeys 2; sheep and goats 446.

Talooka Ghorabaree,—buffaloes 403; bullocks and cows 5,556; horses 202; donkeys 150; sheep and goats 4,696.

SHAHBUNDER.
J. W. Walker, Esq.

Memorandum by J. W. WALKER, Esq., Deputy Collector of Shahbunder,—(No. 355, dated 7th November 1870).

The Deputy Collector, in forwarding the information called for by the Collector's No. 4110 of the 31st October, regrets that the facts furnished by the Mookhtyarkars do not refer at all to previous years. The reason assigned is that no details could be found.

1st.—Cattle disease has prevailed in the Shahbunder Deputy Collectorate during 1869-70.

2nd.—The names are *ghuttiar*, *pita*, *thudee*, *summario*, *phoopree*, *ree* or *vaw*, *phukaree*, *seer*.

All these names are known in the Jerruck District; all these diseases are not, however, epidemic. The diseases known as *ghuttiar*, *thudee*, and *summario* only appear to be epidemics.

Symptoms of ghuttiar.—Contraction of the muscles of the throat, swelling of the limbs, discoloration of skin and blood after death; duration of attack, 24 hours.

Symptoms of thudee.—Eruptions the size of a grain of *chunna* (gram); severe purging; shivering fits: duration of attack 12 to 14 days; not in general fatal; if fatal, generally on the fourth or fifth day.

Symptoms of summario.—Watery discharge from the eyes and mouth; skin of the legs dry and cracked; tongue occasionally sore: duration of attack, 15 to 20 days; not generally fatal.

Symptoms of phoopree.—Most common with goats; inflammation of lungs; fatal in 2 or 3 hours.

* * * * *

3rd.—Cattle diseases have prevailed throughout the district, especially in the Beyla and Meerpoor Buttora Talookas.

4th.—TALOOKA MEERPOOR BUTTORA.

<i>Cattle attacked.</i>	<i>Number recovered.</i>
1,270	260
70	23
TALOOKA JATTEE.	

No details can be obtained for the Beyla and Shahbunder Talookas.

HYDRABAD.
Lieut.-Col. F. Phillips.
From LIEUT.-COL. F. PHILLIPS, Collector of Hyderabad, to the Commissioner in Sind,—(No. 2342, dated 3rd October 1870).

In reply to your endorsement No. 2234, dated 9th August last, I have the honor to inform you that after making careful inquiry I cannot learn that any epizootic disease, that is to say, murrain, has prevailed among cattle in this Collectorate for many years past.

2. When cattle in this province perish in large numbers, it is always from want of food, in seasons when rain has not fallen in sufficient quantities to promote the growth of grass. Such seasons were those of 1864, 1866; and again in the present season it is reported that cattle are in great want of grass in the districts to the eastward which are beyond the influence of the canals.

3. On the other hand, in 1869, when an unusual fall of rain took place, the cattle in all parts were in the highest condition.

4. I am unable therefore to reply categorically to the questions put in the Government Resolution No. 3644, dated 30th July last, now under report.

5. In this district three descriptions of cattle disease are known, which I briefly summarise as follows:—

1st.—The *ghootko*, which signifies throttling. The symptoms are loss of appetite, depression, difficulty of breathing, and swelling in the throat. The disease is supposed to arise from bad water and forage, and an attack lasts but a few days. No remedy is known, and recoveries are few.

2nd.—*Thundee* or *seer*, a disease somewhat like small-pox in the human being. There is an eruption in the face, the eyes water, there is foaming at the mouth, and blood is passed. The disease is generally fatal, and its duration is from 10 to 15 days.

3rd.—*Summaro*. The symptoms are, convulsions and foaming at the mouth; deaths few in comparison.

6. But mortality from these diseases has not lately been reported to be excessive. No *post-mortem* examination of any case is on record.

From MAJOR R. R. WALLACE, Acting Collector of Shikarpoor, to the Commissioner in Sind,—
(No. 3221, dated 30th November 1870).

SHIKARPOOR.
Major R. R. Wallace.

I have the honor to report, as directed in your endorsement No. 2234 of 1870, on the questions connected with cattle disease, put forward in the correspondence forwarded under your endorsement as above.

2. In this part of Sind there is but little information worthy of reliance to be obtained on the subject of diseases affecting cattle. Of statistics there is absolutely no record.

3. I append to this letter a statement showing the disease chiefly affecting cattle and quadrupeds generally in this Collectorate, but remedial measures, excepting cautery and exposing the animals to the smoke of wood or other fires, there are none.

4. If an unusually large number of animals are attacked in one place, those not affected are driven off to pasture at a distance.

5. Disease of some kind or other is never absent from the Collectorate; it appears sometimes in one part and sometimes in another, and with different degrees of virulence.

6. I have directed that in all weekly reports furnished by Mookhtyarkars a return should be embodied showing the nature of the disease, if any, and the number of deaths in each class of quadrupeds, camels, horses, cattle, sheep, and goats, as there is nothing on record to give even an idea of the loss resulting from this cause.

Extract from Statement showing the prevailing Diseases amongst Cattle in the Shikarpoor Collectorate.

Name of disease.	Animals which it attacks.	Symptoms.	REMARKS.
Seer	Cattle	Refusing food, diarrhoea and watering at the eyes and nose. The attack lasts ten days, and in some cases 5 or 6 months.	
Maharo	Ditto	Lameness, worms in the feet and muzzle, eyes swell, the animal cannot open its mouth, and a watery humour (called "gig" in Sindee) runs from it, and it refuses food; also its tongue and feet are ulcerated; duration 4 or 5 days, in some cases 2 months.	
Sitra or Seetlah	Ditto	Eyes water and become red, watery humour runs from the mouth, the back and ears droop, the animal refuses food, and is rarely saved. The body becomes covered with little pustules.	

FRONTIER, UPPER SIND.
Col. R. Phayre.

From COLONEL R. PHAYRE, Political Superintendent, Frontier, Upper Sind, to the Commissioner in Sind, Kurrachee,—(No. 1371, dated Jacobabad, 20th September 1870.)

Referring to the Resolution of Government, No. 3644 of the 30th July last, received under your endorsement No. 2234 of the 9th August 1870, I have the honor to furnish the following report on "cattle plague."

2. In the Talooka of Jacobabad plague of any sort has never raged to any noticeable extent, as far as it can be ascertained.

3. In the Thool Talooka, however, during the last year, "cattle plague" prevailed all over it, and even at present it exists, though confined only to the Tuppahs of Gowespoor and Shurghur. The disease as prevailing in this part of the district is known amongst the population as *seer*. It has mostly prevailed amongst cows, buffaloes, and camels. The most noticeable and leading symptom just before the animal contracts the disease is that it refuses food and water. The disease when contracted lasts uninterruptedly for nine or ten days, when the animal either recovers or falls victim to it, but generally the latter. During the illness of the animal there is constant watery discharge from the eyes. The *post-mortem* appearance is that the disease breaks out into a number of small eruptions, each of the size of a pea, the eyes look very much dilated, and the whole carcass has a morbid appearance. This disease first makes its appearance, or rather the cattle contract it, on lands subject to the influence of floods, and where, consequently, the soil is marshy; and being of a contagious description, the disease spreads in time all over the talooka. The people attribute the appearance of the disease and the contracting it by cattle to the malaria arising from these marshy plains when the floods have subsided and the cattle are grazing on the produce of such soil.

The total number of cattle affected by the disease last and this year is 436; of these, 45 have recovered, and 23 are still ill, the remaining 368 having died.

4. In the Kusmore Talooka, again, there are two kinds of diseases, the *silt* and the *ghutt*, as they are termed by the natives of the place. Both these diseases, though differing remarkably, so far as the primary symptoms are concerned, have a sameness in respect to cause, later symptoms, and ultimate effect. The primary symptom in the *silt* disease is the animal's breathing hard and difficult, with a hoarse sound emanating from the chest, accompanied by a constant flow of saliva from the mouth. The *ghutt* disease, on the other hand, is noticeable by the following primary symptoms:—The animal is seized with a sort of tremor resembling the ague in fever cases, so common to Sind; refusal of food immediately follows with a looseness of the bowels. The above are the particulars in which the two diseases would appear respectively to differ.

In either case the disease lasts for from 4 to 5 days. The *post-mortem* appearance is that, immediately the animal ceases to exist, the carcass gets saturated over with a kind of eruption resembling the ordinary "small-pox," and there is also a swelling all over. The natives of the place attribute the contracting these diseases by cattle to their grazing along the river bank on the produce of such soil as is thrown up by the river, either from natural causes, or by the river receding; as also from the cattle drinking warm water to be found in such places, where, from its accumulating in small patches, it is liable to get warmed from the effects of the sun.

The total number of cattle diseased in this talooka is 1,150; of these, 210 have recovered, 140 are still ill, 800 having died.

THURR & PARKUR. From MAJOR G. B. TYRWHITT, Political Superintendent, Thurr and Parkur, to the Commissioner in Sind,—(No. 604, dated 2nd November 1870).

I have the honor to forward the information called for in your No. 2234 of 9th August last.

2. Altogether in the Thurr and Parkur superintendency seven descriptions of cattle disease are known, and do still and have made their appearance among the cattle.

3. Small-pox is the disease that has caused the greatest mortality among horned cattle, but that even has not taken the form of a plague since 1860, when it was very bad, and when it made its appearance. It is stated that fully nine-tenths of those seized died.

4. I have embodied the reports of the Kardars in one return, and a translation of it in English and Persian is attached; my reason for providing the latter being that it may be useful, should it be required to compare the diseases with those described in other vernacular reports in other Presidencies.

5. The diseases described appear all over the superintendency. The desert is sand and the plain is light alluvial soil. No. 7 is common to the Narra or plain portion, but is also to be met with in the desert.

Extract from description of Diseases known among Horned Cattle in the Thurr and Parkur THURR AND PARKUR. Superintendency.

1st.—SMALL-POX. When an animal is attacked with this disease the limbs become stiff, water runs from the eyes, and the ears droop. All desire to eat vanishes and diarrhœa sets in, and death in a few days results. If the hide be removed, the small-pox marks will be found under it; sometimes an animal will linger on for twenty days.

6th.—SUMARA. The mouth and feet of the animal become sore and crack. The mortality is not great; nothing particular is observed *post-mortem*.

7th.—THUDDEE. This appears among animals that are permitted to graze in swampy ground. Their mouths and throats swell and their bodies become very soft, and water runs from their eyes. Very few survive an attack of *thuddee*.

[Four other forms of disease are named, but they cannot be identified. C. P. C.]

From H. E. JACOMB, Esq., for Acting Chief Secretary to Government of Bombay, to the President, Cattle Plague Commission, Calcutta,—(No. 129, dated 9th January 1871).

BOMBAY.
H. E. Jacomb, Esq.

With reference to paragraph 2 of the letter from this Government, No. 6378, dated 28th December last, I am directed to forward the accompanying report,* with accompaniments, received from the Revenue Commissioner, Southern Division, furnishing the information called for in your letter to the Government of India, No. 372, dated 14th June 1870.

From W. H. HAVELOCK, Esq., Revenue Commissioner, Southern Division, to the Chief Secretary to Government, Bombay,—(No. 525, dated 29th December 1870).

SOUTHERN DIVISION.

Letter from Acting Collector of Canara, No. 2316, dated 5th September 1870.
Ditto ditto, Dharwar, No. 1897, dated 10th September 1870, and accompaniment.
Ditto ditto, Kulladghee, No. 1061, dated 17th September 1870.
Ditto ditto, Ahmednuggur, No. 1717, dated 22nd September 1870, and accompaniment.
Ditto ditto, Rutnagherry, No. 2060, dated 3rd October 1870, and accompaniment.
Ditto ditto ditto, No. 2434, dated 24th November 1870, and accompaniment.
Letter from Collector of Poona, No. 2135, dated 13th October 1870.
Ditto ditto, Belgaum, No. 1385, dated 18th October 1870, and accompaniment.
Ditto ditto, Sholapoor, No. 2337, dated 18th October 1870.
Ditto ditto, Sattara, No. 3692, dated 21st December 1870, and accompaniment.

As called for in Government Resolution No. 3644, dated 30th July 1870, I have the honor to submit the reports, as per margin, received from the Collectors of the Southern Division, supplying, as far as practicable, the information required by the President, Cattle Plague Commission, in his letter to the Government of India, No. 372, dated 14th June 1870.

From J. ELPHINSTON, Esq., Acting Collector of Canara, to the Revenue Commissioner, Southern Division,—(No. 2316, dated Carwar, 5th September 1870).

CANARA.
J. Elphinston, Esq.

With reference to your endorsement No. 3291 of the 5th ultimo, forwarding Government Resolution No. 3644, dated 30th July last, calling for a report as to whether any disease of an epizootic nature had prevailed among the cattle in this district, I have the honor to state that, from inquiries I have made, I find that there were three diseases prevalent in this district during the past year, as noted in the margin.

2. The first disease is generally first visible in the lower part of the feet, which, if due care be not taken, become gradually entirely rotten. Sores are formed in the feet between the toes, and sometimes one of the hoofs falls off, and large maggots are frequently formed in the sores. This is also accompanied with ulcers in the mouth, and the whole body is sometimes affected with sores. If the attack is not severe, the animal lives for a week or two.

3. The second disease, called *māhārogā*, is usually accompanied with diarrhœa or watery purging, and the saliva is ejected from the mouth of the animal for a day or two. The stomach dries up and becomes very thin. The duration of this disease is estimated to be a fortnight or three weeks, after which the animal generally dies.

4. The third, or *chendooroga*, is one in which the neck of the animal is swollen and it appears very much distressed, and refuses all food and water, and ceases altogether from chewing the cud. In this state it continues for six or seven days, and if some strong remedy is not employed soon, it dies within that period.

CANARA.

5. The diseases above referred to had appeared in the Coompta, Honore, Sircy, Siddapore, Yellapore, and Soopa Talookas, and the number of cattle attacked, recovered, and died in each of the above talookas is given in the margin, from which it will be observed that the number of cattle attacked and died from these diseases is greater in the Honore Talooka than in all the rest. This is attributable to the diseases having suddenly increased in violence in this talooka.

	No. attacked.	Died.	Recovered.
Coompta ...	23	23	..
Honore ...	607	435	172
Sircy ...	242	90	52
Siddapore ...	271	189	82
Yellapore ...	44	29	15
Soopa ...	91	48	43
TOTAL ...	1,178	814	364

6. Among the talookas where cattle disease prevailed, Coompta and Honore are on the sea-coast below the Ghauts, and the soil is generally sandy. The rest of the talookas are above the Ghauts, and the soil is generally stiff and clayey and retentive of moisture. In almost all of the above Ghaut Talookas there is a great scarcity of water in the dry season, and the water generally used by men and beasts is full of mud and decomposed matter; as this is the case, I believe it is one of the chief causes of the epidemic diseases among both men and cattle above the Ghauts.

DHARWAR. From E. P. ROBERTSON, Esq., Acting Collector of Dharwar, to the Revenue Commissioner, Southern Division,—(No. 1897, dated Dharwar, 10th September 1870).

In reply to your endorsement No. 3291, dated 5th instant, I have the honor to reply *seriatim* to the several questions put by the President, Cattle Plague Commission, as regards the Dharwar District.

1st.—A disease among cattle of an epizootic nature prevails more or less throughout the districts of this Collectorate. It is prevalent at all seasons of the year, but its ravages are greatest during the hot season.

2nd.—The disease is called *hirey byanee* by the natives of this country. The symptoms of the disease are,—the animal first refuses food, but drinks greedily. This is followed by a fluid discharge from the eyes and nostrils, frequent and bloody faecal discharges, and scanty high-colored urine. The disease lasts for three or four days, when generally it proves fatal.

3rd.—*Post-mortem appearances.* No *post-mortem* examination has ever been made in this district of cattle that have died from *hirey byanee*.

4th.—The disease prevails in almost all the talookas of this district on black soil plains as well as in hilly districts; but it seems to be worse generally in the latter, where the soil is red and hard.

5th.—As regards the number of cattle attacked, number recovered, and number still ill, I append a statement showing the progress of the cattle disease for the last 17 months in this district.

Statement showing the Progress of Cattle Disease in the Dharwar Collectorate.

No.	NAMES OF TALOOKAS.	Number of cattle labouring under disease at the end of last month.	Number of cattle attacked with disease during the current month.	Total of columns 3 and 4.	Number of cattle died.	Number of cattle recovered.	Number of cattle remaining unrecovered at the close of the month.	REMARKS.
MARCH 1869.								
1	Dharwar	...	75	75	42	29	4	The Mamlutdar reports that the disease is not gaining strength.
APRIL 1869.								
1	Dharwar	4	47	51	29	13	9	

DHARWAR.

Statement showing the Progress of Cattle Disease in the Dharwar Collectorate—continued.

No.	NAMES OF TALOOKAS.		Number of cattle labouring under disease at the end of last month.	Number of cattle attacked with disease during the current month.	Total of Columns 3 and 4.	Number of cattle died.	Number of cattle recovered.	Number of cattle remaining unrecovered at the close of the month.	REMARKS.
MAY 1869.									
1	Hooblee	...	...	32	32	32	...	...	The Mamlutdars report that every precautionary measure has been taken to check the progress of the disease.
2	Dharwar	...	9	119	128	74	34	20	
3	Nowgoond	...	...	88	8	44	17	27	
4	Dumbul	...	...	50	50	22	18	10	
5	Raneebednoor	...	...	20	20	8	10	2	
6	Kode ...	...	...	18	18	12	6	...	
	TOTAL	...	9	327	336	192	85	59	
JUNE 1869.									
1	Hooblee	...	...	10	10	10	...	...	Ditto ditto.
2	Dharwar	...	20	58	78	42	28	8	
3	Nowgoond	...	27	17	43	21	22	...	
4	Dumbul	...	10	50	60	33	17	10	
5	Raneebednoor	...	2	72	74	20	2	52	
6	Kode ...	...	...	4	4	4	...	...	
	TOTAL	...	59	210	269	130	69	70	
JULY 1869.									
1	Dharwar	...	8	25	33	20	5	8	Ditto ditto.
2	Nowgoond	...	...	12	12	4	4	4	
3	Dumbul	...	...	...	10	...	10	...	
	TOTAL	...	8	37	55	24	19	12	
AUGUST 1869.									
1	Dharwar.	...	8	53	61	46	11	4	Ditto ditto.
2	Nowgoond	...	4	15	19	10	9	...	
3	Raneebednoor	...	...	6	6	2	4	...	
	TOTAL	...	12	74	86	58	24	4	
SEPTEMBER 1869.									
1	Dharwar	...	4	347	351	241	65	45	Ditto ditto.
OCTOBER 1869.									
1	Dharwar	...	45	175	220	144	48	28	The Mamlutdar reports that the disease is on the decrease.

DHARWAR.

Statement showing the Progress of Cattle Disease in the Dharwar Collectorate—concluded.

No.	NAMES OF TALOOKAS.	Number of cattle attacked with disease at the end of last month.	Number of cattle attacked with disease during the current month.	Total of columns 3 and 4.	Number of cattle died.	Number of cattle recovered.	Number of cattle remaining unrecovered at the close of the month.	REMARKS.
NOVEMBER 1869.								
1	Dharwar	28	96	124	43	89	...	The Mamlutdar reports that steps have been taken to check the progress of the disease.
DECEMBER 1869.								
1	Dharwar	...	31	31	20	11	...	Ditto ditto.
2	Hooblee	...	44	44	38	6	...	
3	Dumbul	...	12	12	8	3	1	
	TOTAL	...	87	87	66	20	1	
JANUARY 1870.								
1	Dharwar	...	32	32	12	20	...	The Mamlutdar reports that the disease has almost ceased to prevail.
FEBRUARY 1870.								
1	Dharwar	...	10	10	9	...	1	Ditto ditto.
MARCH 1870.								
1	Dharwar	1	14	15	12	3	...	Ditto ditto.
APRIL 1870.								
1	Dharwar	...	43	43	43	...	...	The Mamlutdars report that steps have been taken to check the progress of the disease.
2	Raneebednoor	...	36	36	13	13	10	
3	Kode	...	140	140	...	120	20	
	TOTAL	...	219	219	56	133	30	
MAY 1870.								
1	Hooblee	...	12	12	12	...	...	Ditto ditto
2	Raneebednoor	10	48	58	38	14	6	
3	Kode	33	42	75	48	27	...	
	TOTAL	43	102	145	98	41	6	
JUNE 1870.								
1	Raneebednoor	6	2	8	7	1	...	The disease has nearly ceased to prevail.
JULY 1870.								
1	Kode	...	68	68	12	54	2	Ditto ditto.

From J. F. ARMSTRONG, Esq., Collector of Kulladghee, to the Revenue Commissioner, Southern Division, Poona,—(No. 1061, dated Kulladghee, 17th September 1870). KULLADGHEE.
J. F. Armstrong, Esq.

With reference to your circular endorsement No. 3291 of 5th ultimo, I have the honor to state that no disease of an epizootic nature appears to have prevailed among the cattle in this district, nor is any prevailing. Cattle have, of course, died, and do now die, but there has been nothing in the shape of a cattle murrain.

From the Collector of Ahmednuggur, to the Revenue Commissioner, Southern Division, Poona,—(No. 1717, dated Ahmednuggur, 22nd September 1870). AHMEDNUGGUR.

With reference to your memo. No. 3291, dated 5th August last, and accompaniments, calling for report respecting the various diseases to which cattle are subject in these districts, I have the honor to forward a tabular statement containing such information as I have been able to gather through the Native Talooka officials.

I may add that none of the diseases specified are now prevalent.

The nature of this district is the same as that of the Deccan generally, and, as far as I know, there is no peculiarity of either soil or climate which would tend to foster any particular disease.

I regret that there are no data by which I could furnish the information required by Mr. Hallen in the 5th and last query.

[In the statement furnished by the Collector of Ahmednuggur, the diseases *khoorkhoot* (foot and mouth disease) and *haolia rog* (rinderpest) are shown as being known in different parts of the district. Nine other diseases are named in the statement, but they cannot be identified. C. P. C.]

Extract from Statement showing the Names, &c., of Diseases which are known to prevail among Cattle in the several Talookas of the Ahmednuggur Collectorate.

1	2	3	4	5	6	7
No.	Name of disease.	Talookas in which they are known to prevail.	Symptoms.	Post-mortem appearances.	Duration of the attack.	REMARKS.
7	Haolia rog	Ankola	1st.—Diarrhoea, gradual enlargement of the lungs, constipation, evacuation of fleshy matters, excessive thirst. 2nd.—Swelling of the body, dulness, loss of appetite.	The body emits a bad smell, the eyes sink, water runs from the mouth and nose, mucous discharge from the nose.	15 days.	

From W. SALMON, Esq., Acting Collector of Rutnagherry, to the Revenue Commissioner, Southern Division, Poona,—(No. 2060, dated Rutnagherry, 3rd October 1870). RUTNAGHERY.
W. Salmon, Esq.

In reference to your circular endorsement No. 3291 of 3rd August last, forwarding copy of Government Resolution No. 3644 of 30th July 1870, I have the honor to forward herewith a statement giving the information required by the President of the Cattle Plague Commission.

Statement giving information required by the President of the Cattle Plague Commission as directed in Government Resolution (R. D.) No. 3644 of 30th July 1870, received under the Revenue Commissioner, Southern Division's endorsement No. 3291 of 5th August 1870, from January 1869 to August 1870.

No.	Names of the districts affected.	Situation.	Nature of the soil.	Name of the disease.	No. of cattle attacked.	No. recovered.	No. died.	No. still ill.	REMARKS.
1	Malwan	Near the sea-shore ...	Sandy	...	109	27	82	...	The animal before being attacked by this disease loses its strength, lays back its ears, its eyes sink in, it refuses food, becomes thirsty, does not chew the cud, is attacked by fever, saliva flows out from its eyes. Later on it begins to pass watery stools, its belly swells, and coagulated blood is thrown out in the motions. It dies within 6 or 7 days, or sometimes within 2 or 3.
2	Deogurh	Near the Syhodree range, and also the sea-shore.	Hilly, sandy, rocky, and level.	...	411	4	407	...	
3	Rajapoor	Ditto	Ditto	...	938	311	627	...	
4	Rutnagherry	Near the sea-shore ...	Hilly and sandy	...	250	129	121	...	
5	Sungmeshurn	Near the Syhodree range.	Rocky hills and level	...	211	42	169	...	
6	Chiploon	Ditto	Hilly and rocky	...	2,450	515	1,935	...	
7	Gobagur	Near the sea-shore ...	Rocky and sandy	...	707	145	562	...	
8	Soreendroog	Near the sea-shore and the Syhodree range.	Rocky and billy	...	5,683	695	4,984	4	
TOTAL					10,759	1,868	8,887	4	

From W. SALMON, Esq., Acting Collector of Rutnagherry, to the Revenue Commissioner, Southern Division, — (No. 2434, dated Rutnagherry, 24th November 1870).

In reference to your letter No. 4154 of the 8th ultimo, I have the honor to inform you that the information regarding the cattle disease called *moosulwada*, supplied in the statement forwarded to you with my letter No. 2060 of the 3rd idem, relates to a period from January 1869 to August 1870.

2. The above disease generally prevails in the hot weather, but sometimes in the cold and rainy seasons, and lasts for about one or two months, and sometimes four or five months.

3. A statement giving the information of a similar disease called *peya*, or otherwise called *nurud peya*, is herewith forwarded. This disease generally prevails in the rainy season, and sometimes in the hot and cold weather. It lasts for one or two months, and sometimes four or five months, or throughout the year.

Statement giving information required by the President of the Cattle Plague Commission, as directed in Government Resolution (Revenue Department) No. 3644 of 30th July 1870 received under the Revenue Commissioner, Southern Division's endorsement No. 3271 of 3rd August 1870, from January 1869 to August 1870.

No.	Names of the districts affected.	Situation.	Nature of the soil.	Name of the disease.	No. of cattle attacked.	No. recovered.	No. died.	No. still ill.	REMARKS.
1	Malwan	Near the sea-shore ...	Sandy	Peya, or otherwise called nurud peya.	662	163	497	2	When the animal is being attacked by this disease it refuses food, discharges watery matter from mouth and nostrils, lays back its ears, its mouth becomes dry, there comes on a swelling in the neck, it drinks water, and begins to shiver.
2	Deogurh	Near the Syhodree range, and also the sea-shore.	Hilly, sandy, rocky, and level.	Ditto	350	...	350	...	
3	Rajapoor	Ditto	Ditto	Ditto	790	401	389	...	
4	Rutnagherry	Near the sea-shore ...	Hilly and sandy	Ditto	...	...	...	...	
5	Sungmeshurn	Near the Syhodree range.	Rocky, hilly, and level	Ditto	136	32	104	...	
6	Chiploon	...	...	Ditto	...	...	...	...	
7	Gobagur	Near the sea-shore ...	Rocky and sandy	Ditto	254	...	254	...	
8	Dapoolce	Near the sea-shore and also the Syhodree range.	Rocky and hilly	Ditto	511	43	462	6	
TOTAL					2,703	639	2,066	8	

POONA. From J. E. OLIPHANT, Esq., Collector of Poona, to the Revenue Commissioner, Southern Division,—
J. E. Oliphant, Esq. (No. 2135, dated Lanowlee, 13th October 1870).

With reference to your circular endorsement No. 3291, dated the 5th August 1870, I have the honor to intimate, after inquiry, that no disease of an epizootic nature prevailed among the cattle in this district during the last 12 or 15 years, and that although no correct information can be obtained for the period previous thereto, it may be assumed from the reports received on the subject that the disease whenever prevalent was not of the nature referred to.

BELGAUM. From A. GREY, Esq., Collector of Belgaum, to the Revenue Commissioner, Southern Division,
A. Grey, Esq. Poona,—(No. 1385, dated Belgaum, 18th October 1870).

With reference to your Circular No. 3291, dated 5th August 1870, I have the honor to submit copies of reports from the First Assistant Collector and District Deputy Collector, by which it will be perceived that the cattle disease prevails more or less throughout the district, and that there is a concurrence in the information which both these officers have obtained of the symptoms of the disease. It has very recently been brought to my notice that the disease among the cattle at Desoor, mentioned in Mr. Grant's letter, is of a very malignant type, and that the directions which have been given to separate the sick animals and to bury the carcasses of the dead cattle have been of no avail in checking the progress of the disorder which carries off nearly every animal attacked.

J. H. Grant, Esq. From J. H. GRANT, Esq., First Assistant Collector, to the Collector of Belgaum,—(No. 68, dated Belgaum, 22nd September 1870).

With reference to your endorsement No. 1080, dated 9th August 1870, forwarding for report a Resolution of Government in the Revenue Department, No. 3644, on the subject of cattle disease, I have the honor to report as follows.

2. *Belgaum Talooka*.—The disease began about a month ago in the village of Desoor, and about two months ago in Gaddikurvinkope. It is called *heriberri* by the natives, and its symptoms are as follows:—The neck swells, saliva comes from the mouth, and a swelling forms in the eye. The animal always hangs its head down and refuses to eat. Great thirst ensues, and continues generally for a day and a half. Diarrhoea then sets in, the urine becomes tinged with red, or mixed with blood, weakness ensues, the animal falls down, remains so for a day or two, and then dies. Small portions of the entrails are passed with the dung and smell very badly. When the animal dies, the eyes retreat inwards and the tongue protrudes. If the dung gets on the body before the animal dies, it breeds small insects. The bladder has the appearance of having been destroyed, and the stomach is full of greenish water.

3. The disease is not general at present. In the two villages above mentioned 130 animals fell sick of it; of these, 100 died, 20 are reported as still sick, and 10 recovered: death ensues from 4 to 20 days after the first attack.

4. The village of Desoor above mentioned is on a hill, and the soil is red, and there is a little jungle in the vicinity. The soil of the Gaddikurvinkope is partly red and partly black; there is no jungle near the village.

5. The origin of the disease is not known. It seems that notwithstanding the great thirst felt by the sick animal, water should not be given, as it hastens death. The remedy used by the natives is the juice of the leaves of the *neem* tree (*beon*), and it is said to be successful; occasionally they also use the *karibeon*.

6. *Sumpgaum Talooka*.—Symptoms the same as above. The disease was slightly prevalent in Naglapore and a few villages in Belavadi Karyat. The ground is open, some of the soil is red and some black. No jungle in the vicinity. The disease is not restricted to any particular localities, consequently any village is liable to it.

7. *Purusgud Talooka*.—In this talooka there are a variety of diseases among cattle, but *heriberri* is the chief; they are as follows:—

1st, *Kundroga*,—caused apparently by not giving sufficient grass or water, or by giving bad water; it lasts about three days, and is sometimes fatal; it is more or less prevalent always; when attacked the animal trembles a good deal.

2nd, *Bairoga*.—Tongue becomes black and the surface of it is covered with ulcers, saliva flows, and the animal can neither eat nor drink. A cure is often effected by rubbing the tongue with *nelli kayi* (*phyllanthus emblica*).

3rd, *Kalberri*.—The hoofs get full of small insects, induced probably by treading in mud and dung; the cure is effected in about two months by various substances which are poisonous to the insects.

4th, *Heriberri*.—Chiefly prevalent in the hot weather; three-fourths of the animals attacked die; after death the flesh becomes black.

8. I have not been able to procure precise information as to the number of animals attacked, but in the Beedee Talooka, where there is no disease at present, the number of animals that died is stated to be as follows:—

In 1867, 77 animals died
In 1868, 688 „
In 1869, 332 „

all from *heriberri* or *doddaberri*.

9. I have included the Belgaum Talooka in my report, the information regarding it having been called for from this office, and supplied at the same time as the rest.

From VISHNOO PURUSHRAM, Esq., District Deputy Collector, to the Collector, Belgaum,—(No. 128, dated 28th September 1870). Vishnoo Purushram Esq.

With reference to your letter No. 1090, dated 9th August 1870, I have the honor to report as follows with respect to the three Talookas in my charge:—

Athni Talook.

In Murgundi and Ainapoor, a cattle disease called *nebin byani* or *mhani byani* is prevalent. Cattle are as suddenly attacked therewith as men are by cholera. The causes of this disease are unknown.

During the attack the cattle neither eat nor drink. They become dull, and frequently pass reddish urine. The dung stinks much. Death generally follows 4 or 5 days after the attack. During illness they appear very uneasy and restless.

* * * * *

The soil in Murgundi and Ainapoor is partly sandy and partly black light soil.

In Murgundi there were ten cases and in Ainapoor one; all proved fatal. There are no more cases.

The Mamlutdars of Chikodi and Gokak report that no cattle disease of any description is prevailing in their districts at present, and they have consequently not supplied the statistical information required. The following information has been obtained by them from old people regarding cattle diseases that had formerly appeared in their districts:—

Name of disease.	Symptoms.
Hirey byani...	<i>Gokak Talooka.</i> The cattle do not eat. The blood is spoilt, and they pass watery stools of a red color. The eyes water, the body trembles, death follows in two or three days.
* * *	* * *

From T. BOSANQUET, Esq., Acting Collector of Sholapoor, to the Revenue Commissioner, Southern Division,—(No. 2337, dated 18th October 1870). SHOLAPOOR. T. Bosanquet, Esq.

I have the honor, with reference to your circular endorsement No. 3261 of the 5th August last, to state that cattle disease is now and has been for some time prevalent in the Kurmulla Talooka of this district. I am not able to ascertain the number of cattle now suffering from it.

2. By "epizootic disease" I presume is meant "cattle disease" of any kind.

3. In the course of last year no less than 988 head of cattle appear to have died from cattle disease.

4. The disease most fatal is called *waryacha rog* or *mota rog*. The symptoms are—diarrhoea, running at the mouth, inability to eat, and sinking of the eyes. The body assumes a dark color. The duration of the disease is from one to three days.

5. I have presumed that *mota rog*, "great disease," is the same as *waryacha rog*, which would appear from its name to be an epidemic. In two of the Talookas the disease is spoken of as *mota rog*, of which running at the mouth is one of the symptoms.

SHOLAPOOR.
T. Bozanquet, Esq.

6. I will now answer Mr. Hallen's second question in detail. The names of the diseases mentioned as sometimes prevailing are as follows. With the exception of No. 2, they all appear to be of a fatal nature.

Disease.	Symptoms.	Duration.
1.—Waryacha rog or mota rog	Diarrhœa; body becoming of dark color; running at mouth; sinking of eyes, emaciation.	One to three days.
2.—Khoorkoot (hoof disease)	Mouth, tongue; and hoofs become affected. Inability to eat. Hoofs fall off. This disease is susceptible of cure if taken care of in time.	About fifteen days.

7. The first named disease has prevailed mostly in the Baree and Kurmulla Talookas. It has prevailed slightly also in the Marraha and Punderpoor Talookas.

SATTARA.
J. R. Arthur, Esq.

From J. R. ARTHUR, Esq., *Collector of Sattara Division, to the Revenue Commissioner, Southern Division*,—(No. 3692, dated 21st December 1870).

With reference to your Circular No. 3291 of the 5th August last, I have the honor to inform you that diseases of an epizootic nature prevail to a considerable extent in this district; but the information regarding their nature is exceedingly scanty, and the people appear to have no definite notion as to how they should be treated. The explanation they give with regard to diseases known by different names are so similar that it is difficult to determine whether the same disease is spoken of, or whether any distinction really exists. There is no information at all of any reliable kind as to the extent to which the different diseases prove fatal, nor can it be ascertained in what proportion recoveries occur.

2. There is in this district the usual variety of soil, and I do not find that the diseases are in any way regulated by their character. I would repeat, however, that the information is of the very vaguest description, and the only way in which it appears to me that trustworthy knowledge can be obtained is by deputing some professional person to make inquiry into the matter.

3. I annex a statement, however, which gives such particulars as are procurable.

[The statement furnished shows that foot and mouth disease, known as *lall*, and rinderpest, called *putkee* or *moosunda*, prevail in the district. C. P. C.]