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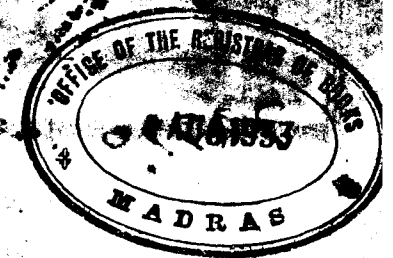


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The Indian Veterinary Journal

(The Journal of The All-India Veterinary Association)



Editor :

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NOTICE

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A quarterly record of Veterinary Medicine and Surgery
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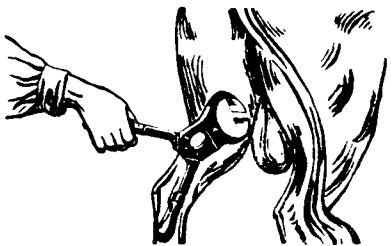
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THE INDIAN VETERINARY JOURNAL.

(The Journal of the All-India Veterinary Association)

Vol. IX.]

JANUARY, 1933.

[No. 3.]

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THE Indian Veterinary Journal

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Editorials.

CIVIL VETERINARY SERVICES IN INDIA.

I

The history of the Civil Veterinary Services in India is comparatively a recent one; but even so, the progress achieved by the Civil Veterinary Departments in the various Provinces affords an interesting study. The need for these services has been widely recognised and strongly emphasised by the Royal Commission on Agriculture, which toured this country a few years ago; but to what extent the Provinces have adopted the recommendations of the Royal Commission to make adequate provision for the veterinary needs of this vast agricultural country is a matter of supreme importance. We have on previous occasions dealt with this question at some length and we make no excuse for adverting to it again. An analysis of the actual state of affairs relating to the Civil Veterinary Departments in the Provinces both before and after the visit of the Royal Commission on Agriculture would appear to reveal the deplorable fact that sustained efforts are wanting (barring one or two notable exceptions) to enlarge their scope and activities in proportion to the demand for veterinary aid in rural areas. It is no doubt true that owing to the general financial depression, at the present time, the normal working programme of the various utilitarian services under the Central and Local Governments have had to be curtailed or held in abeyance, but our complaint is that even in the best of times adequate provision has never been made available for the Veterinary needs. The Local Boards are entrusted with the burden and responsibility in most of the Provinces of financing the schemes for combating outbreaks of the deadly diseases of cattle, as well as for the establishment of hospitals and dispensaries so necessary for the treatment of ordinary ailments of thousands of working cattle on

which thousands and thousands of poor people and agriculturists depend for their livelihood. That this policy has been to a great extent responsible for the stagnation and want of progress is evident from the fact that in Provinces where the Veterinary Department is entirely financed from the Provincial revenues and not dependent upon the precarious resources of the Local Boards for equipment and staff, the rate of progress has been fairly commensurate with the requirements for combating outbreaks of contagious diseases of cattle and for the establishment of hospitals and dispensaries on a progressive scale. The Veterinary budget should be a direct charge on the Provincial revenues, for it cannot be denied that the agricultural cattle are entitled to be protected against the ravages of preventable diseases by the State, the bulk of whose revenues is derived from agriculture. It may be that public opinion has not been sufficiently voiced on this behalf to stimulate action and accelerate the pace of development in the matter of making adequate provision for the Veterinary needs of India as a whole. We propose to examine in some detail what progress, if any, the Civil Veterinary Department of each Province has to its credit and begin with the Southernmost Presidency of Madras.

About thirty years ago, a separate department of Government known as the Civil Veterinary Department was constituted with a Superintendent in charge under the administrative control of the Board of Revenue, as it was found to be imperatively necessary to organise an adequate agency of properly qualified veterinary men to tackle the problem of prevention of the heavy cattle mortality occurring year after year. Two of the then existing Stock Inspectors who had been deputed to the Veterinary College at Bombay to qualify as Veterinary Graduates formed the nucleus to the cadre of Veterinary Assistant Surgeons. To recruit men to meet the growing demands of this new Service from the Colleges at Bombay and Calcutta, the pay and prospects were not attractive enough and the alternative was to open a Veterinary College at Madras. The Government decided to build and equip a Veterinary College for this Province and the Madras Veterinary College became an accomplished fact in 1904. The Superintendent, Civil Veterinary Department was also the Principal of the College and the staff consisted of an Assistant Principal and three Lecturers. The first batch of Graduates from this College came out in December 1906, and almost all of them were provided for in the Department. In 1909, a whole time Principal was appointed, so that the Superintendent may devote the whole of his time to the development of the Department. Improvements and additions to the staff and equipment of the College were made from time to time.

The curriculum of studies was revised in 1930, so as to include a wider range of training and a thorough grasp of the fundamentals of the basic Sciences. And to-day it is not too much to say that in the matter of staff, equipment, research work, facilities for Post-Graduate training and general standard of instruction, the Madras Veterinary College is second to none in India.

Proposals for the institution of a degree in Veterinary Science and the affiliation of the College to the Madras University are now under consideration. It is hoped that before long these proposals will materialise.

This College has been in existence now for a little over a quarter of a century and measured by the pace of progress for India as a whole in the matter of Veterinary Education, the Institution may justly feel proud of its advance. For the year 1912--1913, the total expenditure on account of the College was Rs. 40,132 and for 1930--1931 the amount was Rs. 132,688—a steady and sustained progress. All the available Graduates from this College year after year found employment in the Department and until so recently as 1928, the problem was to increase the supply: In their review of the administration report of the Civil Veterinary Department for the year 1927--1928, the Government have stated as follows:—"It is found that the number of available Veterinary Graduates is hardly adequate for the requirements of the Presidency. There has, however, been a slight increase in the number of students admitted to the College, and with the increase from 15 to 40 of the number of stipends tenable at the College sanctioned by Government recently, it is hoped that a greater number of students will be passing out of the College in future and that Veterinary Graduates will be available in greater numbers hereafter. Similarly with the recent grant of the increase in the strength of Leave Reserve it is expected that it would be possible for a greater number of Veterinary Assistant Surgeons being deputed annually to undergo the Post-Graduate Course..... In conclusion the Government note with satisfaction the enthusiasm and ability displayed by Mr. F. Ware, the present Director, Civil Veterinary Department, ever since he took charge of the Department, and trust that the comprehensive scheme of development and expansion of the department which he is inaugurating will be carried through with sustained effort to its fruition".

This admirable forecast by the Government for the future expansion and development of the department has unfortunately been checkmated by subsequent events. At the present time recruitment to the Department is entirely suspended and of the Graduates who passed out of the College within the past year or two, very few have been taken into the Department. Unless the policy of expansion

and development laid down in the Government order referred to above is resumed and given effect to at a very early date, the College will hardly attract a sufficient number of candidates to justify its continuance. It is scarcely necessary to reiterate the fact that private practice will not provide enough to keep body and soul together. Let us hope therefore that the Government will not reverse its policy of expansion and development laid down for the Civil Veterinary Department and that the Madras Veterinary College will continue its good work and supply Graduates to the growing needs of the Department year after year as in the past.

We will now turn our attention to the executive side of this Civil Veterinary Department and review its achievements. With the arrival of the first batch of Graduates from the Madras Veterinary College in 1907, it was found possible to open a few more hospitals and dispensaries, which could no longer be delayed, and with the regular annual addition thereafter, the subordinate staff of the Department in 1912-1913 consisted of seven Veterinary Inspectors and 65 Assistants. The superior staff comprised of a Deputy Superintendent and a Superintendent—the administrative head of the Department. Most of the Veterinary Hospitals and Dispensaries continued to be under the management of the Local Boards. For combating outbreaks of contagious diseases of cattle, touring billets were established and each of the Revenue districts of the Presidency had one or more Veterinary Assistants to attend to outbreaks. In the absence of outbreaks each of these assistants did a certain amount of systematic touring in villages, treated cases and performed castrations. In 1912, the incidence of Rinderpest was so severe that a special Mobile Corps was formed with six Assistants in charge of a Senior Inspector for combating the disease.

In 1917-1918, there were 12 Inspectors and 113 Assistants on the rolls of this Department and the number of Deputy Superintendents was increased by one. The Hospitals and Dispensaries increased to 40. The Department and the College which were under the administrative control of the Board of Revenue passed into the direct control of Government in 1917, and this arrangement enabled the Superintendent of the Department and the Principal of the College to correspond directly with the Government. During the next five years the expansion of the Department is illustrated by the following figures:—Imperial Service Officers 4, Provincial Service Officers 6, Subordinate staff 17, Inspectors and 161 Assistants, Hospitals and Dispensaries 51.

For administrative purposes and efficient supervision of the field work, &c., the Presidency was divided into four Circles, each in

charge of a Deputy Superintendent and a Second Superintendent's Division was also formed.

Experience with serum-alone inoculation against Rinderpest showed that it was not possible to make any headway with the disease and it was therefore decided to try the Serum-simultaneous inoculation. To begin with, a few of the Government animals at the Agricultural College, Coimbatore, were successfully inoculated by this method in 1920. Since then its gradual extension and adoption to the exclusion of the Serum-alone inoculation against Rinderpest has justified the claims made for it.

The Local Boards were relieved of the management of the hospitals and dispensaries. Some important changes in the organisation of the Department were introduced in 1923-1924, as a result of the recommendations of the Retrenchment Committee. The 2nd Superintendent's Division was abolished as the Committee were of opinion that distinction between the work of the 2nd Superintendent and Deputy Superintendents was unnecessary and that the Presidency should be divided into Circles in charge of Deputy Superintendents working directly under the Chief Superintendent.

The Government also accepted the recommendations of the Retrenchment Committee for the abolition of the Grade of Veterinary Inspectors, as it was under contemplation to increase the Deputy Superintendents, circles.

Further administrative changes were introduced in 1926. The Chief Superintendent, Civil Veterinary Department, was appointed Veterinary Adviser which designation was later changed into that of Director and the Principal, Madras Veterinary College, who was till then independent of the Chief Superintendent was placed under his control, so as to place the whole Veterinary Service in the Presidency under one administrative officer. The number of Deputy Superintendents' circles was increased to six. In their review of the administration report for the year, Government observed "Six new dispensaries were started during the year. The total number of Veterinary Institutions on 31st March 1926, was 82, of which 5 were private Institutions. The number of dispensaries is still inadequate for the requirements of the Presidency. Since the close of the year, sanction has been accorded to the opening of six new dispensaries".

In 1929, the sanctioned cadre of Veterinary Assistant Surgeons was 246 and actually there were 239. Eight new dispensaries were opened. In the words of the Government review "the report (Director's) reveals progress in all directions of the Department's activities, the most outstanding of which is the adoption, especially in the latter half of the year, of the Serum-simultaneous method of inoculation against Rinderpest on a large scale and the consequent

expansion of staff which has culminated in the re-organisation of the Department and the addition of five circles to the existing seven". In the following year, seven new dispensaries were opened and the number of touring posts was increased from 88 to 91. The campaign of S. S. inoculation against Rinderpest was in full swing, the number of cattle protected by this method was double that of the previous year.

In order that an adequate supply of serum for these inoculations may be made available locally at a cheaper cost, proposals for opening a Serum Institute were awaiting the decision of Government. Another notable feature was the decision taken by Government in the matter of Provincialisation of the veterinary service, according to which there will be only one single Provincial Service in this Presidency carrying a pay of Rs. 250-25-550-25-750 with a selection grade of 10 per cent. of the cadre on Rs. 850-25-1000."

During 1930-31, seven new dispensaries were opened, making a total of 118, and the touring billets were increased to 97. The appointment of a Special Rinderpest Officer to enquire into the methods adopted for combating Rinderpest was also sanctioned. In pursuance of the question of opening a Serum Institute in Madras experiments were conducted with a view to ascertain if anti-rinderpest serum of required potency could be made during the hot and cold months. The results being satisfactory, the establishment of a Serum Institute was sanctioned with effect from April 1932.

We have endeavoured to portray the activities of this Department during the last twenty five years. And it will be clear from what has been stated that the avowed policy of expansion and development given expression to by Government in their periodical review of the administration reports of the Civil Veterinary Department was being kept in view and steadily pursued. But this policy is now in danger of being given up or reversed on the score of financial stringency. It is indeed sad to contemplate that the Veterinary Department which is admittedly of indispensable service to the Live-stock of the country and in the development of which the technical officers have given of their best and toiled for the last twenty five years and more, should be so ruthlessly brought under the retrenchment Axe, when it is but half developed.

We fervently hope that public opinion will assert itself to save the Department from any such disaster.

VETERINARY RESEARCH.

II

Healthy development and increase of Live-stock have been said to be a sure sign of a country's prosperity. They in turn may be said to depend on two important factors, viz., the right application of the knowledge of Genetics and prevention of diseases. Both these problems have not received adequate attention in this country. It may be that a few costly stallions and a few expensive Breeding Bulls from overseas have been introduced in India with a view to improve the live-stock, but how far the object has been achieved is a matter for speculation, more so, when no adequate steps have been taken to prevent such diseases as Strangles, Contagious Abortion, &c. A breeder may have learnt the right application of Genetics in obtaining a certain type of animals required for the needs of a farmer &c., but when he finds that his mare or cow "slips" what would have been a very good foal or calf, he knows that he has an insurmountable difficulty to overcome and he approaches a professional man for advice to prevent the loss and the latter too is not able to deal with it adequately. As far as we are aware no work appears to have been done on these diseases in this country. Some amount of work has been done on the prevention of such diseases as Rinderpest, Haemorrhagic Septicæmia, Black-Quarter, etc., and from time to time newer methods of immunising cattle are being introduced. All these have saved the lives of many a valuable animal and thus have prevented a good deal of loss to the farmer or stock-owner; but the fact remains that as many "would be" valuable animals have not been given the chance of being born, on account of the prevalence of contagious Abortion. Contagious Abortion prevails in equines with disastrous results, and in addition many a valuable young foal has succumbed to "Strangles." It appears that very little work, if any, has been done on Strangles and one can stretch the point further and say that practically no work has been done in Equine contagious diseases prevailing in India, for want of necessary provision for Research into such problems, or for want of interest, which in our opinion, is the cause of the set back in Horse Breeding industry in this country.

There are at present, six Veterinary Laboratories in India, one attached to each of the five Veterinary Colleges in their respective Provinces, in addition to the Imperial Institute at Muktesar, and it is time that these Provincial Laboratories take up certain problems and work on them. It is too much to expect one Laboratory to tackle all the problems and our contention is why not take advantage of other Laboratories as well. So much is spoken of team

work nowadays, but no attempt has been made under Veterinary Research to adopt that golden rule. This is a question which needs the immediate attention of the Imperial Council of Agricultural Research, and it is that body that should distribute work to different Provincial Laboratories.

With the above end in view, it may be feasible to call for a meeting of Research workers from different Provinces with their respective Departmental Chief at a central place and discuss with them their urgent local needs, chalking out in each case a rough line of Research to be pursued and indicating where to look up for help in cases of difficulties and above all providing the necessary finance so as not to hamper the workers.

Again the Provincial Laboratories may need a little overhauling in matter of equipment and staff. Right men must be found without fear or favour and they should not be unnecessarily saddled with other extraneous work. In a few other professional Colleges, Research work has been completely divorced even from teaching work to enable the workers to bestow their undivided devotion on the work on hand.

At present these Laboratories do a fairly large amount of routine work of examining and reporting upon materials received from the staff working in the districts and the College Hospitals, which is a necessary help in diagnosis, &c., but the amount of Research work done is comparatively negligible, which, in our opinion, is due to paucity of staff on the one hand and want of funds on the other. No Local Government will take the initiative to provide the necessary staff and funds, and the responsibility of obtaining these lies on the shoulders of the Departmental Head.

When once these Provincial Laboratories are overhauled and the work is distributed, it is not difficult to predict that the day may not be far off when contagious diseases of animals prevailing in India will be tackled in a manner which will at once be to the pride of the profession and the profit of the country.

UTILISE THE TIME AND NOT MERELY FILL IT.

Catch ! then, O catch, the transient hour ;
Improve each moment as it flies ;
Life's a short summer—Man a flower
He dies—alas ! how soon he dies.

Dr. S. Johnson.

What with the studied indifference of the Powers-that-be to the pitiable cries of the profession to improve its lot and what with the long shadows of the coming events of a future that threatens with dreadful disaster, we fear the profession is fast drifting on to despondency. It is our melancholy privilege, occupying the position we do, to notice the above mentioned fact in communications received and conversations held. We dread to think where it will lead to. It is a first rate tragedy that can ever befall on any scientific profession. The only remedy for this is certainly in the hands of a discerning Government. But in the meanwhile, is the profession to allow this rot to go on unchecked ? Are we to forget the interests of Science and Country's welfare in the midst of sorrow of the present hour ? Are not they too sacred to be sacrificed on the altar of grief ? Cannot the profession hearten up and continue to do its duty by the Science and the Country ?

A kindly friend has written to us that our proper place is the Pulpit and not an Editorial Chair. "Of what use are all of your sermons to a starving profession ? It takes all our time to keep away the wolf from our doors. Come down, Dear Editor, from your idealistic heights and teach us how to make bricks without straw !" We have no objection to vacate our Editorial Chair in favour of our friend and we only hope that he will help us to get the necessary ordination for the profession he has chalked out for us. We fear of being pursued even over there by our friend, who might then ask us to teach him to prepare amulets without breaking us ! We give no guarantee to undertake any such hazardous task. Our contention is that in the midst of all the cares, anxieties and worries of the profession, there is still scope for every one of its members to strive hard to contribute his humble share towards the advancement of Science. That can be achieved only by utilising every hour and not merely filling it. Will the profession remember it ?

RETIREMENT OF A DISTINGUISHED COLLEAGUE.

The name of Mr. M. Ramachandra Mudaliyar, Superintendent, Civil Veterinary Department, Hyderabad State, is not new to the members of the profession in India. He is due to retire shortly from the State Service, and an account of his Life-sketch is appearing in this issue from a friend. An outstanding personality of great merit Mr. Mudaliyar was only to be known to be liked and we dare say H. E. H. the Nizam's Government, the profession in the State and the public alike will miss him badly. Perhaps there is nothing in this world richer than the consciousness of work well done and Mr. Mudaliyar is blessed in that way. We join in the general prayer for his welfare and unalloyed enjoyment in his retired life.

Original Articles.

KUMRI.

BY

PROF : P. G. MALKANI, B.A., B.Sc. (LOND. VET.) M.R.C.V.S.,

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There occurs in many parts of this Province and various parts of India, Ceylon and Federated Malay States a rather serious chronic disease of horses, which is known as "Kumri." This disease is characterised, in a fairly advanced case, chiefly by loss of strength in the hind legs and irregular movements arising from defective co-ordination between the various groups of muscles. When the animal is standing the hind legs are held wide apart and the fore legs are carried back-ward to bear more than their share of the body weight. During walking the hind feet are lifted hesitatingly and incompletely from the ground, the toes being dragged and gradually worn or the heels coming first in contact with the ground, with the toe tilted at each step. At a trot the legs are swung outward in an attempt to clear the ground, while the hind quarters show the characteristic swinging, pointing to inability to keep the loins rigid. These irregular or ataxic movements are particularly well seen when the animal turns and if the horse is made to turn rapidly he may come to the ground. The animal has difficulty in backing, drags the toes along, and may come to the ground if backed quickly. In such cases pressure over the loins usually causes visible wincing and crouching.



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There is no wasting of muscles, no loss of sensation, no skin lesions suggesting trophic disturbances, no paralysis of the bladder or rectum—negative symptoms of great importance, as they help in differential diagnosis and show what parts of the nervous system are intact. In some cases there is marked disturbance in health.

The onset of "Kumri" may be explosive or slow. In the former case the horse may be unable to stand or may actually be found down in the stable and unable to get up. It is stated that after such an acute onset the condition may improve and the degree of paralysis attained may remain stationary for an indefinite period. In cases that develop insidiously there may be observed at first a slight dragging of the toes along the ground or just a perceptible flinch as the rider mounts. Such cases may—either proceed to any degree of incapacity before becoming stationary or they may progress steadily so that if they are not destroyed they reach a stage of complete paralysis when it is impossible for them to rise from the ground.

Kumri is said to occur very widely over the southern and South eastern portions of Asia. It has however a remarkably regional distribution. Thus in India it is restricted to certain provinces such as Madras, Assam, Burma, Bengal, Bihar and Orissa, and United Provinces (specially districts along the borders of Bihar and Orissa). Even in these provinces it is limited to such low lying localities and tracts as are liable to yearly inundation. Macalister states that the distribution of the disease is so curiously regional that whereas "in one area cases may be so common that few ponies of susceptible type brought within its radius will escape, the adjoining districts may enjoy complete freedom from the disease."

In addition to being regional the disease is strictly seasonal in its appearance. Replies to a questionnaire indicate that the majority of cases in Bihar make their appearance after the monsoon and that an increase in the number of cases usually follows a flood.

There appears to be a remarkable breed susceptibility in Kumri. The great majority of cases are usually seen in Australian Walers who appear to be most susceptible. Arabs come next in order of susceptibility. The country bred animals are said to be relatively immune but there is no doubt that cases among them do occur.

Evidence appears to show that bullocks and goats occasionally show weakness of loins very much resembling the one seen in Kumri horses. If that be so, it will lend further strength to the new theory of Kumri, because bullocks and goats are usually affected with schistosomes.

AETIOLOGY.

Ever since the earliest contribution to the literature on the subject was published by Gibb and Molyneux in 1828, the causation of Kumri has been the subject of study by various veterinary workers and a fruitful field for speculation by others interested in it. A century of such work has resulted in the elaboration of theories some of which are too fanciful to merit consideration, some which have strong *prima facie* support in their favour and others which are more vague and thus insusceptible of direct proof. The theories held at the present day may be conveniently classified as follows:—

1. The disease is due to some specific micro-organism of unknown type.
2. The disease is caused by unfavourable climatic conditions such as extreme cold.
3. The disease is due to some vegetable poison.
4. The disease is a form of filariasis.

SPECIFIC MICROORGANISM.

Suggestion has often been made that some specific microorganism or virus is responsible for Kumri. Investigators have however failed to find any microorganism by repeated microscopic and cultural examination of the various tissues, organs and body fluids of the affected animals. Further all attempts to transmit the disease by administering in various ways all sorts of material from Kumri ponies to healthy animals have been entirely unsuccessful. In the face of this contrary experimental evidence it appears that Kumri cannot be due to any bacterium protozoan or other virus which can be demonstrated by methods available at present.

CLIMATIC CONDITIONS.

The theory that physical causes such as extreme cold or high winds contribute to the causation of Kumri has been in existence for a very long time. At one time Kumri used to be called "Wind-stroke" suggesting thereby that high winds or continued draughts caused the weakness in the loins. This theory is obviously insusceptible of direct proof but the arguments usually given in support of it are (1) that such physical conditions have usually more influence upon—imperfectly acclimatised animals than upon indigenous breeds (2) that alteration in the structure of the stables so as to minimise the draughts reduces the incidence of Kumri (3) that conditions such as chill are still regarded by neurologists as being the probable prime cause of human nervous diseases of obscure etiology. It has however

been shown that (1) the disease is well known in windless districts and windless seasons (2) that Veterinary literature has no record of Kumri in other parts of the world with the same climatic conditions (3) that alteration in the structure of the stables has no effect on the incidence of Kumri. Macalister stated that he found "in Kumri districts the most perfect stables with a very bad Kumri history and stables barely deserving the name with an absolutely clean record." In view of this evidence it would appear more probable that these external factors play, if at all, only a secondary part and that one must search for the causative factor somewhere else.

VEGETABLE POISONS.

The theory that Kumri may be due to ingestion of some poisonous matter contained in the forage seems to have originated from the suggestion in 1886, by Carlisle that Kumri may be a form of Rye grass poisoning. Later in 1897, Burke put forward the suggestion that the disease might be a form of lathyrism due to the consumption of fodder containing Khesari dal (*Lathyrus sativa*). At the present time there are many adherents of this hypothesis, no doubt because exclusion of the probability of other specific causes lends indirect support to this view. The direct evidence put forward in favour of this view is as follows:—

- (1) It is stated by some observers that horses fed entirely upon fodder imported from outside the province do not suffer from Kumri.
- (2) drying the fodder is also said to reduce the incidence of Kumri.
- (3) the occurrence of the disease after a flood appears to point to moulds as being the causal agents;
- (4) plants are known which have a direct poisonous action on the nervous system.

It will be shown later that the observation that Kumri has something to do with pastures and floods is quite a correct one and easily explained by the new theory. The interpretation that it implies the existence of a poisonous plant has however several obstacles in the way of its acceptance. The plant which has been definitely suggested as having an etiological relationship with Kumri is *Lathyrus sativa*. Lathyrism has been recognised ever since the day of Hippocrates and its symptoms, both in man and animals are well known. For a long time it was *Lathyrus sativa* that was incriminated as the causal agent of this condition but Anderson, Simonsen and Howard have

recently shown that this plant is not responsible for this condition in man and is quite harmless. They consider a weed called Akta (*Vicia sativa*) which grows in association with *Lathyrus sativa* as the probable cause of Lathyrism as they have found it to contain alkaloidal bases which are toxic to guineapigs, ducks and monkeys. H. Stot of Lucknow in a paper read at the 17th session of the Indian Science Congress at Allahabad described his experiments on Tonga ponies with Botanically pure specimens of *Lathyrus sativa* and *Vicia sativa*. At the end of four months and 24 days of continual feeding with these specimens he found the animals in excellent condition. From these experiments it would appear that even Akta cannot be held responsible for lathyrism in animals. Whatever may be the cause, the symptoms seen in equine lathyrism differ markedly from those seen in Kumri. Thus while in equine lathyrism the heart, the respiration and particularly the laryngeal muscles are also involved making tracheotomy sometimes necessary; such symptoms are significantly absent in Kumri. Further during post mortem examination of a horse dead of lathyrism one usually finds congested patches in the larynx and engorgement of the lungs and bronchi but these lesions are not met with in Kumri. Again the geographical distribution of Lathyrism does not appear to correspond with the incidence of Kumri. Thus it is stated that among the rice eating population of Assam lathyrism is practically unknown. Such inconsistencies of geographical distribution together with the differences in clinical features and postmortem lesions render it highly improbable that the cause of lathyrism, whatever its nature, plays any part in the causation of Kumri. If, in view of this, it is held that some other hitherto unknown poisonous plant may be the cause of Kumri one will still have to explain the apparent relative immunity of indigenous breeds, the apparent absence of mass infection in a stable, the notable absence of postmortem lesions usually associated with such poisons and finally the apparent arrest in the progress of the disease even when the animals not removed from the surroundings in which they are ingest the poison.

FILARIAL THEORY.

The Filial theory is quite an old one. From the writings of Gibb and Molyneux it would appear that the co-existence of Kumri and filariasis oculi had been observed a number of years before that date and that their etiological association was no new subject of controversy then. Even up to the present day this theory has remained the principal point at issue among various workers and there are many unquestioning adherents of the filarial hypothesis who talk of "ponies going in the back after worm in the eye", of "con-

cealed filariasis" when no such worm is visible and whose dictum is "One worm in the eye means a bunch in the spine". The arguments brought forward in support of this theory are : —

1. that observers like Sartin, Adams, and Lingard allege that many Kumri cases give a history of ocular filariasis;
2. that many cases of filaria usually develop weakness of loins;
3. that observers like Place and Lingard allege that they have found the parasites at the seat of disease;
4. that there are cases of filariasis in dogs which are characterised by general toxic manifestations and specially in Great Danes by lameness of one of the hind limbs.

There are however some serious objections to the filariasis theory. Thus subsequent workers have failed to find these parasites in the eyes or other situations in many cases of Kumri. Macalister states that he killed many true cases of Kumri and on careful examination found that the majority of the cases had no filaria in the eye and no parasites in the spinal cord or other situations. The cases examined at this laboratory have also shown no history of ocular filariasis and no filaria have been found so far in the spinal cord. This is therefore an important disproof of the invariable association of these two conditions.

It has been found that filariasis occurs in many places where Kumri is not known. Thus filariasis is very common in the Punjab but Kumri is rare. Similarly filariasis is very widely distributed outside India, being found in Europe and America but Kumri has not been recorded from these places. Even in India filariasis is very widely distributed but Kumri is restricted to certain districts. This is another important inconsistency of geographical distribution.

Again Lingard's own work has shown that ocular filariasis is absolutely and relatively more common in country-bred animals, Kumri on the other hand is essentially a disease of imported horses. This is yet another inconsistency of racial distribution.

Further, although testimony is not lacking to show that other genera of helminthic parasites have toxigenic powers capable of producing nervous lesions the evidence in favour of assigning such properties to filaria is inconclusive. In fact it is well known that the filaria in a large majority of cases live in perfect harmony with their hosts and are actually regarded as the most innocuous of all helminths.

In view of such inadequate statistical support and glaring inconsistencies of racial and geographical distribution it would appear that the filarial hypothesis is untenable and the association between filaria and Kumri is nothing but a chance coincidence having no etiological import. Scientific literature is rich with parallel cases where two entirely independent diseases have co-existed to such a striking degree as to suggest a causal connection. Thus before the discovery of *Trypanosoma gambiense*, Manson regarded *Filaria perstans* as having some causal significance in sleeping sickness on account of its close correspondence in distribution with this disease. Similarly before the discovery of the cause of Kala Azar by Leishman the disease was regarded as a form of malarial cachexia because malarial parasites could be found in all stages of the disease.

THE NEW THEORY (SCHISTOSOMIASIS)

Work on Kumri has occupied the present author's time for the last year and it has now progressed to a stage at which it is considered that there is some justification for making the suggestion that Kumri may be nothing else but a form of equine schistosomiasis, the Schistosome responsible for the condition, resembling somewhat the *Schistosoma indicum* Montgomery, 1906. This suggestion is based on postmortem findings and the results of treatment adopted in few of these findings.

No previous investigator has recorded the findings of Schistosomes in cases of Kumri but considering the difficulty of finding Schistosomes unless they are specially "fished" for, this is quite understandable. At this Laboratory, however, special attention was being paid to these parasites because of our last year's discovery of the cause of Nasal Granuloma in cattle. As a result of this search these parasites were discovered in all affected cases, destroyed at the Laboratory. Treatment of the disease with tartar emetic (a well known specific in Schistosomiasis) was then adopted as a test of the tentative hypothesis formulated as a result of these findings. The results of this treatment have been encouraging enough to lend some support to the hypothesis.

The Schistosomiasis theory is further rendered more acceptable by the fact that it explains most satisfactorily all the features of the disease. The regions and seasons for Kumri provide just the conditions for snails which act as intermediate hosts in the life history of schistosomes. It is now easy to understand why all investigators have found it impossible to convey infection by ingestion and inoculation experiments. It is clear how pastures containing cercariæ are related to the disease and how drying of the grass by killing off the cercariæ helps in lowering the incidence of this disease. It is

likewise easy to explain why Kumri occurs only in India and not in the western countries as the particular schistosome (probably *Schistosoma indicum*) exists only in these regions. This has a parallel in the case with *Schistosoma haematobium* which is very common in Egypt and Europe but is notably absent from India. The chronic nature of the disease is also in keeping with recorded observations on Schistosomiasis. Thus Manson states that cases of Schistosomiasis in human beings last for ten years or more. Further there is evidence to show that the symptoms seen in Kumri and even the characteristic nervous lesions alleged by Macalister to be present in every case of Kumri (author's final opinion concerning these lesions is held in abeyance pending examination of a representative samples of spinal cords and brains) can be caused by Schistosomes. From pathological and clinical studies on human schistosomiasis Fairley has shown that schistosomes and probably their ova exert their deleterious action on the tissues mainly by toxic action and that antibody can be demonstrated in the blood of infected monkeys and human beings by means of a specific complement fixation test. Tsundo and Shimaura have recorded a case of Katayama caused by *Schistosoma japonicum* in which during life the patient suffered from disorder of speech and tremor in both the upper and lower extremities with headache and mental disturbance, later vertigo and Jacksonian fits and finally right hemiplegia. Postmortem examination of this case revealed in addition to the lesions in the Viscera, hæmorrhagic infiltration of both the dura and pia mater, sclerosed areas and ova of Schistosomes embedded in the neuroglia in the brain in various places. Similarly William Mann has recorded his experience in which he has found symptoms varying from acute bronchitis to dementia precox, Jacksonian epilepsy and hemiplegia associated with the presence of *Schistosoma japonicum*.

The question has been asked whether the treatment now suggested will cure the disease. All that can be stated at present is that the treatment will certainly kill the parasites and the eggs and thus stop the progress of the disease. Recovery after that will depend upon the amount of damage done to the tissues and their ability to repair. As already stated Macalister believes that there are slight but characteristic degenerative lesions in the spinal cord in cases of Kumri. If that be so resolution meaning return to normal will depend upon whether the nerves have been destroyed or not. In the former case complete resolution would be obviously impossible but in the latter case recovery will occur in time. Particular attention is being paid at this laboratory to see whether Macalister's histological findings can be confirmed because should it be proved that there is no involvement of the central nervous system the prospects of the

permanent cure of Kumri will loom large. The treatment now suggested will also give indirect confirmatory or contradictory evidence in this connection.

In the light of the present discovery one can suggest definite prophylactic measures. Thus inspection of the fodder and grazing grounds should be rigourously carried out and as far as possible animals should not be allowed to graze during the periods when Kumri is common. Attention should also be directed to the quality of drinking water, tanks and polls being avoided. It is well known however that such advice is "more honoured in the breach than observance" as the latter is admittedly not free from difficulties. Considering the small size of cercariæ and their abundance during season it is highly improbable that animals will escape infection. It would therefore be a wise plan for animals exposed to the danger to undergo a course of treatment with antimony so that the parasite will be destroyed before it has a chance to do irreparable damage in the system. Moreover as tartar emetic does not only kill the adult parasites but also destroys their eggs it would serve as the most valuable agent for completely preventing further multiplication of these parasites in the affected region. There is no reason therefore why systematic application of this medicine should not succeed in eradicating the disease from any affected area.

ACKNOWLEDGMENT.

Thanks are due to Major P. B. Riley, Director of Veterinary Services for his help in securing Kumri ponies for this investigation. Mr. R. T. Davis, Principal, Bihar and Orissa Veterinary College, has given me the benefit of his advice and constructive criticism at all times and has given me all possible facilities. For all this I am deeply indebted to him. Gratitude is also due to my colleague, Professor G. N. Roy Choudhuri who has placed all his clinical experience at my disposal and has carried out the treatment of an explosive type of Kumri in close consultation with me. The Veterinary Surgeons of the Province have shown a ready response to my questionnaire. Much is due to my assistants who have worked most patiently and enthusiastically throughout this investigation.

RAPID METHOD FOR EVAGINATING THE SCOLICES IN PARASITIC CYSTS*

BY

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Difficulty was being experienced in evaginating the scolices of parasitic cysts for the purpose of studying the suckers and hooks. Experiments were therefore carried out to find out a rapid method for this purpose. The cysts used for these experiments were *Cysticercus tennuicollis* and *Cysticercus bovis*, and the following methods were tried (1) Application of pressure to the caudal vesicle, (2) keeping the cysts in physiological saline at room and incubator temperatures, (3) keeping the cysts in diluted bile (obtained from a carcass) both at room and incubator temperatures, (4) keeping the cysts in dilutions of sodium taurocholate at room and incubator temperatures, (5) keeping the cysts in solution of sodium glycocholate both at room and incubator temperatures, (6) keeping the cysts in Ringerlocke solution at both room and incubator temperatures.

The pressure and Saline methods were found to be unsatisfactory. With Ringerlocke solution at incubator temperature (37°C) evagination occurred after a long time (30-48 hours) with diluted bile the evagination was more rapid and certain; with glycocholate the evagination was less rapid than with bile; with sodium taurocholate however the evagination was most rapid and the time taken seemed to vary with the concentration.

From these experiments it would appear that surface tension plays some part in the process of evagination under natural conditions.

* Abstract of an article read before the 20th Session of Indian Science Congress, Patna, 1933.

DISCOVERY OF THE CAUSE OF NASAL GRANULOMA PRELIMINARY REPORT.*

BY

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The Etiology of Nasal Granuloma in Cattle has engaged the attention of Veterinary Research Workers for the last 10 years or so. Different explanations have been given from time to time but the most plausible case has been made out by Prof. Krishnamurti Ayyar against an "Actinomyces like fungus" which is alleged to be present in the granulomatous growths seen in the nasal cavities. Work carried out at this Research Laboratory has however shown that the Actinomycotic theory is no longer tenable. As a result of the discovery of sections of schistosomes during histological examination of the growths, of the discovery of actual parasites in the fixed growths and during post-mortem examination, and lastly of the discovery of the characteristic spindle shaped eggs and ciliated embryos (miracid) in direct cover glass preparations of the nasal discharges from all affected animals, it is now announced that Nasal Granuloma in Cattle is a form of Schistosomiasis and that the species of schistosome responsible for the condition is probably *Schistosoma spindalis*, Montgomery (1906). This Schistosome theory explains most satisfactorily the various observations made in connection with this disease, namely its regional and seasonal occurrence, the nature of the lesions, the unsuccessful attempts of previous workers at direct transmission and finally the uniformly successful treatment with tartar emetic.

ACIDFAST INFECTIONS IN CATTLE AND THE IMPORT OF THEIR RELATIONSHIP IN DIAGNOSIS.*

BY

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Temporary Veterinary Research Officer, Imperial Institute
of Veterinary Research, Muktesar.

In connection with certain experimental work, two bullocks, which were found to be infected with John's disease as a result of testing with Avian tuberculin and examination of rectal smears were brought up to Muktesar from Bihar in 1930. After a

* Abstract of an article read before the 20th Session of Indian Science Congress, Patna, 1933.

sojourn of one year at Muktesar, these two animals were destroyed for detailed *post mortem* examination. The result of examination of the tissues by culture, animal inoculation and histological examination showed them to be definite cases of tuberculosis, the original diagnosis of John's disease being still confirmed by the specific organisms in bowel smears in one case only. A further case was provided by the Army Remount Depot, Mona, in which a bovine was confirmed to be affected severely with both organisms since the lung lesions were definitely of miliary tuberculosis and the intestines were unmistakably affected with John's disease.

Although reports on double infections such as these are not at all rare in the literature, the general belief seems to be that these are quite infrequent in occurrence. The findings in these cases have been discussed, since these conjoint infections may be a disturbing factor in the correct interpretation of the diagnostic tests. The properties which this important group of organisms has in common, such as staining affinities, morphological features, cultural requirements, and reaction to avian tuberculin have been considered, to interpret if possible the frequency of double infections, such as the above cases.

HISTOPATHOLOGICAL STUDIES ON A CASE OF HELMINTHIC GRANULOMA OF THE EQUINE SKIN.*

BY

CAPT. S. C. A. DATTA, M.R.C.V.S.,
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of Veterinary Research, Muktesar.

The results of histopathological studies on what is believed to be the first case of helminthic granuloma of the equine skin to be discovered in this country are recorded in the paper. From an analogy with the findings in related conditions such as *Summer sores* in Europe, *Esponja* in Brazil, in which a verminous habronemic origin has been generally accepted, *Bursati* in India has been suspected to be due to a species of *habronema* (Sen, 1927) but confirmation has been consistently not forthcoming. The material for the present studies was provided by a specimen of tissue, removed from the neck of a horse and forwarded as *Bursati* lesions from Ferozepur. The histological findings in this case are of great interest, for, apart from the usual characters of *Bursati* tissue, namely, an inflammatory granulation tissue associated with pronounced eosinophilia, the capillaries

* Abstract of an article read before the 20th Session of Indian Science Congress, Patna, 1933.

and larger vessels have revealed a severe thrombo-angiitis with the larvæ of a nematode worm enclosed in the thrombus material. The sequence of events in the development of individual lesions has been studied. The most outstanding and fundamental changes have been observed in the blood-vessels, the two extreme pictures of the lesions being a mild endothelial lesion and a pronounced "phlebolith" formation. The changes in this case at least were due to an infection contracted from internal sources since the blood-vessel lesions in general were noticed as advancing from inside out and because the parasites were invariably restricted to the inside of intact vessels.

Expert helminthological opinion was obtained from Mr. G. D. Bhalerao, M. Sc., who was inclined to consider certain spine-like processes on the worm as the striations or ridges characteristic of habronema larvæ.

ACTINOMYCOSIS IN A BUFFALO HEIFER.*

BY

CAPT. S. C. A. DATTA, M.R.C.V.S.,

*Temporary Veterinary Research Officer, Imperial Institute
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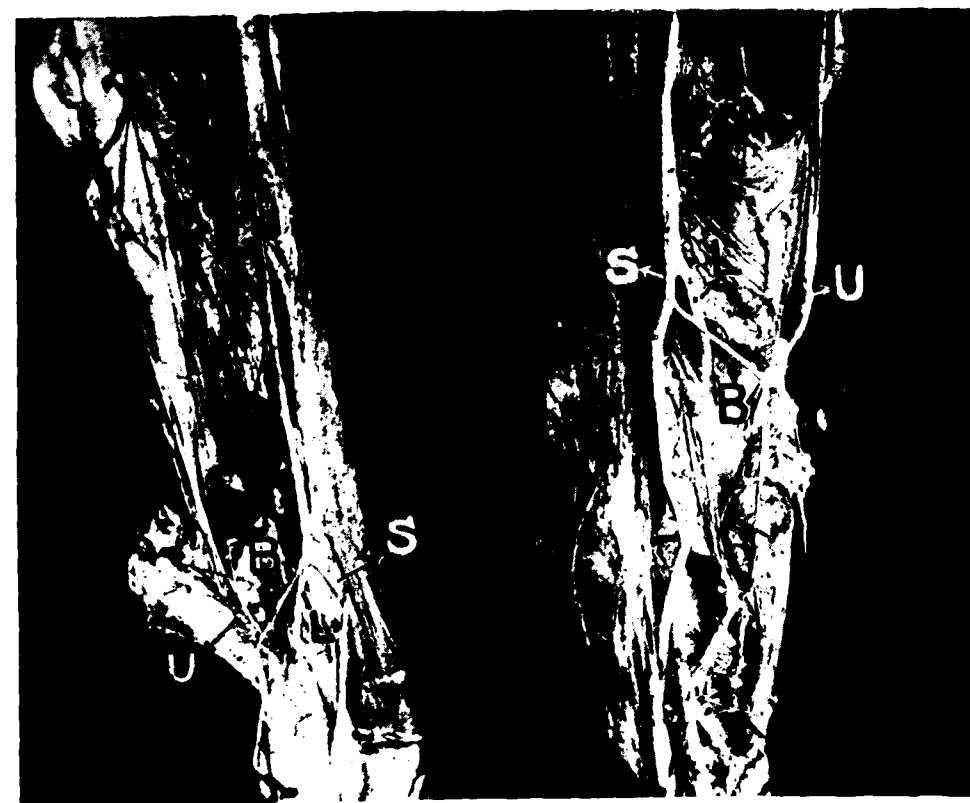
The subject of actinomycosis has received very little scientific attention amongst Veterinarians in this country and the general belief has been that the condition is not at all frequent. Although certain intractable diseases of animals in India such as Bovine Nasal Granuloma, Bursati and Bovine Lymphangitis were ascribed from time to time to streptothrix organisms, reports on genuine cases of actinomycosis of animals have been very few indeed. Pease (1891) described an outbreak amongst 11 buffaloes of various ages in the Punjab and Krishnamurti (1927) describes a growth on the shoulder blade of a buffalo and another in a bovine.

The present case concerns a buffalo heifer of Delhi breed belonging to a resident of Hyderabad, Sindh. The growths in this case were situated on the parotid glands of both sides of the neck, which were surgically removed and the case treated with Potassium iodide with apparent success. Histological examination revealed gram-fast mycelia in the centre of the "ray fungus" colonies.

This case has been considered as worthy of report since actinomycosis in the buffalo has not been described before, apart from the two reports mentioned above and in order that the attention of field workers may be drawn to the occurrence of this condition in India.

*Abstract of an article read before the 20th Session of Indian Science Congress, Patna, 1933.

Plate No. IX.



C. Normal.

A. Variation.

L. Large metacarpal artery.
S. Small metacarpal artery.
U. Ulnar artery.
B. in A. Branch of S joining U.
A in C. Branch of L joining U.

Anatomical Section.

SOME PECULIAR ANATOMICAL FINDINGS IN THE HORSE.

By

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(Continued from page 122, No. II, Vol. IX.)

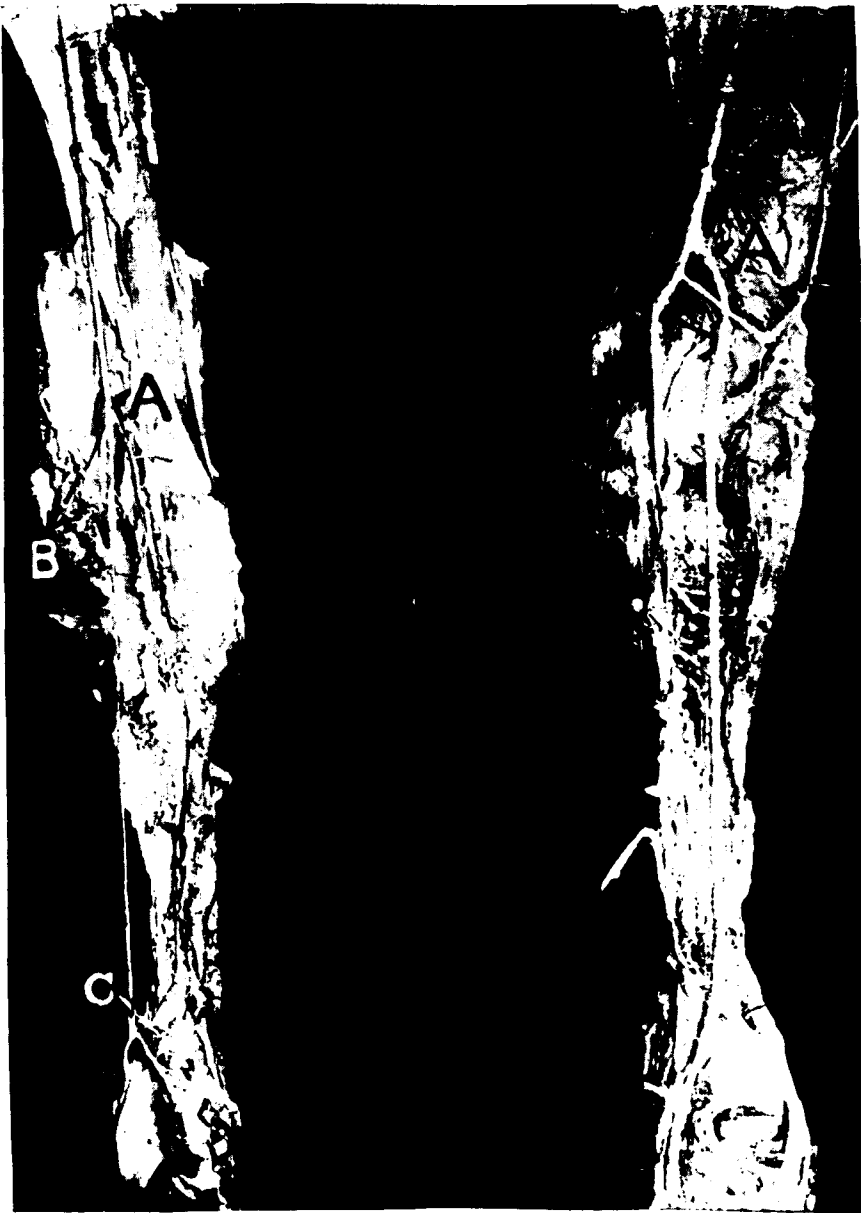
8. *Branch from the small metacarpal artery helping the formation of the supra-carpal or the superficial palmar arch*:—This arch is usually found formed by the anastomosis of the ulnar artery with a branch from the large metacarpal artery immediately after its origin from the posterior radial artery or from the posterior radial artery itself. But in the subject dissected on 25-10-29, this arch in the right fore limb (horse) was found formed by the anastomosis of the ulnar artery with a branch from the small metacarpal artery (Plates IX and X). The formation of this arch in the left fore of this subject was found normal.

9. *Want of the usual collateral branches of the large metacarpal artery*:—The large metacarpal artery has usually two unnamed branches. The first comes off at its (large metacarpal) origin from the parent vessel (posterior radial) and joins the termination of the ulnar artery to form the supra-carpal arch. The second unnamed branch is given off from the large metacarpal at or near the point of its bifurcation into two digital arteries and it then divides into branches which ascend to anastomose with the interosseous metacarpal arteries. In the right fore of the subject dissected on 25-10-29, the two unnamed branches referred to above were wanting. A branch from the small metacarpal artery anastomosed with the termination of the ulnar artery and formed the supra-carpal arch (Plate X.)

A branch from the external digital artery took the place of the second unnamed branch of the large metacarpal artery. It is thus seen that in this particular subject and that only in one of the fore limbs the large metacarpal artery was not found detaching its usual branches.

The large metacarpal artery of the left fore limb of this subject showed the two usual unnamed branches.

10. *An additional branch on the digital artery*:—The digital arteries usually begin to give off collateral branches at the back of the digit but not above it. But in the subjects dissected on 14-10-26,



A. A: Large metacarpal artery.
B and C: Branches of large metacarpal artery.
B and C are found wanting in A.

26-10-26, 22-9-27 and 25-10-29, external digital arteries of both fore limbs of each subject showed an additional branch immediately after its origin from the large metacarpal artery (Plate VII-A). This branch ascended, branched and anastomosed with the interosseous metacarpal arteries. In all the subjects in which this additional branch of the external digital artery was met with, the lower unnamed branch of the large metacarpal artery was wanting.

The digital arteries and their collateral branches in the hind limbs of these subjects were found normal.

General Articles.

PIROBLUE IN THE TREATMENT OF CANINE PIROPLASMOSIS.

BY

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The proper investigation in finding out the parasites of Canine Piroplasmosis and its successful treatment is long felt by many of our Veterinary practitioners. This disease is prevalent in Bengal mostly during summer and rains and the infection is conveyed by two kinds of ticks, viz. "*Rhipicephalus sanguineus*" and "*Dermacentor reticularis*" and in 10 to 20 days after tick bites, there is a rise in temperature followed by emaciation, anæmia, icterus, and in some cases cerebral symptoms. Various medicines have been tried for the treatment of this disease viz., Sulfarsenol, Tryparsomide, Novarsinobillon, Trypanblue, Atoxyl, S.U.P. 36, Quinoplasmoquine, Sodium antimony, etc., and we have very recently experimented on Piroblue in the treatment of Canine Piroplasmosis and we have obtained very good results. In this article I shall mention the following cases from my record book:—

Case No. 1:—An Alsatian pup, 6 months old, admitted in the Dog Ward of this College with the history that the pup was keeping a high temperature for over a week ranging from 104° F. to 106° F. The pup was not keen on its food and was very weak and emaciated and his visible mucous membranes were pale. His *faeces* were stained with blood and mucus and his urine was high coloured. The pup was infested with ticks and the examination of blood confirmed our diagnosis of Canine Piroplasmosis. 1 c.c. of one per cent. solution of Piroblue was given intravenously when the pup had a temperature of 105° F. The next day the temperature was found

to be 103° F. On the third day 2 c.c. of the solution was again administered, and the temperature came down to normal on the following day. The appetite returned to some extent and light nourishing food was offered. General improvement commenced, the animal's appetite improved every day and with the nourishing food the pup recovered and was sent back to the owner within 10 days.

Case No. 2:—An Airedale dog, three years old, was admitted in the Dog Ward with the history that the owner purchased him very recently from a gentleman while the animal was fully infested with ticks and was keeping an irregular temperature ranging from 102° F. to 104° F. The general condition of the dog was very poor and very recently he had bleeding from the nose. 1 c.c. of Hemostatic serum was given immediately intravenously to check the bleeding. The examination of the blood revealed *Babesia canis*. 2 c.c. of one per cent solution of Piroblue was injected intravenously while the dog had a temperature of 103° F. and on the next day the temperature came down to 102° F. On the fourth day the treatment was repeated and on the following day the temperature dropped to normal. This dog had relapse after a week and 3 c.c. of the solution of Piroblue was given intravenously. The blood was found free from parasites and the temperature remained normal for the next fortnight, when the dog was discharged while it was in the convalescent stage.

Case No. 3:—A Spaniel dog, five years old, was admitted in the Dog Ward with the history that the dog was infested with ticks for a long time. The dog had still many ticks on its body when he was brought to the Hospital.

It kept a temperature ranging from 102° F. to 104° F. for about a fortnight before he was admitted as an inpatient. His liver and spleen were much enlarged. The mucous membranes were pale and there was also œdematous swellings on the extremities. Diagnosis of Piroplasmosis was confirmed on microscopical examination of the blood. It was given an injection of 2 c.c. of the solution of Piroblue when its temperature was 103° F. but the temperature remained unchanged. On the 3rd day it was again injected with 3 c.c. of the solution and on the following day the temperature was 102° F. On the sixth day another injection of 3 c.c. of the solution of Piroblue brought the temperature down to normal. The dog was perfectly alright after some little time and it was discharged cured.

Case No. 4:—A Fox Terrier dog, six years old, was admitted with the history that the dog declined to take any food for over a week, and that it had diarrhœa and high coloured urine. The dog

was keeping a high temperature ranging from 103° F. to 105° F. The animal was weak and emaciated and its spleen and liver were much enlarged. Several ticks were found on the body and on examination of blood Babesia canis was found. An injection of 2 c.c. of one per cent. solution of Piroblue was given when the temperature was 104° F. Next day morning, the temperature came down to 103° F. On the fourth day the dose was repeated and the temperature came down to 102° F. On the eighth day, another injection of 2 c.c. was given, and since then the temperature was found to be normal till the dog was discharged a fortnight later.

Prevention of the disease:—As one attack of this disease does not confer any immunity and the animal is liable to reinfection through tick bite, we should always try to exterminate ticks from the kennels and also from adjoining lands. Dogs should always be deticked. Bathe the dogs with Pot. Sulphurata, Soapex, Pulvex or Kurmange, which will prevent to some extent, ticks getting on to dogs.

Concluding remarks:—Piroblue is prepared by the Sandoz Chemical Works in Switzerland and the dose is 4 c.c. of a one per cent. solution in canine practice. The dose may be repeated once in two or three days, and according to the condition and progress of the patient 3 to 4 injections may be given intravenously. In case of tick fever in dogs, some other complications may arise and these should be treated accordingly along with the injections of Piroblue. Besides this, the question of careful nursing should not be forgotten. In combating anemia in case of tick fever, Collosal Ferremalt, Collosal Calcium C, Vitamin D, Livadex or minced raw liver has proved useful.

Acknowledgment:—I wish to express my thanks to Major Hodgins, M.R.C.V.S., R.A.V.C., D.A.D.V.S., for kindly supplying me with Piroblue for use.

MILK IN RELATION TO PUBLIC HEALTH.*

By

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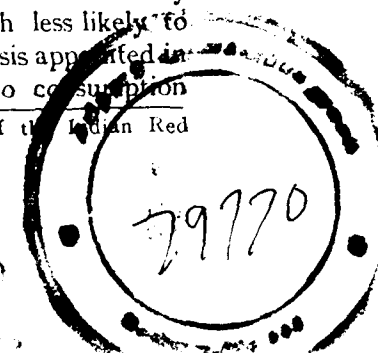
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"The Public Health is the Fountain upon which rests the happiness of the people and the welfare of the nation."—*Disraeli*.

Fresh unchanged milk obtained under scrupulously clean and hygienic conditions from healthy and properly fed cows furnishes a food at once complete and thoroughly wholesome for both children and adults. It contains all the essential nutritive constituents of a complete food in most suitable proportions and as such approaches to being a perfect food nearer than any other single natural food. In infant feeding it is not, however, a perfect substitute for human milk to be used with impunity in its natural state without any previous modification, yet it constitutes the best substitute. Physiologists and medical men all the world over recognise in it the one most indispensable food for children and invalids, because it supplies in a particularly convenient and usable form materials that they need.

The necessity and importance of milk as an article of diet is realised by all. What, however, is not realised by the general public in India is the importance that should be attached to the milk being clean. However valuable and rich in nutritive elements milk may be as a food in itself, yet, when it is carelessly produced, handled and distributed under uncleanly conditions, it may prove to be a source of serious danger to public health. Milk, even though fresh and clean looking, when obtained from an unhealthy, diseased or improperly fed animal frequently proves deleterious for infants, and is sometimes so for adults. And, when milk gets contaminated with large numbers of the ordinary saprophytic bacteria, which may have gained access to it directly or may have developed from those gaining access to it during the milking process or during its subsequent handling and storage, it becomes distinctly dangerous for infants, more particularly so in hot weather, but not very appreciably so for adults. It does not, however, mean that milk so affected is absolutely harmless for adults; it remains comparatively less harmful for them. Further, milk infected with the germs of bovine tuberculosis is very apt to transmit tuberculosis to children, but is much less likely to infect adults. The Royal Commission on Tuberculosis appointed in 1911 established that man is notably susceptible to consumption.

* Reprinted from "The Red Cross" the Official Journal of the Indian Red Cross Society. Vol. VI. No. 4 Oct. 1932.



132.9.3

communicated from the cow. The following extract from their report will not be without interest :—

"The evidence which we have accumulated goes to demonstrate that a considerable amount of the tuberculosis of childhood is to be ascribed to infection of the bovine type transmitted to children in meals consisting largely of the milk of the cow.

".....Bovine tubercle bacilli are apt to be abundantly present in milk sold to the public when there is tuberculous disease of the udder of the cow from which it was obtained. This fact is, we believe, generally recognised though not adequately guarded against. But these bacilli may also be present in the milk of tuberculous cows presenting no evidence whatever of disease of the udder."

Further, man is susceptible to several of the specific diseases of cattle, including tuberculosis, foot-and-mouth disease, anthrax, cowpox, rabies, etc. These diseases of cattle may be directly transmissible to man through the agency of milk. The milk of cows affected with these diseases should, therefore, be regarded as highly dangerous.

In foot-and-mouth disease milk secretion is reduced to a considerable extent; the milk becomes thin, a little slimy, shows sediment after standing for some time and coagulates on boiling. Even a trace of the serum from the vesicles of the disease in cows renders large quantities of milk infectious. If infected milk is ingested, it produces headache, nausea, vomiting, diarrhoea and vesicles may appear on the lips, mouth, nose, etc. Such milk must be excluded. Boiling the milk, however, destroys the virus of the disease. In cases of anthrax, fortunately the milk secretion is suppressed, and as such the question of using the milk from a cow affected with the disease does not often arise in practice. The milk, if secreted at all, is very little in quantity and is very much changed in its appearance. It becomes yellow, slimy and sometimes bloody with a bitter taste. Anthrax bacilli are passed out through the udder only in very advanced stages of the disease, but the chances of the milk becoming secondarily infected through the discharges and dung are very great. Milk from a herd in which anthrax is present must, therefore, be regarded as highly dangerous. Cowpox is a disease which manifests itself by vesicles and scabs on the cow's teats, and portions of these undoubtedly fall into the milk during the process of milking. The disease is closely related to smallpox of man. The milk during the course of the disease in the cow becomes thin, rather bluish and may even be nauseating. The disease may be transmitted by the milkers from cow to cow or through infected fodder and stalls, and from the cow to man through milk. If infected milk is given to children they may become affected with eruptions

on the face. The virus of cowpox is destroyed at temperature of 48 degrees Centigrade. Heating the suspected milk to this temperature renders the milk safe. Cattle often get bitten by rabid dogs and become infected with the virus of the disease. Milk from such cows should be regarded as dangerous and excluded from use.

Furthermore, septic local affections like that of the udder (mastitis—inflammation of the udder), intestines (enteritis), uterus (metritis), etc., and many other suppurative conditions of our milch animals are caused by bacteria which are also pathogenic to man. In these affections milk often becomes unpalatable, for instance in cases of gastroenteritis, diarrhoea, dysentery, etc., milk from cows so affected becomes bitter, saltish or otherwise unpalatable. If milk of cows suffering from mastitis is partaken of by man, it is liable to set up sore throat and diarrhoea in them.

Again, milk may act as a 'carrier' of the causal organisms or virus of certain dangerous specific diseases of man. Outbreaks of typhoid fever, paratyphoid fever, dysentery, cholera, septic sore throat diphtheria and scarlet fever have often been traced to infected milk supplies. These diseases are collectively known as "milk-borne diseases" and are communicated to milk through human agencies only. Cows are not susceptible to these diseases. The milk-borne epidemics are generally explosive in character, a large number of cases occurring at about the same time, and the disease is found to be limited to those families only which have received milk from a certain dealer.

Typhoid fever, paratyphoid fever, dysentery and cholera are essentially intestinal diseases of man, and faeces and urine of patients or 'carriers' are the chief sources of infection. In the dissemination of these diseases in man infected milk stands second to water. The causal organisms thereto may gain entrance into milk by a number of ways: by contaminated water that has been used to wash milk vessels or to dilute milk fraudulently, by flies carrying infective material on their legs, or by convalescents of the diseases working as milkers or otherwise handling milk. The greatest danger is from those persons who carry disease in a mild form, the so-called cases of "walking typhoid, paratyphoid, dysentery or cholera."

Diphtheria bacilli are present in the mouth and nasal cavities of the persons affected with the disease, and may gain access to milk by their coughing, sneezing, loud shouting or direct contact. Septic sore throat epidemics have often been also traced to the infection of milk from cows suffering from streptococcic mastitis.

When an outbreak of any of the afore-said milk-borne diseases occurs, the suspected milk supply should at once be stopped, proper

care of the patients taken, their faeces and urine properly disposed off and medical help immediately sought.

From the foregoing statements, it is clear that the relation and effect of disease in cows upon milk and subsequently upon the consumers is very profound and that public health is greatly influenced by the purity or impurity of milk supplies. The pollution of milk in the majority of cases is entirely due to the want of knowledge on the part of those who handle it. The contamination, or in other words, dirt and dust in milk, is not necessarily visible matter; it is dust accompanied by bacteria or microbes. Milk, as has been mentioned before, is a fluid which contains all the essential constituents of a complete food, and as such it is also a very suitable food for bacteria, and herein lies the danger of milk. When bacteria, pathogenic or non-pathogenic, gain entrance into milk, they thrive and reproduce at a very rapid rate, and hence milk which gets infected with disease germs rapidly becomes a powerful and dangerous vehicle of contagion for disease.

Dirt and dust, the chief carriers of germs, may gain access to milk in a number of ways: dirty conditions of the milkers' hands and clothes; dirty conditions of the cow's flanks, thighs udder and teats; dirty methods of milking; dirty vessels; dirty conditions of the cow-shed, dairy and wash-house; dirty methods of transportation and storage of milk: flies, etc., etc. The cleanliness of the milk varies considerably according to the conditions under which the milk is produced.

The fact that milk may prove to be a source of great danger to public health, has led the health authorities in almost all Western countries to assume control of public milk supplies. This control is partly in the hands of medical men and partly under veterinarians and is strengthened by suitable legislation by the State or Municipal authorities. India is still very backward in this respect: very little has yet been done to bring the milk industry of the country under proper control and supervision. Whatever amount of milk inspection work is being done at present, is carried out by incompetent persons whose chief instrument of inspection is a lactometer. The difficulties in their way are also manifold. There are few food problems which are so complex and beset with great difficulties as that of furnishing a cheap and wholesome milk supply to consumers. This is particularly true in India where the general public, milkers, vendors of milk and others connected with the trade are all illiterate and primitive in their knowledge of scientific matters. The cattle are ill and underfed; they are housed under notoriously insanitary conditions; cleanliness which of so great an importance in the production, handling and distribution of milk, is practically unknown; useful and effective

legislation is lacking; there is no general agreed policy—national, municipal or private to meet dangers of tuberculous and other kinds of harmful milk; consumers are indifferent towards obtaining a wholesome and clean supply of milk.

Any control must necessarily be binding and would mean expenditure. It would control the characters of land used for pasturage, the cultivation of fodder; it should determine the construction, location, ventilation and drainage of cattle-sheds and other necessary buildings; it should provide for abundant supply of pure and clean water; it must maintain cleanliness in the sheds; it must provide for the registration of milch animals, their periodic veterinary inspection to ensure a healthy condition of the herds; it must regulate the feeding of animals, the collection, handling, examination and distribution of milk; employees in the trade must be periodically examined medically to ward off the dangers of dissemination of the so-called 'milk-borne' diseases, etc., etc. In short, the solving of the problem of giving to the people a safe milk supply requires that the conditions at the seat of production, on the transportation lines, at the stores and in the houses be correct in all essentials.

Clinical Articles.

FOWL PARALYSIS (WRY NECK).

BY

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A case of "Wry neck" was noticed on 9th October 1932, in a hen at Andheri, a suburb of Bombay. For the sake of elucidation the number, age and their breeds and the condition of the birds under which they are kept is given below.

Indian Aseel (game) two pairs, one pair 12 months old, and the other 5 months.

Minorca Cockrel 1.

Nondescripts 30 (from 2 months to 1 year.)

Majority of the birds are home reared. They live more or less in semi-wild condition, running about over two acres of land the whole day and come to roost under a shed at night time. Some of them perched on the trees outside instead of in the shed.

NATURE OF THE GROUND.

Red earth, leaf mould, pebbles, flint, plenty of bushes and trees. Animal food and green stuff is in abundance. The land is not cultivated.

FEEDING.

Crushed dari seeds and legumes given *ad lib* morning and evening. Meat is given occasionally. No oyster shells or stone grit is supplied. A white non-descript pullet age 9 months was locally purchased in the month of May about hatching the eggs. When the hatched out chickens were 1932 for month old, in the middle of July, this hen started laying about one of six eggs per week with seven days' break in the rate at the rate of September. After that it started laying again at the beginning of seven eggs per week.

The weight of the eggs was slightly below two ounces, which is an extraordinary size for a hen of the common Indian breeds.

The hen seemed to be in good condition as regards the body weight and plumage; but all of a sudden on October 9th it was found standing in a corner and a bit drowsy looking. It was frightened it ran away and joined the other chickens. On the morning of October 10th, it was seen standing with drooping wings and wry neck, the neck having twisted to the right side. When approached it started walking with steady gait, but could not run fast and was easily caught.

Some injury to the neck was suspected; but on the examination of the neck and head no signs of injury could be seen. The neck could be easily turned to its normal position without causing any pain to the bird.

Microscopic examination of blood for spirochete and fowl cholera gave negative results.

In the evening the neck was held twisted to such an extent that one eye was directed upwards and the other towards the ground. In spite of the wry neck co-ordination in locomotion was not impaired; and it could feed from the ground by bringing the head down, slantwise.

Next day the condition got worse and the feathers of the head and neck got dirty owing to dragging the head on the ground. All the same it could walk and peck at the food every now and then.

It may be worth mentioning that during these few days of illness it laid two eggs of usual size and shape.

The case appeared quite extraordinary, because partial or complete paralysis of the legs and turning in or out of toes which are considered to be the usual accompaniments

of fowl paralysis were absent and the predominant symptom was the wry neck, and slight drooping of the wings. The symptoms of fowl paralysis under intensive poultry farming may be due to various causes such as fermented food, deficiency of vitamin or even excess of vitamins (Vitamin B), internal parasites and absence or lack of indigestible grit (vide Veterinary Journal No. 6 and 7, Vol. 88). In some cases it is considered to be an inoculable disease.

In this particular case I could not hold the above mentioned causes responsible for the wry neck. The fowls had extensive ground to roam about, and they had access to plenty of flint, grit, green stuff and insects and worms, so the idea of vitamin deficiency and lack of grit was eliminated.

I could not hold the internal parasites responsible for these symptoms, because other chickens which were killed from time to time did not harbour many parasites in their digestive tract.

Considering the nature of the rum and the number and size of the eggs laid by this hen I was inclined to believe that it was due to deficiency of calcium. On this presumption it was decided to try calcium therapy.

Having still in mind the possibility of its being an infectious disease and being desirous of reaching some definite conclusion, one healthy pullet was given $\frac{1}{2}$ c.c. of blood from the affected fowl intravenously and another subcutaneously on the evening of 11th October 1932.

All the birds were allowed to mix with the affected and the inoculated birds. The same evening the sick fowl was given intravenously 4 c.c. of a 5 per cent. solution of calcium gluconate.

The temperature of the sick bird was 105° F. while that of a healthy one was 105.8 F. Next morning the sick bird showed signs of improvement as regards drooping of the wings and the extent of wry neck. In the evening the bird showed decided improvement, the bend in the neck was less by half and it could feed from the ground quite easily. During the next two days it made an uneventful recovery and it started laying again from 1st September 1932.

Till the day of writing this article the inoculated hen continues to be in good condition and is laying. The other fowls as well are healthy.

CONCLUSION.

On the strength of a single observation perhaps it is too presumptuous to conclude that fowl paralysis is brought about by calcium deficiency.

However, as this particular case decidedly recovered after calcium administration I infer that this condition may have been due to Hypocalcemia.

AMPUTATION OF PENIS IN A BULL BY LIGATION.

BY

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A Grey Bull belonging to Mr. K.S. was admitted for paraphymosis at the Patna Veterinary College Hospital on the 16th July 1932, and discharged on the 3rd August 1932.

Condition of the animal :—The bull developed paraphymosis and remained in this state for over a fortnight. He was treated elsewhere and later the owner was advised to admit the animal here. The protruded portion was 18 inches long and was oedematous; there was laceration due to injury caused by striking of the organ by hind legs. As no bandage was put on, the penis looked swollen, wounded and a filthy mass full of mud, dirt, etc.

Treatment adopted :—After removing the damaged tissues measures were taken to reduce the condition, and when this was found to be futile, amputation was decided on.

Procedure of the operation :—The bull was cast, a metal mare catheter was introduced into the urethra and a rubber tourniquet was tightly applied just over the healthy portion of the base of the penis. The whole of the protruded portion measuring about 14 inches was below the tourniquet and the catheter was kept in position by threads passed through the two rings at its ends tied over the back and a square piece of bandage was placed below to support the organ and the catheter.

The bull experienced no trouble in passing urine as the catheter was included in the tourniquet. A careful watch was kept to see the flow of urine. On the 5th day after the application of the tourniquet, the protruded portion below the tourniquet with the catheter fell off and 4 inches of the protrusion immediately returned into the sheath.

The wound of the penis was subsequently washed with Bin Iodide Mercury lotion (1 to 5000) and a suspensory bandage was placed over the sheath to keep the part clean and free from flies. At no time during the process of healing did the bull give evidence of pain or difficulty in urinating and in two weeks the wound healed and the bull was discharged cured.

By this method there is no danger of hæmorrhage, no inconvenience caused in micturition, no resultant stricture produced and there is no necessity of an anæsthesia during the operation.

DISTOKIA IN A MARE: ANTERIOR PRESENTATION, CARPEL FLEXION OF ONE LIMB.

BY

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Subject :—Sunama, Chestnut Indian Mare, ten years.

History :—The mare was a good and successful racer; and having finished with racing, she was taken into the mares' section as a brood mare on 5-7-29. She gave birth to a filly in 1930. On the 12th June 1931, she was crossed and held. On the 30th April 1932, or 322 days after service, she showed labour pains at about 9 P.M. Unlike before, she took a pretty long time, and at last a limb of the foetus appeared. I gave the mare her own time, having asked all the attendants to keep away from her sight. The labour pains increased, but no avail. Having satisfied myself that it would not be a normal delivery, I decided at 11-35 P.M., to assist her.

Examination :—The mare was in a recumbent position, and was thus secured. Introducing my hand, I found that the limb that was partly presented was the fore limb, because the knee and the fetlock were bent in the same direction. Further up in the passage, I felt the head and the other limb bent up.

Delivery :—The presented fore limb was secured by means of a cotton rope and an assistant was directed to keep it just right enough. The head and the flexed limb were pushed well back, and when there was a little room inside, I examined if the foal was alive and it was found to be dead. Keeping the foetus pressed back by means of a crutch, I introduced another rope with a slip noose, over the pastern of the flexed fore limb, and keeping the palm of my hand over that hoof, I pulled the pastern to straighten the limb, keeping the palm all along over the hoof to prevent any injury to the mother. This was carefully done in the intervals of the labour pains. The head was also brought to the normal position over the limbs, and with gentle traction to the head and fore limbs, the foal was delivered along with the after-birth. The mare was then given an uterine douche with Pot. Permanganus solution, and kept in a quiet box with plenty of bedding, green food and fresh water. She was also given a stimulant draught containing Spts. Ammon. Aromaticus. The douching was continued for a few days and she was given an electuary containing Quinine Sulph and Camphor to act as an ecboic and antiseptic.

INCIDENCE OF HELMINTH PARASITES IN PARIAH DOGS.

BY

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The present paper is the outcome of an investigation on the incidence of different types of helminth parasites in pariah dogs.

The investigation was undertaken under the direct guidance and instructions of Captain S. G. M. Hickey, M.R.C.V.S., I.V.S., Director, Civil Veterinary Department, United Provinces, Lucknow, and the material was obtained from the Lucknow Municipality, as a result of an arrangement with the Medical Officer of Health, for whose co-operation and help the writer is thankful.

The total number of dogs examined was fifty and the frequency of the different types of worms found on autopsy, are stated below:—

<i>Serial No.</i>	<i>Kind of worm.</i>	<i>Number of dogs affected.</i>	<i>Percentage.</i>	<i>Remarks.</i>
1	<i>Ancylostoma caninum</i>	49	98%	
2 (a)	<i>Dipylidium caninum</i>	27	54%	
	(<i>T. cucumarina</i>) 11			
(b)	<i>T. serrata</i> 8			
(c)	<i>T. marginata</i> 7			
(d)	<i>T. coenurus</i> 1			
3	<i>Toxacara Canis</i>	3	6%	
4	<i>Spirocerca Sanguinolenta</i>	7	14%	Found free in the oesophagus in 4 dogs and in tumours attached to the walls of the oesophagus in 3 dogs.

A CASE OF TUBERCULOSIS IN A DOG.

BY

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AND

R. VENKATARAMA AYYAR G.M.V.C., AND M. NOOR AHMED, G.M.V.C.,
Pathological Assistants.

Subject:—A bitch, aged 6 years, in-patient No. 35, belonging to Mr. T. S. R.

History:—The animal was admitted for treatment as an in-patient at the Madras Veterinary College Hospital, on 5-4-1931, with the complaint that it was getting very thin gradually with sores all over the body which she kept on scratching. The clinical diagnosis was shown as worms and skin disease. The animal died on 17-4-1931 at 3-20 P.M.

Gross pathology:—The autopsy was conducted the same day at 4 P.M. The liver was found to be yellowish brown in colour and harder than normal. It presented numerous miliary tubercles when cut into. The hepatic lymphatic gland was very much enlarged and caseated (Fig. 1). Both the kidneys were yellowish in appearance and showed scattered miliary tubercles in their parenchyma (Fig. 2). Both the lungs presented caseating nodules and each about the size of pepper (Fig. 3). The mucous membrane of the intestines showed catarrh and revealed pin-point hæmorrhagic spots in places with a few *Diplidium caninum*. The stomach and intestines revealed no ulceration. The messenteric lymphatic glands were not enlarged.

The smears and sections made from the liver, hepatic lymphatic gland, kidneys and lungs revealed acid fast bacilli indistinguishable from tubercle bacilli. The tubercle organism could not be isolated to determine the type, as the materials were preserved in formalin. As the messenteric lymphatic glands were not enlarged, no microscopical examination of the same was done.

The case is interesting as this is the first case of tuberculosis in a dog recorded in the Madras Presidency, as far as we are aware.



Fig. 1. Liver showing enlarged and caseated lymphatic gland (A)

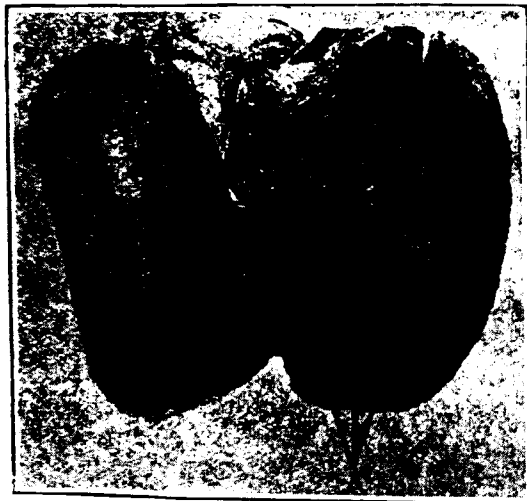


Fig. 2. Kidneys showing scattered miliary tubercles (A)



Fig. 3. Lungs showing Miliary tubercles A.

TREATMENT OF CHOREA AND PARALYSIS IN THE DOG BY SULFARSENOL.

BY

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Patient :—A non-descript terrier, aged about ten months.

History:—This animal had recently suffered from distemper, which developed as a sequel chorea and later paralysis. The Chorea affected the whole of the body, i.e., head, trunk and limbs and the fore limbs were paralysed. The dog could lift its head only for a few seconds when it would fall down again. Defæcation and micturition was performed in the recumbent position and the food was taken in the same position.

This state of things existed for over a month, when the practitioner in charge of the case recommended its destruction. The owner, a Parsi lady, did not agree to this, and wanted to give it a chance, bad as it was.

She brought the dog to me for advice. I told her that I wanted to try Sulfarsenol treatment in progressive doses. She agreed to this and brought the dog for treatment. When I saw the dog and its condition I felt that I had made a mistake in not recommending destruction but having suggested the treatment there was nothing else to do but to carry it out, and the result was amazing.

5th October, 1932. 1st injection 0.03 cc. No result.

6th	"	2nd	"	0.12 cg.	"
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8th	"	3rd	"	0.18 cg. Slight
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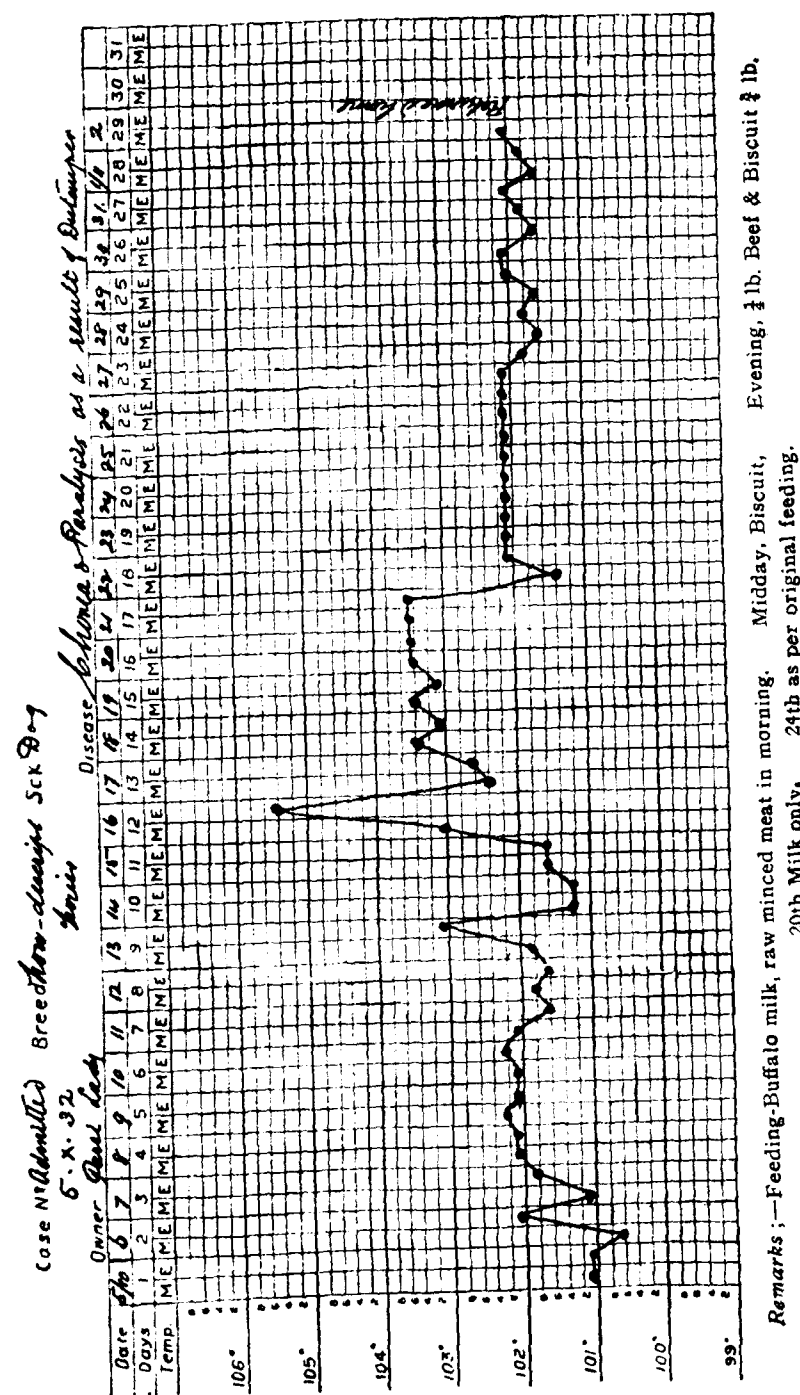
5th	„	3rd	„	0.15 cg.	Slight local reaction in the evening and the animal attempted to rise.
10th	„	4th	„	0.24 cg.	No reaction. Choreic movement worse particularly in the abdominal region.

12th „ 5th „ 0.30 cg. Animal showed some signs of improvement.

13th	„	Placed on his feet he can walk with assistance, but cannot rise without assistance.
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14th	"	Got up with slight assistance walked and micturated standing.
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15th	„	Can now stand without help for several minutes.
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16th	October, 1932.	Temperature 105.4°. Choreic movements less, later in the day the animal got up of his own accord and walked about without assistance.
17th	„ 6th injection 0.30 cg.	There is great weakness but the animal can rise of his own accord. Right hind and fore only showed choreic movements. The left side and abdomen showed no movements whatsoever.
18th		Choreic movement in right hind has disappeared to-day. Only right fore remains affected.
19th		Fæces inclined to be loose.
20th		Hæmaturia present. Gave saline diuretics.
21st		Continued diuretics.
26th		Doing splendid, can get up and walk well. Choreic movements toning down in right fore leg.
30th		Improving rapidly.
1st November		Choreic movement about the same in right fore.
2nd	7th injection 0.30 cg.	Going well, can run about a little. The animal was handed over to the owner so that it can have more freedom to move about. The owner was advised to bring it down weekly for injections.
9th	„ 8th injection 0.30 cg.	About the same.
16th	„ 9th „ 0.30 cg.	Right fore choreic movements much less, but showed up when the animal stands in one position for some time.
23rd	„ 10th „	Right fore remains about the same.
30th	„ 11th „	Not much improvement in the right fore.
8th December	12th „	The animal has improved generally, the movement in right fore is better.

The animal was discharged and the owner was informed that in course of time the movements in the right fore will disappear and no further treatment was necessary.

PARASITIC DYSENTERY IN BOVINES.

BY

S. SESHADHRI IYENGAR, G.M.V.C.,

Veterinary Assistant Surgeon, Chidambaram, Madras.

A peculiar kind of dysentery in cattle is observed in this place. During 1931, about 20 cases were treated during the months of January to November. During this year from July to the date of writing (October) some ten cases were met with.

Smears of samples of stools were submitted last year from some animals. Smears were negative. Fæces were declared to contain ova of Strongyles and Trematodes.

This year also fæces from one severe case were submitted and they were declared to contain ova of Strongyles and ova of flukes particularly *Schistosoma spindale*. The diarrhœa commences suddenly. There was no dung, blood clotted and mucus mixed diarrhœa. The animals became very much emaciated. Sometimes actual blood passes out.

I tried various kinds of treatment last year and the recovery was very slow.

This year, I started treatment from the beginning with oleo-ginous emulsions. The recovery was good and rapid. There was no mortality this year.

There were 3 deaths last year and I was able to conduct P. M. on one animal. Only gastro-enteritis was observed and fæces and ingesta were said to contain ova of Strongyles.

The peculiarity observed in this is that the affection commenced almost exactly in the same month.

PUERPERAL SEPTICÆMIA IN A BITCH.

BY

B. RAMIAH, G.M.V.C.,

Veterinary Assistant Surgeon, Parvathipur, Madras.

On 25-6-32 at 6 P.M., I was called to see a Spaniel Bitch which was labouring in agony after littering one pup. I hastened to the spot at once and found her lying prostrate with blood shot eyes and gasping breath. The abdomen was much enlarged. She gave birth to one pup at 11 A.M., from which time she had been suffering in that manner. On examination of the uterus I found one pup lying across the pelvis inlet in the dorso pubic position. This was set right and the pup gently extracted. A few more pups which could be easily reached were also removed. The pups in all now numbered five but the abdomen was still large and manipulation revealed the presence of some more. A warm antiseptic uterine douche was

given and the following mixture was repeated four times at intervals of two hours during the night.

R

Spts. Ammon. Aromat.	...	m. xx
Tr. Digitalis.	...	m. v
Liq. Ext. Ergot.	...	m. xxx
Acqua Chloroform.	...	oz. 1
Mft. mist. sig. every two hours.		

The exhaustion was also met by the administration of stimulant and nutritious drinks such as coffee, lactol, milk etc. By next morning she pupped four more all numbering nine by this time. This roused my suspicion to suspect some more pups which I did feel on palpation of the abdomen. The same mixture was repeated twice at intervals of two hours and at 12 noon by the aid of careful abdominal massage and slight interference two more pups were delivered. The pups now numbered 11. I then satisfied myself by further examination that there were no more.

In the evening the Bitch was very dull, unmindful of the pups, rapid pulse and breathing and the temperature rose to 105°F. The uterus was gently irrigated with 1 per cent. lysol solution which flushed out a piece of placenta. A saline enema was given and the following mixture was administered thrice during the night :-

R

Brandy	2 dr.
Quinine Sulph	3 grs.
Liq. Ext. Ergot	20 m.
Acqua Chloroform.	1 ℥.

The next day the temperature was 104°F throughout. There was no improvement in her general condition nor did she take care of the pups but drank a little milk that was offered to her. The uterus was douched thrice with warm lysol lotion, and a saline enema given twice during the day. Four doses of the same mixture were administered alternated with another four doses of a diaphoretic mixture. On the 4th morning there was not a bit of improvement in the temperature despite the above treatment. It stood still at 104°F. The above treatment having failed and realising the situation was one of sepsis I gave an injection of Anti Streptococcus and Staphylococcus Vaccine which to my surprise and satisfaction had the desired effect of bringing the temperature down to 102.4°F. in the evening. No medicines were administered but the uterine douche and saline enema were continued. The next day the dog kept up the normal temperature and made a good recovery thereafter.

Notice of Drugs.

TREATMENT OF COCCIDIOSIS OF CATTLE WITH METHYLENE BLUE (MLB) *

*Extract from an article by Amon Kowatsch,
Veterinary Surgeon.*

A severe epidemic of coccidiosis was observed among valuable cattle stocks in Gleisdorf. The outbreak started among the yearlings and took a very violent course. Painful stools consisting almost only of blood were passed on the 2nd and 3rd day. The animals were unable to rise and refused the fodder. Treatment with Carbo-Medicinalis, Tannoform and quinine proved to be without avail. In the meantime, in spite of preventive measures, the disease spread rapidly when at last Methylene Blue (MLB) was recommended to me.

Methylene Blue (MLB) (Tetramethyl-thionin-chloride) is easily soluble in cold and hot water with an intensive blue colour. It is manufactured by Messrs. Bayer-Meister Lucius and extensively used in veterinary surgery in 1 to 3% solutions or as a 1 to 2% powder for external treatment of wounds. Furthermore, on account of its bactericidal action, it is very useful in the treatment of infections of the gastro intestinal or the urinary tract. In the above mentioned cases of coccidiosis large quantities of a 0.4% solution were given to the animals as repeated rectal injections at body temperature 3 times daily. The quantity of the solution used for one injection amounted to $\frac{1}{4}$ of a gallon. Obviously, the administration was rather painful to the animals. So one has to take care that the enemata are kept for a few minutes at least.

Furthermore, every animal received 3 times daily 8 oz. of the 0.4% solution orally. On the 3rd day marked improvement set in. The animals fed readily; blood disappeared from the fæces which now showed a more solid consistency. Further enemata were stopped and oral treatment of Methylene Blue solution was continued for 3 more days only. Apparently the disease was cured after this treatment. However, after a few days' lapse, nearly all the animals relapsed severely. Blood was observed in the stools again. No further rectal injections were given. The treatment was continued only by peroral administration according to the above mentioned scheme. On the 3rd day again the animals were normal. However, to be on the safe side, peroral treatment was continued for further

* Manufactured by Messrs. Bayer-Meister Lucius, Leverkusen, Germany.

8 days. Relapses were not observed afterwards and complete cure was effected.

Conclusion: Methylene Blue (MLB) seems to be a reliable and cheap remedy for coccidiosis in cattle when given by rectal and oral routes as a 0.4% solution.

MALIGN-CATARRHAL FEVER.

Recent experiments of veterinary surgeons show that the well-known antimalarial remedy, plasmoquine,* has a reliable curative action in malign-catarrhal fever. For a single dose 3 c.c. of the 1% solution are recommended.

Furthermore, it is claimed in the literature that "Bayer 205" (Naganol)* acts surprisingly well in the same indication. Naganol is to be given repeatedly in intravenous injections. Dr. Ellinger (Germany) prescribes 1 gm. of "Bayer 205" for every 100 kilo of body weight, to be dissolved in 30 c.c. of distilled water. The injection is to be given into the vena jugularis and has to be repeated twice with one day's interval. The action was highly satisfactory. Other workers inject 5 to 6 gms. of Naganol (Bayer 205) (according to the body weight of the animal) as a total dose intravenously distributed over several days.

An important note on the treatment of paralysis of hind legs as a sequelæ of canine distemper is given in the Veterinaermedizinische Nachrichten, (Bayer-MLB), No. 3. 1931.

Dr. M. (Veterinary Surgeon), says that in most of the cases of paralysis of hind legs as an after-effect of canine distemper, improvement and cure was brought about by the use of Tonophosphan*, an organic phosphorus compound in watery solution. He gave subcutaneous injections 3 to 5 c.c. of the ready made 3% Tonophosphan solution on alternate days. The dosage was individual and according to the body-weight of the dogs. The dogs stood the injections very well indeed; hence prolonged administration was possible. In most cases, the paralysed animals came to normal conditions again after 3 weeks' treatment. Dr. M. claims that no other preparation gave similar successful results.

*The preparations are manufactured by Messrs. Bayer-Meister Lucius, Leverkusen.

*Manufactured by Messrs. Bayer-Meister Lucius, Leverkusen.

Notes.

Readers may remember that in the issue of October 1931 of this *Journal*, we had published the "Government Review of the Veterinary Service in the Presidency of Bombay" and our reviews on the subject. We now understand that the reorganisation scheme contemplated in that review has been put into effect. The details of of this new scheme are not before us. We, however, understand that the designation of the Head of the Department has been changed from Superintendent into Director of Veterinary Services and Mr. E. S. Farbrother, M. R. C. V. S., I. V. S., continues to be the Head with the new designation. So far as this change is concerned, Bombay has come into line with most of the other British Provinces in India.

Under the new scheme the whole Presidency of Bombay is said to have been divided into three divisions corresponding with the Revenue Divisions, namely, Southern, Central and Northern. The Central Division has been kept under the charge of a Deputy Director—a new post—and Khan Sahib J. D. Buxy, G. B. V. C., who was a Deputy Superintendent in that C. V. D., has now occupied this post with headquarters at Poona. Whereas the remaining two divisions, Southern and Northern have been kept in charge of two Senior Veterinary inspectors, Messrs. V. N. Kulkarni and M. G. Kulkarni, respectively.

We fail to understand the justice of this half measure. They may say it is due to the present financial position. But these two Officers will be handicapped very much for want of the necessary status. Again an unimaginative Government might turn round and ask if work could be carried on with cheaper agency, why "Deputy Directors". We hope the Director in that Province will fight out the cause and promote his men to the Gazetted rank. Any scheme to import outsiders for such posts will spell disaster as the morale of the service will be seriously jeopardised and rightly too—To boot, it will be injustice of the first magnitude with a capital "I".

The Director gets further relief in his Office work, as Mr. Y. N. Marathe, G. B. V. C., another Deputy Superintendent under the old scheme, has now been made the Personal Assistant to the Director of Veterinary Services. The P. A., to the provincial head

of a *Scientific Department* should be a senior Technical Officer of Provincial Cadre of varied experience, so that he may be able to handle the several important problems that come up for consideration in the Central Office from time to time, in a manner befitting the responsibility and trust attached to the office. His administrative and professional experience should be such as to stand him and his Chief in good stead in solving many new problems and in chalking out new channels through which the Department can best serve the country.

All these aspects have been well considered by the older departments such as Medical, Engineering, Agriculture, with the result that the P. A., to the Surgeon General is a Senior Medical Officer of the rank of a Civil Surgeon, the P. A., to the Chief Engineer or Superintendent of Engineer is an Engineer, the P. A., to the Director of Agriculture is a Senior Agricultural Officer, the P. A., to the Inspector General of Police is a Senior Police Officer of Provincial rank. These examples are enough to prove the contention that P. A., to the head of the Scientific Department should be a professional man of experience and standing.

Our local contemporary the daily "Hindu" of the 2nd December 1932, announced the formation and working of a "Rural Service League at Anantapur, in Madras Presidency. In response to our enquiry the League has favoured us with a printed copy of its rules. The object of the League is rural uplift and well being in Anantapur District and is strictly *non-political* in character. Educational Propaganda such as (1) Lectures, (2) Lantern Lectures, (3) Demonstrations, (4) Shows, (5) Exhibitions, (6) Conferences, (7) Publication of pamphlets, (8) Publication of a journal, (9) Reading rooms and libraries, (10) Vacation classes for rural workers and teachers, (11) Study groups, (12) Harikatha purana recitations, Bhajanas and co-ordination of the work of League with the various existing departments, Government and Non-Government, such as Education, Agriculture, Veterinary, Co-operation, Labour, Medical, Public Health, Maternity and Child Welfare, Industries, etc., are some of the means to be employed to realise the aim of the League. Such Leagues are most welcome and they should be formed in each district since they are of great potential good to the country. We therefore commend this scheme and wish it a long and useful career.

Every Veterinary Surgeon should be an active worker in such an organisation which is sure to popularise and advance the interest of the Science and the department in the rural areas, where colossal

ignorance still reigns supreme. We find on the Provisional Committee of the Anantapur League the names of well known social workers and officers of different nation building departments. Its welcome feature is that the Lady Member of the District Board, Sreemathi Chilakur Lakshminarasamma, wife of the well known scholar and educationist Dr. Chilakur Narayana Rao, M.A., Ph.D., L.T., of the Ceded Districts College, is the convenor of the Committee. We are pleased to find our esteemed friend Mr. M. S. Sastry, G.B.V.C., General Secretary, All-India Veterinary Association, and his worthy Colleague Mr. P. K. Rangesa Rao, G.M.V.C., Touring Veterinary Assistant Surgeon of Anantapur, are among the founders and the active workers of the League. This League has already secured for the present a donation of Rs. 300/- from the Anantapur District Board towards the expenses.

We find the Madras University Extension Board has arranged a series of Lectures on Civics and Economics by eminent men and women and the provisional programme which extends over a period of two months commencing from the 1st week of January 1933, has been announced in the local dailies. The provisional programme includes, Co-operation, Public Health, Industries, Engineering, etc. We are painfully surprised to find the absence of any subject connected with Veterinary Science in the programme. It could not be that the Board was not able to secure the co-operation of any eminent Veterinary Surgeons in Madras to deliver one or two lectures on the work of the Veterinary Department or importance of the Science in relation to urban or rural economics. It could never be that the learned Board failed to understand the close relationship between Veterinary Science and the Economical interests of this country. The omission is inexplicable. We, however, hope this defect in the provisional programme will soon be removed.

We went through the Report of the Bengal Retrenchment Committee 1932. The section dealing with 'Veterinary' though only 2½ pages in length has completely cut the ground off the profession in that important Province. The proposals are so retrograde that we feel no doubt about their being turned down by the Government with the active help of the Director of the Civil Veterinary Department, Bengal.

Fancy the Committee saying "One Director, One Assistant Director, Five Inspectors and Six Veterinary Assistants are sufficient for epidemic duties and for the work of supervising the District

Veterinary Assistants". We don't know how the Committee arrived at this figure with such Mathematical precision. One thing we see and that is there are to be Seven of the 'Supervising Staff', and only Six Assistants in the epidemic field!

That reminds us of the old Scotch army which consisted of "Three and thirty Pipers with two and twenty men". Perhaps the proposal is not so remarkable as the above army. They have the "District Veterinary Assistants" to supervise as well.

Another illuminating proposal is to replace the present European Principal by an Indian on "considerably lower pay and without an overseas allowance". Nationality has no place in a Scientific profession and that on grounds of economy is nothing short of absurdity. It is sickening to go through that report and we only look up to the Government of Bengal to save the profession from utter annihilation by not giving effect to those heartless proposals.

On Friday the 9th December 1932, under the auspices of the Debating Society of Bihar and Orissa Veterinary College, Professor P. G. Malkani, B.A., B.Sc., (Lond.) M.R.C.V.S., gave a lecture on the "Etiology of Kumri". Hon'ble Mr. J. T. Whitty, I. C. S., Member, Executive Council, Bihar and Orissa, presided. Many members of the public were present.

Professor Malkani after discussing in detail the different theories and pointing out the obstacles in the way of accepting them announced that he had discovered Schistosomes in post-mortem examination held on Kumri ponies and had obtained encouraging results during treatment of Kumri cases with Tartar Emetic, which is a well known specific in Schistosomiasis. He also referred to the good results obtained by Professor G. N. Roy Chaudhuri in another case of explosive type of Kumri treated on similar lines which lent support to this theory.

He showed that the new theory explained quite satisfactorily the various features of the disease which were difficult to explain before. By means of lantern slides he showed how the infection is probably conveyed to horses and suggested definite preventive measures to this end.

Hon'ble Mr. J. T. Whitty, spoke about this disease as being a terrible scourge of horses. The disease was perhaps somewhat similar to human paralysis caused by *Lathyrus Sativa* or Khesari-dal.

He had always believed up to now that feeding horses on Khesari might in some way be connected with Kumri. Ever since he had been in this country, he had owned horses himself and some of the most valuable of them had died of Kumri and nobody had yet been able to find its cause or cure. The idea of horse-breeding at the Pusa Farm, had, he believed, to be given up on this account.

In concluding, Hon'ble Mr. J. T. Whitty, I.C.S., congratulated Mr. Malkani for his interesting and illuminating address and he felt that Mr. Malkani was on the right track or very close to it and if he succeeded in establishing the cause of this disease the cure will follow and Mr. Malkani will be a public benefactor. Speaking about the Bihar and Orissa Veterinary College he opined that such discoveries would do more to justify this institution than even the excellent training and educational work that was being done there.

We extract in this issue from the "Indian Association Bulletin" Penang, an appreciation of Mr. R. V. Patel, G.B.V.C., who retired on the 1st of October 1932, from the important post of Assistant Veterinary Surgeon, Penang, after a distinguished career of 24 years in the service of that Government. We pray to God that he may be long spared to enjoy his well earned rest. His place has been taken up by Mr. B. D. Mehta, G.B.V.C., Assistant Government Veterinary Surgeon, Singapore, on the 12th of October 1932.

The Chemo-therapeutical line of treatment in Foot and Mouth Disease with intravenous injections of Lugol's solution, has been put to a fairly extensive Field test under controlled conditions at the Muktesar Institute and "it is considered that there is no justification for the use of Iodine in this disease, other than for its general tonic effects, for it appears to have no specific action on the virus of Foot and Mouth Disease, or at least not on the type of virus responsible for the natural outbreaks of this disease which occur in the Kumaon hills".

Well, the workers in the field in the Presidency of Madras have the same story to narrate with regard to this line of treatment.

Adverting to our Editorial in the last issue, "Mr. P. T. Saunders and University Affiliation", it would appear that what Mr. Saunders wished to convey was, that he was not against University affiliation, but that the process of effecting change should be gradual so that there may not be a dearth

of qualified men for departmental work. Mr. Saunders was of the opinion that the question of replacing the present diploma by a degree could not be considered until some experience of it had been gained, especially in view of the recent change in the curriculum.

Correspondence.

To

THE EDITOR,

The Indian Veterinary Journal, Madras.

SIR,

Adverting to the extract that you have made in the last issue of the Indian Veterinary Journal page 163 on "The infectivity of milk and meat in Rabies" and the opinion of editor of I.M.J., that "Raw flesh, milk and meat would only be dangerous, and that only extremely rarely if there were *fresh* cuts or abrasions on the lips or mouth or tongue" (italics mine) the following from Edelmann's "Meat Hygiene" page 316 may be read with interest.

"As the meat of rabid animals is dangerous to health and unfit for food it should be condemned. Although transmission of rabies has not been observed from injection of meat from rabid animals, the disease is nevertheless possible if inoculation occurs while handling the meat. According to V. Ratz the virus of rabies remains active for 13 to 24 days after the death of the animal.

In the incubation stage of the disease, slaughtering of domestic animals.....is not prohibited and the meat may also be utilized after removal of the bitten area.

In accordance with B.A.I. order 211 Regulation 9 Section 2, paragraph 4 all animals showing on antemortem inspection-symptoms of rabies shall be marked "U.S. Condemned" and tanked for fertilizer".

RANIPET, }
3-11-'32. }

Yours faithfully,

P. THEAGARAJ, G.M.V.C.

Mr. M. RAMACHANDRA MUDALIYAR.

*Superintendent, Civil Veterinary Department,
H. E. H. The Nizam's Government, Hyderabad.*

To

THE EDITOR,

The Indian Veterinary Journal.

Before long, Mr. M.R. Mudaliyar, the head of the Civil Veterinary Department, Hyderabad State is due to retire after a strenuous career of nearly 32 years and it is but just to record in the pages of the *Indian Veterinary Journal* a short Life-sketch of that great member

of the profession, who may rightly be described as the "Father of the Veterinary Services in the Hyderabad State".

Born of a very respectable Vellala family of Poona in 1879, he had his early education at Elphinstone and Rajaram High Schools in Bombay, where he was liked both by his masters and his class-mates for his sturdy, independence and his unfailing stand against all injustice. Finishing his High School career, he joined the Bombay Veterinary College, against the opposition of his parents, as from the very early days of his life he had developed a liking for the Veterinary profession, which in later life he was destined to adorn and organise in a Premier State of a Prince in India.

Passing out in 1900, he was for some time an Inspector under the Glanders and Farcy Act in Bombay City, wherefrom he was selected in 1901, as the Inspecting Veterinary Surgeon in charge of H.E. H. The Nizam's Stud Department, which post he held for 14 years, creating in the meanwhile more and more need for duly qualified Veterinary Surgeons and thus organising the Civil Veterinary Department of the State. Thereafter, he worked in various capacities in the Service of the State. In 1905, he was deputed as the Special Veterinary Officer, Hyderabad Exhibition and also as the Famine Veterinary Officer in connection with the purchase of cattle to be given to ryots on Takavi system in 1907. He was made a Deputy Superintendent in 1915, from which appointment he was elevated to the rank of the Superintendent of the Civil Veterinary Department in 1928. He was an examiner of the Veterinary Institute Hyderabad from 1916 to 1918.

Mr. Mudaliyar's charm of manners, gay disposition and profound knowledge made him a good Administrator to be implicitly obeyed and a delightful friend. To many a sub-ordinate he was a veritable Friend, Philosopher and Guide, who will be missed in years to come.

Being a Pioneer in the field in State Service, the work of publishing a few professional pamphlets and books for the benefit of the lay public devolved on him. Leaflets on "Surra"; "Epizootic Lymphangitis"; "Most Contagious Diseases of Cattle"; "Some common ailments of Cattle and their home treatment"; and the "Indian Materia Medica of most common indigenous drugs both for the use of Medical and Veterinary Practitioners" are works which will ever continue to stand to his credit.

Mr. Mudaliyar is retiring full of years and full of honours and he may rightly feel proud of having discharged his onerous duties to the satisfaction of all concerned. May he live long and enjoy his well-earned rest is the prayer of,

"A GRATEFUL VET."

To

THE EDITOR,

The Indian Veterinary Journal.

Sir,

The *Veterinary Alumni News*, No. 4, Vol. X, dated October 1, 1932, of the Kansas State College of Agriculture and Applied Science, Manhattan, U.S.A., gives the figures of enrollment of students in the Division of Veterinary Medicine for 1932-33, as follows:—

Preveterinary (first year).	15
Freshman (second year)	12
Sophomore (third year).	49
Junior (fourth year).	40
Senior (fifth year).	45
Six-year (Animal Husbandry and Veterinary Medicine).	3
Graduate	3
Total...	167

The Dean of the Veterinary Division states, "This is a slight increase in enrollment over the corresponding period of a year ago. It is very gratifying to the Veterinary Staff to have all these young men entrusted to their care for a period of five years. The loyal alumni and friends—who are largely responsible for the selection of this College by these young people for their Veterinary Division—will not regret the influence they have exerted."

Under the caption of Veterinary locations, the Dean sends an emphatic appeal to the Veterinary profession of America for the employment of the new Veterinary graduates. He states, "At the end of the present college year, in June, 1933, approximately 45 young men will be candidates for the Degree in Veterinary Medicine. Each of these will be looking for a desirable location. Recall your own days immediately after you left college and how you would have appreciated a little assistance at that critical time. Lend this help now, by reporting to the Division of Veterinary Medicine, the name of any community that in your opinion will offer possibilities for a recent graduate."

RAJAHMUNDRY,
November 26, 1932.

G. A. AJWANI, M.Sc., D.V.M., D.V.H.

Extracts.

THE USE OF CHLORAL HYDRATE IN GENERAL PRACTICE.

BY

C. S. SHAWCROSS, M.R.C.V.S.,

Altrincham.

CHLORAL HYDRATE is well known as one of the most useful drugs in the surgery for a variety of cases, and would no doubt be more used if its administration were attended with less risk. My only object in writing this article is to call attention to cases in which the drug might be administered *per orom*, or by rectal injection, or taken by the patient voluntarily in drinking water or sloppy food. The use of the stomach tube in the administration of chloral hydrate is not always satisfactory in restive animals, and where possible nasal haemorrhage is likely to interfere with subsequent anaesthesia. Intravenous injection of chloral is not always practicable, as the type of case requiring treatment with this drug is often too rough to allow one to use sufficient care.

Case 1:—Milk fever with meningitis; temperature 109. Cow extremely rough bellowing, grinding teeth, respirations and pulse very rapid. Chloral hydrate, oz. ii, mixed with hot water and treacle, was injected per rectum, and cold water cloths applied to the head. In fifteen minutes she went quiet and sleepy, and the temperature had dropped to 106. The udder was now inflated, and a hypodermic injection of Calcium Sandoz given. In eight hours the cow was up and eating, and made a complete recovery. I have found chloral hydrate given as above per rectum is extremely useful in all cases of meningitis when it is too dangerous to give a drench.

Case 2:—Recently I was attending a case at a farm, when a cow which was being brought up from the field jumped a barbed-wire fence, and tore one teat to ribbons. Amputation of the teat was decided upon, and this was done in a hurry, as haemorrhage was severe. The base of the teat was ligatured, and the teat severed below the ligature. The cow was so wild that it was feared that the owner would be unable to remove the ligature the next day without casting the cow, and as she was just at calving, this was undesirable. Two ounces of chloral was left, to be given in a pail of water half-an-hour before he wished to remove the ligature. This was done without disturbing the cow in the least. Whilst still under the influence of chloral she both calved and cleansed. The usefulness of chloral in alleviating the pain of colic without interfering with peristalsis is generally recognised, and the above case proves that the labour pains of parturition are not impaired by its use.

Case 3:—A horse which had turned savage and for two days no one had been able to enter the box with food or water. One ounce of chloral was dissolved in a pail of water and lowered into the box with a rope. The horse greedily drank the water, and fifteen minutes later quietly submitted to the adjustment of a bridle. He was led a distance of seven miles quietly, and was then slaughtered for lion food.

Chloral may be given in the above manner to both horses and cattle if water has been previously withheld, and a number of minor operations may be performed on restive animals prepared in this way without using much restraint. Chloral may also be given in this way as a preliminary to complete anaesthesia,

and obviates the restlessness usually associated with chloroform when the muzzle is put on a horse in the standing position. In eversion of uterus in cows, I usually give a drench of one ounce of chloral mixed with treacle and water as a preliminary to returning the uterus. It not only prevents shock, but makes the cow easy to handle, and after reduction of the uterus the cow can be propped up in a comfortable position, and left half asleep for four or five hours, after which she usually gets up little the worse for her experience unless there has been serious damage to the uterus.

"Veterinary Journal" Vol. 88, No. 8.

FOR RINGWORM.

Major Elwood L. Nye, V.C., offers the following as "Another treatment for ringworm".

"To each ounce of tincture of iodine add one and one-half grains of bichloride of mercury and shake well. This mixture is very easy to apply with a swab; much more convenient than ointment; penetrates rapidly, and is therefore not mussy or greasy; and above all, it quickly destroys any fungoid growth. The most advanced cases usually yield to two or three treatments which may be given about three days apart. The immediate effect is a slight cauterization. The skin is burned and a scab quickly forms, which is removed before the next treatment is applied; and thus the caustic is carried into the skin sufficiently to reach all of the infecting organisms. The ease with which this treatment may be applied; its cleanliness and prompt effective action make it a most useful agent in treating any parasitic skin disease".

"Veterinary Bulletin", January 1932.

DIARRHOEA IN CANINE DISTEMPER.

BY

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Harrisonburg, Va.

In cases of the intestinal form of canine distemper where the diarrhoea is persistent, I have had good results from the use of 10 to 20 c.c. of anti calf scour serum. Usually not more than two doses given with an interval of 12 to 24 hours between them, are required to stop the diarrhoea. The serum should be given subcutaneously and not more than 5 c.c. at one place. Of course, the usual aseptic precautions should be taken.

"Veterinary Medicine" Vol. XXVII, No. 3.

PROTOZOAN KILLS WILD DUCKS.

The number of wild ducks, greatly reduced by various adverse conditions, are being still further decreased by a disease caused by a little one-celled organism, a protozoan known as *Leucocytozoon anatis*. Wickware, According to a report received by the Bureau of Biological Survey, U. S. Department of Agriculture, from Dr. Earl C. O'Roke of the School of Forestry and Conservation of the University of Michigan. Doctor O'Roke has just completed his second summer's study of this disease at the University Biological Station, Douglas Lake, and elsewhere in Michigan.

This organism has a complicated life cycle. In certain stages it occurs in the red blood cells, and in others in tissue cells of glandular organs. The parasite is transmitted from duck to duck by the bites of black flies of buffalo gnats. Adult ducks harbouring the parasites are apparently little affected by them, but ducklings succumb in large numbers. Death of the duckling may occur at the time of the first appearance of symptoms, but usually it does not take place until the twelfth day after exposure.

The blood of a sick duckling is thin, pale, and watery, and contains numerous spindle-shaped parasites somewhat larger than normal blood cells. The most common lesion at autopsy is the greatly enlarged, blackened spleen.

"Veterinary Medicine" Vol. XXVII, No. 3.

NEW TYPE OF RABIES IN SOUTH AMERICA.

Kraus, R., and Duran, A. 1932. Ueber die in Sudamerika vorkommenden Epidemien der Hundswut bei Rindern und Pferden. (Epidemic rabies among cattle and horses in South America) Zeitschr. f. Immunitätsf. u. exp. Therapie 74 (½): 182-199.

In Brazil, Paraguay and Argentine occurs an epizootic disease among cattle, horses and mules which is characterised by pareses and which is caused by a neurotropic virus. The demonstration of Negri-bodies in the brain, the infectiousness of the brain and the course of the experimental disease, especially in rabbits and in dogs and demonstration of Negri-bodies in the brain of these animals gives reason to the assumption that the cause is a lyssa virus. Since several factors seem to be against the idea that the classical street-virus is involved, which is transmitted from the bite of a rabid animal, the assumption is justified to consider it a variety of the lyssa virus. In view of the already known varieties of the lyssa virus, it does not seem to be impossible that the virus of the "Mal de cadera de bovinos" forms a special variety. Further experiments will decide this question.

"Veterinary Medicine" Vol. XXVII, No. 10.

THE SIGNIFICANCE OF THE PITUITARY IN PARTURITION.

Heller, H., & Holtz, B. (1932):—J. Physiol. 74, 134-146. 8 figs. 2 tables [30 refs.]

Dixon and Marshall (1924) suggested that pituitrin is secreted at the end of pregnancy under the stimulus of certain substances stated to have their origin in the ovary thus stimulating the uterus and leading to parturition. Other investigators, Bourne and Burn (1928) and Parkes (1930), have denied this, suggesting that some hormone sensitizes the uterus to the action of pituitrin.

The authors of this paper conducted experiments to determine the sensitization of the uterus by oestrin rather than by an increase in the amount of pituitrin in the blood. In addition they investigated the influence of the K/Ca ratio and anterior pituitary hormone to the isolated uterus, since alterations in both these factors are found in pregnancy. The experiments were conducted on the isolated uteri of guinea pigs.

Other workers had shown that previous treatment of the isolated uterus by pituitrin reverses the normal effect of adrenalin of relaxation to contraction. This method was therefore used for detecting changes in the activity of the posterior lobe of the pituitary during pregnancy.

Their main conclusions were that adrenalin relaxes the uterus during the greater part of pregnancy and stimulates it shortly before delivery. Protein-free

oestrin (progynon) and crystalline oestrin have no sensitizing action for pituitrin on the isolated uterus. Protein-free preparations of the anterior lobe hormone prepared from urine (prolan or praehormone) sensitize the uteri of infantile and pregnant guinea pigs to pituitrin. Changes of the K:Ca ratio of the bath sensitize the uterus to pituitrin if K is predominant.

These results indicate that not only an increase in the secretion of pituitrin, but also an increased sensitivity of the uterus to pituitrin occurs at the end of pregnancy and that it may be an important factor in determining the onset and progress of parturition. These findings also suggest that, during the second half of pregnancy when the corpora lutea are degenerating and their inhibitory action is disappearing, labour is induced by a stimulus of a comparatively small increase of pituitrin on a uterus sensitized to its action by a combination of factors such as the increase of anterior pituitary and the alteration in the K:Ca ratio.—J. R. M. Innes.

"Veterinary Bulletin, August 1932, Vol. 2, No. 8, p. 470

- I. Schoening, H. W. (1931). Single Dose Rabies Prophylactic vaccination.—North Amer. Vet. 12, No. 6, 45-46.
- II. (1932). B.A.I. Reports favourably on Single Dose Rabies Prophylactic vaccine for Dogs.—Ibid. 13, No. 1, 8.
- III. Schoening, H. W. (1931) Immunization of Dogs against Rabies by the one injection method.—Amer. J. Publ. Health. 21, 637-640. [7 refs.]

I. Schoening considers that the results of the experimental work done warrant the use of prophylactic rabies vaccines, where rabies is a menace, but that the shortcomings of vaccination should be recognised. There is no 100 per cent. efficiency and the possibilities of the development of post-vaccination paralysis, though remote, should be recognised. Reliable field information on the use of the vaccine is lacking. Vaccination, no matter how effective, cannot by itself control outbreaks of rabies. The stray dog will always remain a factor which must be considered.

II. In an experiment carried out by the Bureau of Animal Industry, U.S.A., five dogs were given a single dose of vaccine and four were found resistant fourteen months afterwards to a dose of rabies street virus sufficiently active to produce rabies in four out of five control dogs.

III. The question of the one dose vaccine is discussed under three headings:—

- (a) Dose it immunize?
- (b) Is it safe?
- (c) How long does immunity last?

(a) The vaccines used were of two commercial types, one phenol-treated and the other chloroform-treated, both of which are either killed or are so weakly virulent that they cannot produce the disease by subdural injection into rabbits. In an experiment, of 12 dogs treated with phenol vaccine and later exposed to street virus by intramuscular inoculation, five died of rabies, and in eleven controls nine died of rabies, showing a favourable difference for the vaccinated dogs.

Experience shows that failures are to be expected. The question of the plurality of types of rabies virus is discussed. The writer has one strain against which apparently little immunity in dogs can be produced. Using the chloroform-treated vaccine, nine dogs all survived exposure to street virus injected intra-

muscularly, whereas in the controls eleven out of thirteen were infected with rabies.

(b) The phenol-killed vaccine if properly prepared is incapable of producing rabies, but the question of post vaccinal paralysis must be taken into account. The chloroform-treated vaccine, like the phenol treated, if prepared properly cannot produce rabies. No cases of paralysis have been seen in 180 dogs treated.

(c) The details concerning the persistence of immunity after vaccination are meagre. One case is reported which resisted infection one year after vaccination. The writer does not consider that the immunity should be considered to last more than one year.

The data concerning chloroform-treated vaccine are not available beyond four months.—Norman Dobson.

"Veterinary Bulletin" August, 1932, Vol. 2, Nos. 8, pp. 444-45.

POISONING OF LIVESTOCK BY PLANTS THAT PRODUCE HYDROCYANIC ACID.*

BY

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Many species of both wild and cultivated plants in the United States are capable, under certain circumstances, of developing hydrocyanic acid, also called prussic acid, which is highly poisonous. Such plants are known as cyanogenetic. Each year many enquiries about the possibility of livestock being poisoned by these plants are received by the United States Department of Agriculture. The following facts will enable livestock owners to recognize the danger when it exists and to avoid it.

Few Cyanogenetic Plants Fatal to Animals.

A great many plants are capable of developing hydrocyanic acid and may be responsible for poisoning, but under practical conditions only a few are actually dangerous. A list of those most dangerous by reason of their poisonous character and wide distribution is given below. One or more of these plants is found in practically every part of the United States.

Chokecherry (wild), *Prunus virginiana*.
Black cherry (wild), *Prunus serotina*.
Sorghum, *Sorghum vulgare*.
Johnson grass, *Sorghum halepense*.
Flax, *Linum usitatissimum*.
Arrow grass, *Triglochin maritima* and *T. palustris*.
Velvet grass, *Holcus lanatus*.
Christmasberry, *Photinia salicifolia*.
Sudan grass, *Holcus sorghum, sudanesis*.

Factors Affecting Quantity of Hydrocyanic Acid in Plants.

Hydrocyanic acid is not found in any appreciable quantities in healthy growing plants. The acid develops only when the normal growth of plants has been retarded or stopped by drought, frost, bruising, trampling, wilting, mowing, or

* (Reprinted from the Leaflet No. 88, U. S. Department of Agriculture.)

other cause. Under such conditions hydrocyanic acid is formed by a chemical reaction between two substances, a glucoside and an enzyme, contained in the plant. Neither of these substances is poisonous by itself, and under normal conditions they are not in contact with each other. In damaged plants, however, sufficient hydrocyanic acid to poison animals is sometimes formed by the mixing of the glucoside and enzyme.

The quantity of potential hydrocyanic acid that can be formed in plants may vary considerably with the stage of growth, climatic conditions, and soil. In general, mature cyanogenetic plants contain a smaller percentage of potential acid than do young plants. Plants grown on poor soil contain less than those on good soil, and fertilization with nitrates markedly increases the percentage of the acid. Sorghums grown in the Southern States have not poisoned the livestock so much as those grown farther north. The reason for the difference is probably climatic, but little is known about the exact causes of the formation of the poisonous acid in this case.

Dried cyanogenetic plants, such as those made into hay, commonly produce very much less hydrocyanic acid than plants which are fresh. Well-cured sorghum or Johnson grass, for instance, contains little or no hydrocyanic acid and may be eaten by livestock without danger of poisoning. It is thought that in some cases the poisonous acid is slowly given off during the process of drying and, being very volatile, passes into the air. In other cases some chemical alteration destroys the ability of plants to produce the acid. Some plants, however, retain a considerable proportion of the active acid even when dried. This applies especially to seeds. Dry immature flaxseed has caused hydrocyanic-acid poisoning. Dry ragoon beans, bitter almonds, peach kernels, and wild-cherry bark contain much potential hydrocyanic acid.

Preventive Measures Against Poisoning.

Even when they contain considerable quantities of potential hydrocyanic acid, the plants may not poison livestock. Since poisoning depends upon the presence of actual hydrocyanic acid, anything that prevents its development in the stomach lessens or entirely removes the danger of poisoning. Certain feeds, such as alfalfa hay and linseed cake, retard the production of hydrocyanic acid and may prevent poisoning. Glucose in the paunch markedly represses the rate of formation of the acid. It has been observed that cattle on a corn ration are less likely to be poisoned when grazing on dangerous sorghums than are cattle not fed on corn. It is therefore a wise precaution to give animals a starchy feed, such as corn, milo, or feterita, before allowing them to graze in the vicinity of plants capable of developing hydrocyanic acid.

An alkaline condition of the paunch also diminishes the rate at which the poisonous acid forms, and may even convert it into harmless products. But ordinarily it is not possible to bring about this alkaline condition as a preventive measure. If one animal shows symptoms of hydrocyanic-acid poisoning, other animals should be removed immediately from the pasture. It is commonly and probably correctly believed that the most dangerous plants are those that have wilted and in which hydrocyanic acid is already formed. When an animal eats wilted cherry-leaves, for instance, it receives ready formed a dose of the poison. When normal, unwilted cherry-leaves are eaten, the hydrocyanic acid must develop in the animal's stomach and be subject to the repressive influences previously mentioned. This accounts for some cases of poisoning from wild-cherry-leaves that have not been otherwise satisfactorily explained.

Symptoms of Hydrocyanic-Acid Poisoning in Livestock.

Hydrocyanic acid acts very rapidly, frequently killing the animal within a few minutes, although sometimes the poisoned animal may live for several hours after the symptoms develop. There is first a brief period of stimulation followed by depression and paralysis. Symptoms of colic often appear. Stupor, difficult breathing, and frequent convulsions result from the action of the poison on the brain centers that control respiration. Death is caused by respiratory paralysis, the heart continuing to beat for some time after breathing has stopped.

Quantity Sufficient to Cause Sickness, Usually Fatal.

If the dose is sufficient to sicken an animal it is highly probable that the animal will die. Six grains (0.4 gram) of pure acid is considered a fatal dose for the average horse. Cows are somewhat less susceptible. In one experiment a cow received 6 grains of pure acid and was made very sick but recovered. The fatal dose for the average cow would be somewhat in excess of this amount. Sheep are fatally poisoned on a dose of 1 milligram per pound of weight, or about 1½ grains for a 100-pound sheep. A moderate-sized dog may be expected to die if given 0.04 to 0.05 gram, which is one tenth the lethal dose for horses.

If a plant, then, contains as little as 0.02 per cent potential hydrocyanic acid, and if the animal consumes it all rapidly, 5 pounds of the plant would be fatal for a horse or cow and 1.25 pounds would kill a sheep, if no factors entered in to prevent the development of the acid. Under actual conditions, however, on account of interfering factors such as those already considered, those quantities will not always prove fatal. But since cyanogenetic plants may contain ten to twelve times as much potential acid as in the case just cited, it becomes evident that the fatal dose of these plants may be comparatively small and the danger to livestock correspondingly great.

Remedies.

No known chemical antidote to this poison can be relied on. Moreover, in the majority of cases hydrocyanic-acid poisoning causes death so quickly that there is not time enough to apply remedial measures. Various preparations have been recommended as having possible beneficial results. As the use of drugs themselves is attended by some danger to an animal, a trained veterinarian should conduct or supervise the treatment.

Oxidizing substances, such as potassium permanganate solution, given as a drench, destroy unabsorbed hydrocyanic acid in the stomach, and hydrogen peroxide slowly combines with the acid to produce a less dangerous substance. Glucose or ordinary corn syrup given as a drench combines with the acid to produce a harmless substance and, furthermore, retards the development of more hydrocyanic acid. A freshly prepared suspension of ferrous hydroxide in water, made by mixing equivalent quantities of copperas and caustic soda, converts hydrocyanic acid into relatively nonpoisonous substances (ferrocyanides) and so serves as an antidote. Remedies to be given by mouth, however, are generally unsuccessful after symptoms develop because by that time sufficient poison has been absorbed into the blood to produce death in most cases.

The fumes of ammonia breathed into the lungs may be effective both through their strong stimulating action and through the tendency of ammonia to convert the acid into less dangerous substances. Hypodermic injections of glucose, atropine, sodium sulphide, and sodium thiosulphate may be helpful if administered promptly.

COENURUS CEREBRALIS, OR GID, IN SHEEP.

BY

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It was while practising at Ashford some years before the war that I became particularly interested in this disease. I then collected a series of very interesting photographs and records of a large number of sheep so affected. Unfortunately most of these have been lost, and I only have by me three or four photographs and occasional notes. My particular reason for choosing this subject is because I believe it has been much neglected by veterinary surgeons, and I should like to encourage members of the profession to devote their attention to the clinical aspect. They will find it remunerative, and even more interesting than the life history of the causal parasite, and will have the satisfaction of lessening the financial loss of sheep farmers. Practically all text books discourage any treatment, and recommend early slaughter of affected sheep, whereas there are many hundreds of these cases which make ideal subjects for surgical treatment. "Gid" is also known under the names of sturdy, staggers, turnsick, etc., and in Kent, "pothery." It is a disease which has been known as affecting sheep for at least some 300 years. In 1634, two European surgeons discovered in the brain, on post-mortem examination of a sheep suffering from vertigo, "a vesicle filled with fluid." In 1780, Leske recognised the bladder as a cystic worm, but not until the middle of the last century was its true nature discovered, and tape-worm heads found. In 1852, Seibold proved that the bladder worms when fed to dogs developed into mature tape worms in their intestines. In 1853, Keuchenmeister demonstrated that tape-worm eggs from dogs, when fed to sheep, produced bladder worm in their brain and spinal cord. These observations were afterwards confirmed by many workers, and so it was established that the *Tenia cœnurus* of the dog and the *Cœnurus cerebralis* of the sheep were the larval and adult forms respectively.

Statistics quoted in various text-books agree more or less as to percentage of sheep attacked, viz., in the first year of life from 2 per cent. to 5 per cent., in the second year, 1 per cent. to 1½ per cent., afterwards only occasional cases. But these figures do not take into consideration the occasional outbreaks, when anything from 15 per cent. to 35 per cent. will be affected. These numbers in themselves are sufficient to emphasise the importance of this disease from an economic standpoint, but when one bears in mind that these losses can occur in pedigree flocks, the financial loss to the sheep farmer may be most serious.

Infection takes place, in most cases, in early life, when the lamb is only a few months old (due probably to less power of resistance) owing to ingestion of the proglottides or matured ova of the *Tenia cœnurus* voided by the dog.

Types of Cases:—Broadly speaking there are two distinct types, viz., cerebral and cerebellar. In each type there will be some signs common to both, e.g., altered facial expressions, ear carriage, unsteadiness of gait, grinding of teeth, swaying movements, exaggerated action of one or more limbs, varying degrees of paralysis, and loss of flesh. In the cerebral type, as the cyst matures, the senses are dulled, sight, hearing, touch, or all three. The head is held differently, either to one-side or slightly raised or depressed, one or both ears may be lopped; the sheep will be generally less inclined to move about, excepting the animal which has the cyst located in the extreme anterior portion of the cerebrum, involving the olfactory lobes, when it constantly walks more or less in a straight line until

meeting some obstruction, and there it will remain for a long time (see Fig. 2). Many appear quite stupid, and do not attempt to run away when approached by man or dog; a large percentage show complete blindness in one eye, some show paralysis of the lips, accompanied by excessive salivation, which may be green in colour (termed "greenmouth" by some shepherds). On closer examination many of these cerebral cases will show softening of the cranial bones, but one must be careful not to presume this to be always associated with the presence of a cyst: it is sometimes due to injury, in which case there is a depressed fracture of the skull. Then there are the characteristic turning or circling movements to left or right when grazing, and when the head is held at the normal height when moving to fresh grass; and as the cyst grows, and more brain tissue is injured, the sheep is unable to stand, and finally there is general paralysis or death from exhaustion. The cerebellar cases, on the other hand, are characterised by quite a different set of symptoms: absence of softening of the cranium, no blindness, no expression of stupidity; but there is marked hyper-æsthesia, and on seeing either a man or a dog approach, such an affected sheep darts off at once, holding the head somewhat higher than normal, and directed to the opposite way in which the rest of the body is travelling. There is a frightened expression, a stilt-like gait of the hind legs, as in Fig. 3. As these cases become more advanced, the staggering gait becomes more marked, and in attempting to get away the sheep does so with jerky movements: it falters, falls over, struggles violently, regains its feet, repeats the performance, ultimately collapses entirely.

Treatment:—The only treatment is surgical, viz., boring or trephining the skull, removing the cœnurus or cyst and fluid contents (refer to inflammatory or meningeal fluid); but before this can be carried out the location of the cyst must be decided upon. At least 75 per cent. of the cerebral type can be successfully operated upon, and if one selects the more favourable cases, viz., those which show very decided circling movements with accompanying blindness in the eye opposite to the side which the sheep circles, also cases showing marked stupidity and dullness, with softening of the skull over the olfactory lobes or just behind the horn core, then 85 per cent. to 95 per cent. of cures can be expected. Though I have successfully removed the vesicle from the posterior brain, I do not advocate attempting operative treatment in the cerebellar type, owing to it being nearly impossible to avoid fatal hæmorrhage.

Selecting cases for Operation:—Whenever possible arrange to have the affected sheep penned up and fasted over night, then when turned on to grass the sheep will at once commence to graze, provided the case is not too advanced, and in the space of a few minutes one will notice the characteristic symptoms already mentioned. The commonest variety are those which when grazing do so in either small or large circles, and when seeking fresh herbage, with head held in normal position, walking round to same side forming half, one, or more complete circles. Others of this type will hold their heads directed round to the shoulder of the same side; practically all these cases will show blindness in the opposite eye, and the best way to test this is to quietly walk up to the sheep as it is grazing, or standing still on the opposite side to which it turns, holding a white handkerchief or other object close to the eye, when it will at once be observed the sheep takes no notice, while on passing the hand over to the other eye the sheep will instantly jump away from one's hand. The skull is then examined for sensitiveness to pressure, and for a softened area, which there will be in the great majority of this type if not more than fifteen months old. In a good many of these the skull will have been very much thinned by the pressure of the cyst, or by the action of the fluid when the vesicle has burst. An important feature to

notice in this type of case is that when such a sheep is driven into a corner, and when attempting to escape, it will invariably swing sharply round to the opposite side to which it circles, and a certain number will show keratitis, the result of injuries to the blind eye. These symptoms of circling, blindness, etc., denote the position of the cyst, which will be found occupying the area of the lateral ventricle on the side to which the sheep circles, or in other words, the opposite side to the eye which is blind. I might here remark that in the cerebellar type the affected sheep invariably walk away from the side where the cyst is located, and also falls on to the opposite side. Fig. 2 illustrates the type which keeps on walking already referred to. In this case it has blundered into another sheep, and as the latter did not move away, the sheep in question remained in that position for a considerable time.

Operative Technique:—Having made up one's mind as to the position of the cœnurus cyst, the sheep is placed upon a table, all legs tied together in the fully flexed position by means of a piece of stout cord, held by an assistant, a second holding the sheep's head; the wool is clipped off the skull, and the immediate seat of operation closely clipped with scissors; the skin, if very dirty, is washed with æther soap and warm water, otherwise treated solely with tincture of iodine. One c.c. of codrenine or other suitable local anæsthetic is then injected into the skin immediately over the spot where one imagines the cyst to be: generally speaking, half an inch to one inch behind the horn core. Strict asepsis must be observed, a small saucepan or steriliser should be close by, and any instrument used should be put back into a boiling water before re-using. A short incision is made through the skin, artery forceps applied to any severed vessels for a moment, to prevent blood entering the cranial cavity, and the skull is penetrated by means of a trochar or trephining borer, or by a small trephine. Personally, I rely upon the former when there is softening of the skull, and the borer when this condition is absent. When the borer is used it is advisable to remove the powdered bone before entering the cranial cavity. The *dura mater* must be punctured, and if the cyst is on the surface of the brain some portion of it will instantly protrude, especially if the sheep struggles or jerks its head; and in a good many cases a considerable portion of the vesicle will push its way out, but it sooner or later bursts. If the cyst is not yet visible, carefully introduce a small cannula for about a quarter of an inch, by means of a small syringe endeavour to extract the cyst by suction. Brass syringes are advertised for this purpose, but it is much safer to use a glass syringe, as one can then readily notice if any fluid is being withdrawn, and if this is quite clear, or tinged with blood; if the latter, discontinue use of syringe and introduce a grooved director, then carefully probe for the cyst, and if this has already collapsed, ascertain extent of cavity, re-insert the cannula, this time a little deeper, again carefully use the syringe, and with patience one will invariably bring some portion of the cyst wall into the bore hole. One should then secure some portion of the membrane, and by exerting traction at first at one place and then at another, the cyst will be detached and extracted. Now attempt to remove the fluid by again using the syringe, but with great care, otherwise hæmorrhage will take place; empty the fluid as the syringe is each time withdrawn into a measure glass, as the amount withdrawn should coincide more or less with the size of the cyst removed. Small cysts will yield half to one ounce, whereas large ones yield two and a-half ounces. An ordinary milk syphon in many cases will be found useful, as one can, while the syphon is in position, manipulate the sheep's head by turning the nose to either side, or downwards or

upwards as the case may be, and so draw off the fluid. Nearly all writers on this subject advise not removing all the fluid at the time of operation, but in my opinion all the fluid should be removed. All that now remains to be done is to apply a little iodine to the wound, cover up the bore hole by pushing back the periosteum, introduce a single suture into the skin wound, apply more iodine, dry the surrounding parts if bloodstained, especially in hot weather to avoid the attentions of the fly, release the sheep's legs, and allow it to go free in the field or paddock, but avoid turning out where the sheep might get into a ditch or pond. In advanced cases where the cyst has passed upon the olfactory region there is a great tendency for the sheep to walk down to the edge of a pond or wet ditch, and many have been drowned in a few inches of water through merely pushing their noses under the water. Never operate at or close to the middle line of the skull, otherwise fatal hæmorrhage will ensue if the longitudinal fissure is penetrated.

Recovery:—When once the cyst and fluid have been removed, the return to normal is most marked in a short time: even within half an hour sheep which have not stood for several days are again able to do so, and in about two hours will be walking. Sheep recover their sight sometimes within twelve hours. I should have said something about differential diagnosis. Gid may be mistaken for injuries to the brain, chiefly depressed fracture, especially in quite young tegs. Again, the greenmouth sheep already referred to is frequently the victim of *Oestrus ovis* larvæ, which also cause extreme dullness. There is, however, generally some nasal discharge.

"Veterinary Journal", Vol. 88, No. 5.

R. V. PATEL, G.B.V.C., PENANG, F.M.S.

By the retirement from Government Service and the departure for India of Mr. Patel, our Association has lost one of its most outstanding and enthusiastic members.

Plain and simple in habits, independent in spirit, amiable and cheerful in temperament, Mr. Patel within a short time of his joining our Association proved himself to be one of its very popular members and stalwart supporters. He was a very frank and outspoken man, so much so, that none of those whom he used to banter with his harmless criticisms ever took any offences at all. An active participant in billiards and cards, he did not confine his attention to our indoor games but displayed a vigorous interest in the varied out-door activities of our club.

Born in 1885 and brought up of a very good family at Nadiad in the Bombay Presidency, young Patel had his early education in the Local High School there. He then turned to the study of Veterinary Medicine at the Government Veterinary College, Bombay, from where he graduated in 1907. Immediately after being qualified, he was selected by our Government as a Veterinary Inspector, and sent to Province Wellesley. During his long period of 14 years in the Province he showed conspicuous ability in his professional work and as a result of his meritorious services he was offered a Prize Appointment and appointed as an Assistant Veterinary Surgeon at Penang.

None who came in contact with his work could deny the splendid services he rendered to his department and to the public. From his early and pioneering days to the end of his career here his work drew encomiums all round.

He was an asset to our Committee, where we miss him very badly. It is the prayer of all his friends that he will be spared for long in full health and vigour to enjoy many happy years in retired contentment in our motherland. M. V. P.

"The Indian Association Bulletin" Penang, November, 1932.

Reviews.

Veterinary Pathology and Bacteriology.—By S. H. GAIGER, F.R.C.V.S. and G. O. DAVIES, M.V.Sc., M.R.C.V.S., D.V.H., 1932. Bailliere, Tindal and Cox., 7 and 8, Henrietta Street, London, W. C. 2. Pp. viii + 610, with 194 illustrations. 25 s.

The book will supply, we are glad to say, a long felt want by the English speaking student of Veterinary Pathology and Bacteriology. The students will welcome the book because within its pages is enough information and it will save them the time and labour of obtaining notes on those subjects. To a practitioner who wishes to know some essential Pathological or Bacteriological features of a condition met with in practice, the book provides the necessary information.

The book is divided into three Sections and an appendix is given at the end. Section I contains five chapters dealing with General Pathology. This part is written in a very comprehensive manner and it should be of very great use to the student.

Section II contains twenty three chapters and forms the major portion of the book. In this the authors deal with the diseases caused by bacteria, fungi, protozoa, viruses and those of uncertain origin. The information contained in these chapters are in a nutshell. The authors have adopted the nomenclature of the Society of American Bacteriologists along with the older names as synonyms. This nomenclature, unfortunately, is bound to cause a certain amount of confusion to the student, but it seems to be a small matter in comparison with the advantages gained in obtaining the latest information in the diseases caused by bacteria, etc.

Section III contains nine chapters dealing with Special Pathology devoted to diseases of the various systems, such as the circulatory, nervous, respiratory, etc. There is plenty of information available in this section and the authors have included a small list of parasites found in the stomach and intestines of the domesticated animals.

The appendix is devoted to the laboratory technique wherein methods in vogue in laboratories have been summarised. This is useful information both to a student who works in a clinical laboratory during his course in a College and also to a practitioner who has a small laboratory of his own.

One specific feature of the book is the information on diseases affecting poultry.

We have much pleasure in recommending this book with confidence to Veterinarians in general and Students in particular. The book contains 194 very good illustrations and the get up of the book reflects credit on the publishers.

The Modern Review—January Issue.—The Modern Review usually contains 120 pages. The current issue contains 136 pages. It has, in addition, two multi-coloured reproductions of water-colours by well-known

artists, and black and white reproductions of 9 frescoes from a royal pavilion of Isfahan in Persia, separately printed on art paper. There are, besides, 51 other illustrations.

Rabindranath Tagore has contributed one poem and one article to this number. There is one short story by Srimati Seeta Devi, and some chapters of Nagendranath Gupta's romance, "A Planet and a Star." Two letters of Mahatma Gandhi to C. F. Andrews are printed in this number.

In addition to these, there are 16 articles, many of them of a topical character. Among them mention may be made of Rev. J. T. Sunderland's article on the American Poet Whittier; Mohammad Ishq's article on "Pur-i-Dawood: a Scholar and Poet of Modern Persia"; J. M. Kumarappa's article on "America and the Ottawa Pact"; James H. Cousin's "Shelley's Aesthetical Philosophy"; Naresh Chandra Roy's "Control of the Executive over the Judiciary"; O. C. Gangoly's "Art: an Untouchable in Indian Education"; "Retrenchment," by Hemendra Prosad Ghose; "Manchuria and the League of Nations" by S. C. Guha D. Sc., of Berlin; "Ram Mohun Roy Centenary Memorial" by Taraknath Das; "Ottawa Trade Agreement" by Nalini Ranjan Sarker, President of the Bengal National Chamber of Commerce; "Itinerary of the Persian Tour" by K. N. Chatterji; "The Brahmanic Sculpture of the Gupta Period" by Ramaprasad Chandha, late Superintendent of the Archaeological Department.

This issue contains reviews and notices of more than 40 books, 9 selections from Indian Periodicals, 5 selections from Foreign Periodicals, 7 interesting and illustrated gleanings from scientific magazines, 5 Notes on Indians Abroad by Pandit Benarsi Das Chaturvedi, and 4 brief notes with pictures in the Indian Womanhood section.

The number of Notes on current topics by the Editor exceeds fifty.

Annual Report of C.V.D., United Provinces, for 1931-32.—Rinderpest was very severe during the year and the total number of deaths reported from this was 47,761 against 25,919 in the previous year and yet "Demands for immunisation of Cattle by S. S. method were received from many quarters, but owing to restricted funds the work could not be taken up." Success (91.2 per cent.) with "Danistol" in cases of Liver fluke in Cattle is recorded, but the report says the cost of Rs. 14 per animal is prohibitive and that experiments are in progress with a cheaper drug "Carbon Tetrachloride".

"Naganol" has been used with success in Equine Surra. "Kaolin" though found not useful in the height of severity of Rinderpest, was yet useful in checking diarrhoea when the acute symptoms have passed. The opening of a "Virus" Depot for S. S. inoculation is under contemplation. We miss the Government review on this report in the booklet published.

Annual Report of C.V.D., Assam, for 1931-32.—We note with regret that Mr. W. Harris, Superintendent, C.V.D., Assam, has been compelled by ill-health to take leave preparatory to retirement. The Government have rightly placed on record their appreciation of the invaluable services rendered to the Province by the Retiring Superintendent.

Two items of professional interest need recording. (1) Cases of Anthrax have been successfully treated with intravenous injections of Arsenic. (2) An outbreak of Bovine Contagious Lymphangitis on Khanapara Farm was finally stamped out after the Live-stock were rid of "Lice" which badly infested them, thus indicating the "possibility of lice being one of the vectors for the propagation".

Annual Report of C.V.D., Central Provinces and Berar for 1931-32.—The results of 'Vaccination' against Rinderpest are said to be "very promising". The details are not given as they form the subject of a separate communication to the Government. The wide-spread prevalence of Piroplasmiasis in Cattle is very striking, as many as 62,992 animals having been treated during the year. It would be beneficial to conduct some research into possible method or methods of transmission; and to fix the incriminating vectors, etc. We don't know if we are any more justified to deal with cases of Surra in horses under the Glanders and Farcy Act, when Naganol has been found to be so very efficacious. Perhaps the Act in C. P., needs to be slightly amended by the Local Government as has been done in Madras. In cases of Bovine Coccidiosis "treatment with Methylene Blue was found to be efficacious". A marked increase under every item of work is the pleasing features of the report and the Government's appreciation is as generous as the report deserves.

Annual Report of C.V.D., Bihar and Orissa, for 1931-32.—The year evidently was a healthy one for Cattle. The new College at Patna is taking rapid strides. Nothing succeeds like success. Provision has been made for running a Post Graduate Class with up-to-date hostel accommodation for the Officers. Twenty-nine cases of Bursatti were successfully treated with intravenous injections of Iodine. Good results have been obtained with Trypan-blue in cases of debility.

Obituary.

We regret to record the sad demise of D. Kamayya, G.M.V.C., of the Civil Veterinary Department, Madras, on the 18th October 1932 after a service of nearly 14 years. He was only 36 years of age and that makes the grief all the more poignant, and of P. Chidambara Nadar G.M.V.C., who died on 6th November 1932, at the age of 47, after a service of nearly 23 years. We offer our heart-felt condolence to the members of the bereaved families.

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