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[Despatch Abstract.]

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for the Secy of State
forwarding copies of memos
to the Army Sanitary
Commission on the report
of the Sanitary Comm.
with the Govt of India
for 1899 —

INDIA OFFICE,

London, the 5th November 1891.

Statistics.

No. 78.

To His Excellency the Most Honourable the Governor General of India in Council.

MY LORD MARQUIS,

I forward a copy of a Memorandum by the Army Sanitary Commission on the Report of your Sanitary Commissioner for 1889.

2. The health of the European Army appears of late years to have deteriorated. The unsatisfactory results of the year 1889 were mainly due to venereal diseases, which have affected the health of the troops to a most serious extent, and to enteric fever, the mortality from the latter of these having been the highest on record. I await with some anxiety the Report referred to in your Military Despatch of the 14th July last, No. 127.

3. Special attention should be given to the remarks of the Commission in paragraphs 16 and 18 on the want of more detailed information as to sanitary defects in the sanitary sheets of the troops and jails.

4. I have given instructions for the transmission to your Government by Book Post of 18 copies of this Memorandum.

I have the honour to be,

MY LORD MARQUIS,

Your Lordship's most obedient, humble Servant,

CROSS.

Memorandum of the Army Sanitary Commission on the Report of the Sanitary Commissioner with the Government of India for 1889.

The last of these Reports which we reviewed was for 1885, and we have now before us the Report for 1889. The statistics of 1885 had shown a considerable falling off in the health of the troops. The amount of sickness among the European troops had increased, so had the death-rate among both European and Native troops, and the general conclusion at which we arrived after a consideration of the sanitary history of that year was expressed in the following words:—"We have shown that, notwithstanding the greatly improved health under effective sanitary work of European troops, the reduction in the death-rates has not continued, but has shown rather a tendency to increase, indicating the need of pressing forwards the sanitary works we have advised, not only to continue the improvements, but to hold the ground already gained, which the statistics show is in danger of being lost. A similar remark applies to Native stations and to jails."

2. *European troops. Army of India.*—So far as European troops are concerned, although there has been no increase in the admission-rate, the daily sick-rate, the death-rate, and the invaliding-rate have all considerably increased since 1885. In the European Army of India as a whole the rates of 1885 were 1,533, 71, 14.55, and 37 per 1,000 for the admission, daily sick, death and invaliding ratio respectively. In 1889 they stand thus,—1,498, 86, 16.60, and 43. They are much more unfavourable than the unfavourable results of 1885, more especially the daily sick-rate, which had risen 15 per 1,000, and the death-rate, which had risen more than 2 per 1,000. The increase in the daily sick-rate is no doubt attributable in the main to the enormous increase in venereal disease to which more particular reference will be made hereafter. The increase in the death-rate is not to be accounted for by prevalence of cholera, for this disease caused fewer deaths than usual, but enteric fever contributed no less than 423 fatal cases, a higher proportion than has ever been recorded before. The loss by invaliding was greater than it had been since 1884. We shall not reproduce the figures for a series of years, because they are already succinctly tabulated in the Report, in which the

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Sanitary Commissioner has stated the statistical facts very clearly, both as respects 1889 and the previous years with which comparison is made.

3. *Army of Bengal.*—The unsatisfactory results of 1889 in the European Army of India as a whole we regret to see arise from a general deterioration in all the three Presidencies. In Bengal the admissions into hospital, which in 1885 equalled 1,661 per 1,000, had it is true declined to 1,517, but the daily sick-rate, which is a much more sure test of the amount of inefficiency, had risen from 73 to 87, and the death-rate, which had been 13.16 in 1885, rose to 16.07 in 1889. As in the Army of India as a whole so in Bengal, the increased sickness was chiefly due to venereal diseases, and the increased death-rate to enteric fever. More than 21,000 cases of venereal disease in its different forms were admitted into hospital from among the European soldiers of Bengal. Out of every 100 admissions into hospital from all causes, 32.38, or very nearly one in every three, were due to venereal diseases. Of 1,103 cases of enteric fever 286 died.

4. *Army of Madras.*—In the Madras Presidency matters were even worse, not only in themselves, but in the marked contrast they present to the experience of former years. From 1880 to 1885 inclusive, the annual mortality had always been under 11 per 1,000. In 1884 it was only 8.53, but in 1889 it reached 20.05, or about double the figure it had stood at for six continuous years. In the same way the daily sick-rate was no less than 90 in 1889, whereas for years it varied between 60 and 66. Since 1886 it has been high, ranging from 77 to a maximum of 90 in 1889, as already mentioned. Here we have the same general facts as have been already noted in Bengal. Venereal diseases represent about one-third of the whole admissions of the year, 6,151 out of a total of 20,529; and although enteric fever did not add so largely to the mortality as it did in Bengal, it contributed very materially to the unfavourable ratio of the year.

5. *Army of Bombay.*—In Bombay the results were less unfavourable than in either Bengal or Madras. The admission, daily sick, and death rates were all lower, but the figures are unsatisfactory, especially when compared with former years. The admissions showed no very marked increase, but the daily sick-rate (78) was higher than it had been for eight years, and the mortality (14.74) greater than in any years since 1885, when it attained the high ratio of 23.82, a result due in considerable measure to cholera, whereas in 1889 the proportion contributed by cholera was small. The experience of Bengal and Madras is repeated in respect of the great and much increased prevalence of venereal diseases, and the heavy mortality from enteric fever.

6. *Troops in Quetta and Burma.*—Although the troops in the Quetta District are included in the Bengal statistics, and the troops in Burma included in Madras, separate statements have been prepared to show the results in these two important commands. In the one these results are satisfactory, in the other they are unsatisfactory. In the Quetta command the admission-rate (1,152) is considerably below that of the Army generally, the daily sick-rate (58) is very much below it, and so is the mortality (9.95), in spite of the presence of cholera. Venereal disease was but little prevalent, 202 cases per 1,000 compared with 491 in Bengal. The mortality from enteric fever (4.52), although high, was much under the rate for Bengal (6.68). The Burma statistics are not nearly so good. The admission-rate equalled 1,903, the daily sick-rate 92, and the death-rate 29.22. Venereal diseases were prevalent in Burma, but cases of enteric fever were few, and the mortality from this disease small (2.28). In paragraph 7 of the Report a comparison is made between the health of the troops in Upper and Lower Burma, and the contrast in favour of Lower Burma is very marked. In Upper Burma, which has been occupied only recently, the men were doubtless much more exposed.

7. *Detailed comparison of the three Presidencies and of different groups.*—In the Statistical Officer's Table V, which is one of the tables appended to the Report, full details are given of the extent of sickness and mortality in each Presidency. It may there be seen how the sick-rate varied every month of the year, how the different diseases contributed to the admission-rate, and in what proportion they made up the death-rate. It also shows how many cases of the principal diseases proved fatal out of every 100 cases treated. In Tables VI to XVIII of stations, and the same particulars are given for each of these as have been already given for each of the Presidential Armies as a whole. In Table XIX these particulars are again placed side by side for easy comparison, just as the details for the Presidencies are compared in Table V under the various heads already noted. There are many points of much interest in this table; the fluctuations in the monthly sick-rate, from a maximum of 121 in Bengal proper in January Quetta district for February; the great variations in the admission-rates, from 1,151 in command and 29.22 in Burma.

8. *Hill stations.*—In these remarks the hill stations are not included. These form a special group by themselves, because the removal of troops and their families to the higher elevations is a sanitary measure which has been much insisted on, and to which great importance is very properly attached. Of the men in Bengal, 14,297, or 82 per cent., were in the hills principally during the hot months, besides 609 women and 1,307 children, the percentage of total strength being in the last two 40 and 41. It is satisfactory to find that the health of these troops was much better than it was in the Army generally, as indicated by 1,171 admissions into hospital, 68 sick daily, and 9.76 deaths per 1,000 of strength. Table XII, which

relates to the hill stations of Bengal, shows an average strength of only 6,453, and the highest monthly average was 11,431. The number given in the statement contained in paragraph 13 of the Report would appear to be the number in the hills on a given date, and to include parties not entered in Table XII. Table XIII includes the Hill Convalescent Depôts, which are filled with sick or weakly men, and so no fair comparison can be drawn between this and the other groups. Both admission-rate (1,604) and sick-rate (99) are very high. In Madras and Bombay the hill stations and Hill Convalescent Depôts are joined in one table, No. XVIII, so that here also no fair comparison can be made, but, in spite of the addition of a certain number of sick and weakly men, the general results are very favourable as regards mortality, which equalled only 5.83, but unfavourable as regards sickness, which is represented by 1,303 admissions, and a daily sick-rate of 84 per 1,000, due in a large measure to venereal disease.

9. *History of the Chief Diseases. Cholera.*—We turn now from these general statistics of the three Armies and their component groups to consider the history of a few of the chief diseases. To what extent did they prevail? How does this prevalence compare with the experience of former years? In what parts of the country was it most marked, and under what special local or other circumstances, so far as information on this most important point has been afforded? Table XXII is devoted to illustrate the incidence of cholera during the year, the number of cases at each station of the European Army in the three Presidencies, the months in which they occurred, and the number that proved fatal. As a whole, there was a great diminution of the disease from the previous year; both attacks and deaths fell to about one-half. In Bengal particularly the proportion of cases and of deaths was small, and compares favourably with the past, and, although the history of the troops in Madras and Bombay is not quite so satisfactory in this respect, still the disease was far from being prevalent in either. There are two points in this table which deserve notice, though they are by no means novel, and are indeed but a repetition of what is so frequently observed in the history of cholera. First of all we find that, although there was but little epidemic severity, the stations which furnished cases represent a very large area. This is most strikingly seen in the Bengal Presidency, where we have the disease at different points, from Fort William in the south-east to Mean Meer in the north-west, and from Quetta in the west to Ranikhet in the east. The cause therefore, whatever it is, was very widely spread. But we note further that, although widely spread, it was nowhere manifested in any great intensity. In most of the cantonments the number of Europeans attacked was only one or two. The three exceptions were Mean Meer, Neemuch, and Secunderabad, the maximum number (16) occurring in this last place, where the European garrison is large. It is satisfactory to find that movement into camp on the occurrence of cholera cases had been as usual attended with excellent results. In paragraph 152 we are told that, in 14 out of 18 instances in which such movements were made by parties of European troops, there was no further case after movement; in the other four instances the cases were limited to two or three. The experience of Native troops and prisoners in regard to movements was not always so favourable. In several instances many cases followed movement, but it would appear that, at least in some of these, the movement had not been sufficiently prompt, but had been delayed until many attacks had taken place, an error which ought not to have been made. Of sanitary defects noted in connection with cholera, the following are recorded:—At Dum Dum, Nowgong, Sobagpur, and Secunderabad defective drainage; at Nowgong insufficient barrack accommodation; and on board ship at Mandalay impure water.

10. *Fevers.*—Fevers are returned as usual under the different heads of Intermittent, Remittent, Simple, Continued, and Enteric. The last is taken separately, and the others joined together as different forms of malarial fever. On this basis a statement is given by the Sanitary Commissioner in paragraph 27 of his Report, comparing the results of 1889 with those of former years in all the three Presidencies. In all of them, as has been frequently remarked, the admission-rate under enteric fever has greatly increased. In Bengal in 1889 this reached 25, in Madras 16, and in Bombay 20 per 1,000. In 1880 the rates were 8, 2, and 9. Fevers as a whole have fluctuated much from year to year, and in Madras during 1889 there was a remarkable increase. The admission-rate (47.0) was higher than had ever been before recorded in this Presidency, though this high ratio has been frequently exceeded both in Bengal and Bombay. The high admission-rate of Madras in 1889 is attributed to the occupation of Upper Burma by Madras troops. Among them, as may be seen from Table XXIV, this rate was 861 per 1,000, a higher ratio than that of any other group. As regards mortality, the results are still more unsatisfactory. In the Army of India as a whole the death-rate from all fevers during the ten years 1870—79 averaged 3.45 per annum, during the next ten years 1880—89, it averaged 4.59, during 1888 it equalled 4.48, whereas in 1889 it rose to 6.92, of which .81 was ascribed to malarial fevers, and 6.11 to enteric.

11. *Enteric Fever.*—In Table XXIII a full view is given of the distribution of enteric fever among European troops all over India. In the Bengal Presidency 58 different places furnished cases, in fact, every cantonment returned one or more except Delhi. Over Madras and Bombay it was also widely spread. In many cantonments the cases were few, only one, two, or three throughout the year; in others the number was very large,—at Rawal Pindee and Sialkot 73 each, at Bareilly 95, at Lucknow 111, at Mhow 118, and at Secunderabad 162. At the hill station of Ranikhet there were 3, but the disease would seem to have been of a much milder type than elsewhere, for only three of them proved fatal. At Umballa the

proportion of fatal cases was even smaller, only 5 per cent. At Belgaum it was 50 per cent., and at Mean Meer 53 per cent. These extremes call for some explanation. The experience of another year merely repeats what has been so frequently observed before, that young soldiers during their early years of Indian service are most prone to be attacked by enteric fever. Of every 100 soldiers attacked, 64 were under 25 years of age, only 12 were over 29; 57 were in their first or second year of Indian Service, and 20 more were in their third, fourth, or fifth year. Several interesting extracts are given from the reports of medical officers on this particular disease, but they throw no new light upon it. Certain insanitary conditions in some of the localities concerned are mentioned, which have, no doubt, been remedied. In several of these reports the milk supply is pointed to as the probable cause of the enteric fever, but this can only be said to be a suspicion, and it is a suspicion which, without further evidence, seems hardly warranted, for, as we have pointed out in reviewing former reports, if milk were the real cause, the children ought to be the greatest sufferers, whereas, as a matter of fact, they suffer very slightly. Among them during 1889, for example, the attacks equalled 5 per 1,000; among the women the ratio was 8, and among the men 22.

12. *The question of the enteric fever bacillus.*—The Sanitary Commissioner makes the important announcement that a special bacillus called the *bacillus typhosus* has been discovered in certain Indian enteric cases. "The beginning has been made," he says, "of an important advance in the investigation of the pathology of enteric fever in India. Through the kindness of Brigade Surgeon Hamilton, Surgeon-Major Knox, and Surgeon McGill, specimens of spleen and mesenteric glands from two cases were forwarded to a distinguished bacteriologist, Professor Bernhard, of Kiel, Germany, who reports that he found the *bacillus typhosus* in all the specimens. As the chief bacteriologists of Europe agree that the bacillus occurs in all cases of enteric fever and never in other diseases, the conclusion is now absolutely certain that at least some of the fatal fevers of India with intestinal lesions are identical with the enteric fever of Europe. . . . The constant association of the bacillus with the disease makes it all but certain, in the opinion of the most able bacteriologists of Europe, that the bacillus is there the cause of the disease. If this be so in Europe, it must be so also in India. Hence the source of *real* enteric fever in India must be looked for in the contamination of ingesta, and climate must be considered but a secondary influence." We shall watch the further progress of this investigation with much interest, but even if it should be established as an undoubted fact that this bacillus is special to enteric fever, and that it is the cause of the disease, it remains to be seen what practical steps can be taken to deal with it. We by no means undervalue scientific investigation; every addition to our knowledge is welcome, and must prove of value. We would only urge that too much importance should not be attached to the supposed or even to the real discovery of a bacillus special to enteric fever, or any other disease. We have observed that such announcements do not tend to the advancement of general sanitary improvement which is of so much importance; once a disease is attributed to a bacillus or specific germ, there is too great tendency to look on the matter as settled, and when any fresh case occurs, there is nothing further to be done than endeavour to trace how the specific germ has been communicated, and in the event of such evidence not being found, to assume that it has been conveyed in some unknown way. And as a further outcome of the same line of reasoning, endeavour is not unfrequently made to frame regulations to prevent its being imported in future, regulations which are very apt to be impracticable and vexatious.

13. *Veneral diseases.*—Passing over dysentery, diarrhoea, hepatitis, and respiratory diseases, which call for no special remark beyond what has been already said regarding them by the Sanitary Commissioner, we come to that unfortunately large and important group known as venereal diseases. There is no special table to illustrate this group, but the admission-rate caused by them in each cantonment will be found in one of the columns of Table XX. The history of these diseases has always been unsatisfactory, and in 1889 it was more unsatisfactory than it ever was before. In the Army of India, as a whole, they come next to fevers, and nearly equal them as the chief cause of admissions into hospital, and constitute one-third of the whole admission-rate of the year. How far they contributed to the constant sick-rate is not shown, but in this respect they probably rank even before fevers. In the different Presidencies, taken separately, the results are all most unfavourable, those of Bengal being worst, then Bombay, and then Madras. The figures given by the Sanitary Commissioner in paragraph 39 of his Report show the admission-rates for a series of years, and whether the Army of India be taken as a whole or the Presidencies individually, there is the same lamentable result,—an almost continuous increase, culminating in 1889 in a maximum of 481 for all India, 491 for Bengal, 452 for Madras, and 481 for Bombay. It is remarkable not only that the rates for 1889 are so high, but also that the onward bound which they made in that year is far in excess of what has ever taken place previously; over all India this bound was 110 per 1,000, in Bengal 118, in Madras 76, and in Bombay 124. These statistics are so remarkable that we cannot help inquiring whether they have been prepared throughout on the same system, or whether some changes have been introduced which may account for at least part of the increase. The extent to which venereal diseases prevailed is, if possible, even more

strikingly shown if the cantonments be taken separately. The range is very extensive, from 81 and 117 among small bodies of men at Taragarh and Attock to a maximum of 1,045 at Ahmednagar. In 26 of the cantonments the admission-rate exceeded the very large proportion of 600 per 1,000, and in many of them the excess was great.

14. *Veneral diseases in relation to lock hospitals.*—These results are very much to be regretted. They represent an enormous amount of inefficiency due to one class of diseases, for the prevention of which special measures were long in force. The statistics and arguments of the Sanitary Commissioner all point to the conclusion that the very marked increase of these diseases is due to the withdrawal of these special measures of prevention, but before accepting this conclusion the facts must be very carefully considered. It is shown that in 1884, when lock hospitals were still in existence, the admission-rate from venereal disease among European troops in India was 291. In 1885 certain of these hospitals were closed as an experimental measure, but were re-opened in the early part of 1887, and the system was again in full force till September 1888, when it was altogether done away with. In 1885 the ratio increased to 343 for all India, but it is to be noted that this was due to Bengal and Madras, and that there was some diminution in Bombay. The same occurred in 1886, when the ratio for India was 389. In 1887 Madras showed a slight increase, but, owing to diminution in the other two Presidencies, the rate for India fell to 361. In 1888 Madras showed a diminution of 24 per 1,000, but, owing to increase in Bengal and Bombay, the rate for India rose to 371, and in 1889, as already stated, there was a marked rise in all three Presidencies, and the rate for India stood at the maximum of 481. The comparison is most unfavourable to the later years, but is the whole or even the greater part of this rise to be ascribed to the fact that the lock hospitals had ceased? The experience of previous years does not warrant this assumption, for, even during the continuance of lock hospitals, there was a decided increase in venereal disease. These hospitals existed for 18 years, from 1867 to 1884 inclusive. The figures for the individual years 1870–79 are not given, but it appears that during these ten years the average annual admissions from venereal disease were,—for Bengal 209, Madras 198, Bombay 191, and India as a whole 203. In 1884, that is to say, after the lock hospital system had been in force for 18 years, the figures were,—for Bengal 291, Madras 307, Bombay 292, and India 294. Instead of a decrease there had been a marked rise, amounting roughly to about one-third in each Army. And what is still more worthy of notice is that the statistics of 1866, before lock hospitals were established, are much more favourable than those of 1884, when these hospitals had been at work for 18 years. The figures of 1866, apparently, are not available for Bombay, but for Bengal they are 217 cases per 1,000 in 1866 and 290 in 1884, for Madras 236 in 1866 and 306 in 1884; or, if comparison be confined to the more serious forms of primary disease, we find that in Bengal the ratio rose from 64 in 1866 to 86 in 1884, and in Madras from 80 in 1866 to 101 in 1884. The Sanitary Commissioner would explain these remarkable results by "the greater youth and inexperience of the soldiers, the smaller proportion married, and the more frequent and extended movement of troops;" and it is to be borne in mind that the short service system came into force in 1870, and has been in operation since that time. Whatever degree of importance, however, is to be attached to these causes of increase, the fact remains that the expectations of benefit to be derived from lock hospitals when they were established were very far from being fulfilled.

15. *Native troops.*—The extent of invaliding, the causes to which it was due, the effects on European regiments of a tour of Indian service, the health of women and children, and the mortality among officers during 1889, might all be commented on, but as these subjects have been fully discussed in the Report, we shall pass on to the next section which deals with the Native Army, and then return to consider the very important question of local defects existing in particular stations, in many of which both classes of troops are quartered. For the Native Army of India the statistics present no unusual features. The admissions into hospital, 1,003 per 1,000, the daily sick-rate, 35, and the mortality, 16.19, are much the same as they have been in former years. The lowest admission-rate (856) was in the Madras Army, and the highest in Bengal (1,115), Bombay occupying an intermediate place (1,024). The daily sick-rate in Bombay (32) was lower than that of Madras (36) or that of Bengal (37). In Bombay, also, was the lowest death rate (10.74), and in Madras the highest (23.99), the Bengal rate being between the two (16.30). An examination of the Native Troop series of tables shows clearly where sickness and mortality were chiefly localized. The troops serving in Burma suffered most. Among them the ratio of admissions was 1,363, the daily sick-rate 60, and the mortality 37.72; or, if the Chin-Lushai expeditionary force be included with the Burma statistics, the admissions equalled 2,011, the daily sick 75, and the deaths 46.78 per 1,000. How heavily some of the regiments in Burma suffered may be seen from the last section of Table XXVIII. For example, the head-quarters of the 32nd Madras Infantry lost by death 98 per 1,000; part of the 19th Madras Infantry lost 132, and another portion of the same regiment 211 per 1,000. In this last body of men the cases of sickness equalled 2,788 per 1,000. In an earlier portion of the same table it will be seen that unusual sickness and mortality in some regiments followed their return from Burma. The contrasts in the statistics of European and Native troops are very remarkable. As the Sanitary Commissioner observes,—“It will be seen how much less the Native Soldier suffers from enteric and simple continued fevers, hepatic affections, and venereal diseases, and how much more he suffers

"from ague, dysentery, and pneumonia than his European comrade." The truth of this remark is strikingly borne out by the following figures:—

	Inter- mittent Fever.	Remittent and simple continued Fever.	Enteric Fever.	Hepatic Affections.	Dysentery.	Pneumonia and other Respiratory Diseases.	Veneral Diseases.
	Admission per 1,000.						
European Troops	334	74	22	24	29	31	481
Native Ditto	464	24	2	1.6	55	41	38
	Deaths per 1,000.						
European Troops	19	62	6.11	1.43	81	56	
Native Ditto	1.11	1.49	.07	.11	.90	3.14	

It may be said, in short, that the European soldier dies in the hot weather in the plains of India of those diseases to which he is prone on being removed from a cold or temperate climate to a tropical one, while the Native dies in winter of those diseases to which he is prone (respiratory diseases) from cold when insufficiently protected by clothing, or subjected to overcrowding and defective ventilation, especially if he has a history of previous malarial disease.

The most marked contrast is that presented by enteric fever and venereal diseases. As regards the latter, it is worthy of notice, in connection with what has been already said concerning this class of disease amongst European troops, that in all three Presidencies these diseases showed an increase also among Native troops. In Bengal they rose from 34 in 1884 (the last year of lock hospitals) to 42 in 1889; in Madras from 22 to 30; and in Bombay from 32 to 51; increases which in proportion are nearly as great as the increases which took place between those years among European troops.

16. *Sanitary defects in Cantonments.*—Information as to the local causes of disease is to be sought for in the "Summary of the Annual Reports on the Cantonments in the Bengal Presidency for 1889," which appears in Section VIII, and also in the summary of sanitary sheets for the three Presidencies attached to the section concerning the Native Army. In both of these statements the admissions and deaths per 1,000 of strength at each place are entered side by side, with remarks regarding "sanitary defects, suggestions, improvements, &c." When sanitary defects are pointed out, there is generally abundant evidence to emphasize the need of their being remedied. Some of these defects are trifling, and might be put right at little cost; others, of more importance, seem to be brought to notice year after year without any action being taken in regard to them. We can only cite a few examples of defects which call for remedy, with the remark that sanitary reports are of value in proportion to the amount of practical sanitary work they cause to be done. At Barrackpore, for instance, we have an admission-rate of 1,265 among Native, and 1,674 among European, troops. Among the former—and no doubt the evil effects extend beyond the immediate neighbourhood—it is said, "Sickness due chiefly to the swampy undrained condition of the lines, and the want of elevation above the ground of the floors of the huts." Defective drainage and overcrowding appear in several places, and indeed, as respects Native troops, overcrowding is one of the most common defects noted. Few evils are more serious. Certainly there is no tendency in these reports to overstate the defects, rather the contrary, for we observe that in many places where both sickness and mortality were great, no defects are mentioned. But, to proceed with examples, at Debrooghurh surroundings are described as "swampy." Here and there it is said that ventilation was defective. At Sikkim, "surroundings very insanitary from want of proper latrine provision." In some few places fresh vegetables were scarce; in others, clothing too light for the cold; in others, as at Berhampur, "water very bad." At Bangalore the huts of the 25th Madras Native Infantry are described as badly constructed and ill ventilated. At Trichinopoly the ventilation of all the Native huts is said to be defective. These examples are taken chiefly from the summary of Native troops' sanitary sheets, which are, as a rule, more full than the Cantonment Sanitary Reports, but both might be made more complete and practically useful; what is wanted is to know, not the diseases which chiefly prevailed, for that information is already entered in the statistical tables, but the local causes of these diseases and the remedies which appear most suitable for the removal of these causes.

17. *Military sanitary works.*—In connection with defects may next be noted the military sanitary works which were executed during 1889. They are recorded in Section VIII. The total expenditure on them during the year amounted to Rs 60,74,202. They include accommodation for men and officers, hospitals, and miscellaneous work, such as roads. There does not appear to have been any expenditure on waterworks or other large scheme of improvement.

18. *Jails.*—In regard to the number of prisoners there are two points of some interest. The first is, that in all three Presidencies the average was greater than it was five years ago, and the second, that in Bombay this average is larger in proportion to the population than it is in Bengal, and very much larger than it is in Madras. These results are not peculiar to

1889, but are to be found in each of the years with which comparison is made. In 1889 there were 2.7 prisoners in Madras to every 10,000 inhabitants, in Bengal 3.9 and in Bombay 4.5. In 1888, in the same way, the figures were 2.5, 3.7, and 4.0. No explanation is given of this somewhat remarkable result. Section IV of the Report is devoted to the sanitary history of the jails of India, and the general facts and figures are there so fully set forth as regards both sickness and mortality that we need not repeat them here at any length. They present no unusual features. The general admission-rate for all India (1,155), and the constant sick-rate (38), the deaths from cholera (4.52), and the deaths from all causes (36.56), are almost identical with what they had been in 1888. A comparison of the three Presidencies shows that while the sickness was lowest in Madras it was there that the mortality was highest (39.49), the ratio for Bombay (31.86) being lowest, and that for Bengal (34.84) between the two. Taken according to Local Governments, the death-rate ranged between a maximum of 51.37 in the Central Provinces and 19.53 in Berar. For details on these and many other points reference must be made to the Report. We shall confine ourselves to noting the information given in the sanitary sheets of individual jails, taking as examples a few of those in which sickness or mortality, or both, were high, and seeing what has been said as to the local causes of bad health during the year. We shall omit those unhealthy jails in which the strength was small, because in dealing with small numbers there is always great risk of fallacy. In Bengal small, because in dealing with small numbers there is always great risk of fallacy. In Bengal proper we may select the following. Mymensing, admission-rate 1,341, death-rate 96.21. It is said there was slight overcrowding in certain wards for a short time, that antiscorbutic fresh vegetables were rather scarce in September and October, that water is scarce and not quite good during April and May, when the river is nearly dried up, and that the surroundings are low and marshy. At Chittagong, with 2,148 admissions and 131.43 deaths per 1,000, all that is noted in the way of defects is, "Ventilation in the vicinity of female ward defective, well water insufficient." At Cuttack, with 2,125 admissions and 88.56 deaths per 1,000, the only defects noted are that "the jail wells get low in the hot weather. The jail is in the centre of the town, and the area of land enclosed by the walls is small for the number of prisoners confined." At Midnapore, with 1,473 admissions and 77.89 deaths per 1,000, it is noted that "the food is defective in nitrogenous elements," but as the jail diet for the province is on fixed and carefully prepared scales, such a cause, if it existed, would have much more than a local application. In the province of Assam, Sylhet jail, with 2,691 admissions and 66.88 deaths per 1,000, and Telikhal, with 2,917 and 73, were the most unhealthy. Regarding the last the column of defects is blank. In the first it is noted that "the prisoners are much exposed in the rains and hot weather in extramural work." The North-Western Provinces and Oudh present very great extremes. The admission-rates varied from 244 at Ajmere to 3,144, at present very great extremes. The death-rates from 7.11 at Ajmere to 109.97 in the district jail at Allahabad. Banda, and the death-rates from 7.11 at Ajmere to 109.97 in the district jail at Allahabad. Regarding the last, all that is said is that there was slight crowding in the dormitories for about a month in June and July. The Gorakhpur jail, where the deaths equalled 97.04, had been condemned by a special Committee. In many of the Punjab jails sickness was excessive, as may be seen from the following rates:—Amritsar, 3,272; Lahore Central, 2,840; Lahore Female, 3,732; Mooltan Central, 2,813; Peshawar, 2,366, and others that might be cited. In proportion the death-rate was low. In only two of them did it exceed 50 per 1,000; in the Lahore Central 50.33, and at Peshawar 68.97. In this last there was temporary overcrowding, and the same evil to a greater or less extent is mentioned in several of the other jails. The records of the Central Provinces are less favourable. Here, with a comparatively low sick-rate, the death-rate was, in many of the jails very heavy. In eight of them it exceeded 50 per 1,000, reaching a maximum of 68.37 at Saugor. Here, it is said, "the sickness was attributable to climatic conditions." As we have already seen, in dealing with the Provincial Sanitary Reports, the public health in the Central Provinces during 1889 was very bad. The jails of Berar present favourable results, but in Burma, and more especially in Upper Burma, the reverse was the case. In Upper Burma, so lately occupied, there were naturally many defects in the jails and in many of them the great evil of overcrowding existed. The maximum admission-rate in the Madras Presidency was 1,470 at Rajamundry; in very few of the others did it exceed 800, but in several of the jails the mortality was heavy, 103.09 in the Central Jail, Coimbatore, 70.09 at Palamcottah, 70.44 at Trichinopoly, and 81.22 at Parvatipur. The Coimbatore rate includes 55 deaths from cholera. There the only defect noted is that "the water is extremely hard, and of bad quality." In only two of the Bombay jails did the admission-rate exceed 1,500. In most of them it was much less than 1,000, and at Surat it is entered as only 131. The highest death-rate, 77.51, was at Hyderabad, where also, as above shown, there was the greatest sickness, but the sanitary sheet makes mention of no defects. The above illustrations will show how very desirable it is that more information should be given in these sheets. They should be prepared with the greatest care, for the first step to sanitary improvement is to discover, if possible, the local causes of disease.

19. *The question of the cholera bacillus.*—We shall say nothing in this Memorandum of vital statistics or the history of the chief diseases or vaccination among the general population of India, because we have already discussed these matters in reviewing the Provincial sanitary reports. We would conclude by drawing particular attention to the present state of the question concerning Koch's supposed cholera bacillus. From the concluding paragraph of the report we observe that Surgeon-Major D. D. Cunningham, as the result of further research, has come to the important conclusion "that in Calcutta cholera is associated with many different species of bacilli, and that, therefore, Koch's theory of the existence of a single

specific choleraic comma must be finally abandoned." So far Koch's bacillus, even if the position be claimed for it as the cause of cholera had been established, has not offered a basis for any practical sanitary work. We therefore merely note the stage at which scientific investigation has arrived, without any comment.

Army Sanitary Commission,

War Office;

The 28th August 1891.

No. ~~18 and~~
6

Copy forwarded to the Military Department for such action as may be considered necessary.

No. ~~18 and~~
9

Copy forwarded to all Local Governments and Administrations, with the request that as desired by the Secretary of State in paragraph 3 of his Despatch the jail sanitary sheets may be made more comprehensive in future.

No. ~~18 and~~
14

Copy forwarded to the Sanitary Commissioner with the Government of India for information, with reference to his letter No. 231, dated 21st March 1891.

HOME DEPARTMENT,

SANITARY;

Calcutta, the 22nd January 1892.

By order,

[Signature]

Offg. Deputy Secretary to the Government of India.

To

The Government of Madras.

78300

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From The Govt of India
Home Dept

H.M.

Order 97.692-1-93.

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bound to the
Judicial Dept for
attention, and to
the Surgeon General
and Sanitary Commr.
for information.

No. 1. San. 4
7

3.5.13.
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Dated 22-1-92

Received 27-1-92
Recd in Pub. Dept 2/2
Enclosures

SUBJECT.

Forwarding, with remarks,
copy of the
Despatch from the Secretary
of State re the Memorandum
by the Army Sanitary Commission
on the report of the San. Commr.
for India for 1889.

Judicial Dept }
Surgeon Genl }
Sanitary Commr. }

DESEATCHED
11 FEB 1901
IN M.S.

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WITH ORDER