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Journal

1928 - July



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No. 1.

The Indian Veterinary Journal.

(The Journal of The All-India Veterinary Association).



Editor:

P. SRINIVASA RAO, G.M.V.C.,

Veterinary Surgeon, Madras.

Office: 26, WALLAJAH ROAD, MOUNT ROAD, MADRAS (S. INDIA)

MADRAS

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NOTICE

The Indian Veterinary Journal

A quarterly record of Veterinary Medicine and Surgery

devoted to the cause of the Veterinary Profession.

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EDITOR:

P. SRINIVASA RAO, G.M.V.C.,

Veterinary Surgeon and Proprietor, Dr. Pangal's Veterinary Institute,
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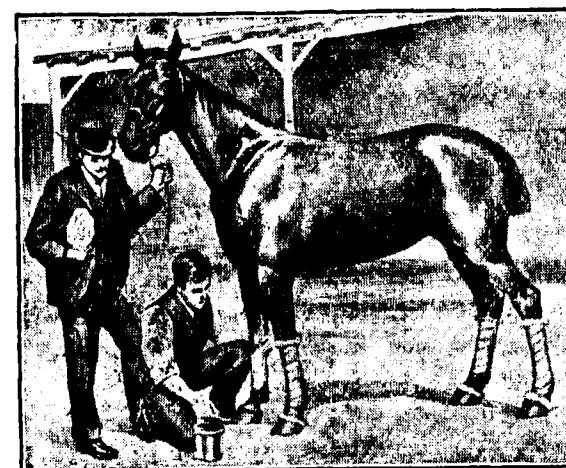
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THE INDIAN VETERINARY JOURNAL

(The Journal of the All-India Veterinary Association)

Vol. V.]

JULY, 1928.

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THE

Indian Veterinary Journal

Vol. V]

JULY, 1928

[No. 1

Editorials.

PROFESSIONAL CONSCIENCE

Conscience does not seem to be a constant commodity in human beings. We have men and men. There are people who are conscience-proof and others who are easily conscience-smitten. Various are the opinions held on the matter of conscience. We shall not enter into a discussion of them. But it seems to be a very interesting faculty capable of accomodating itself to a great extent. We have heard of communal or race conscience, national conscience, religious conscience and so on. But few people talk of professional conscience. Whatever may be the nature of conscience, certain broad principles are recognised all the world over. The "small still voice" seems to dictate the same principles as far as possible all over the universe.

We are sorry that it is the lack of professional conscience, much in evidence in some, that has prompted us to write on this subject. It is an admitted fact that a profession thrives on the efficiency, efforts and achievements of its individual member. It must be the endeavour of every professional man to leave his profession better than he found it. All possible venues in clinics and research must be ransacked. Nothing short of an undivided attention to duty primarily, can justify the claims of a man to belong to a profession. He must continue to be a student learning many new things to the end of his days. The presence or absence of superior officers should in no way interfere with the faithful discharge of his duties.

To relieve the distress of the dumb creation, to serve the ryot in the care of his cattle truly and well, to preserve the cattle wealth of the land to the fullest extent possible, to help in the maintenance of public health by observing stringent rules in the matter of communicable diseases from animals to man and to put every ounce of effort in the advancement of science must all be the ideals to strive after. A robust professional conscience should be our inexorable judge in the discharge of such sacred duties.

Most of our professional colleagues are all that could be desired; but there are a few—their number is fortunately microscopic—whose work is far from satisfactory. It is such men who provide materials for the sort of evidence tendered by officers, like Mr. D. A. D. Aitchison before the Royal Commission. We had dealt in detail in a previous article whether there is any justification to make the 'exceptions' assume the proportions of the 'rule'. But the fact remains that there are such men who are a disgrace to the profession and to the country which gave birth to them. We will only appeal to them before we give them up as lost, to remember that the honour of their profession and their country is intertwined with them and that they should strive their utmost to come in line with others.

After passing out of the college they follow a 'policy of drift', care not to open a professional book or Journal and argue when approached on the subject that their present scale of pay does not warrant more efforts on their part! We admit that the prospects of the profession in India are disheartening; but to make an excuse of it and perpetrate professional stagnation is a matter which must be condemned severely by all right thinking men.

We hope our advice will not be misunderstood. We want every limb of our profession to be strong, to be above reproach, to be useful to the Crown and country, to create a public opinion in their favour, to develop an inexorable professional conscience and to enjoy the fruits thereof. We request our readers to judge for themselves at the end of a day's work if they had done their best. From such introspection many good things will accrue and the profession will be bettered.

AN ARTICLE AND AFTER

My article on "An Expert's Evidence" commenting on the evidence of Mr. D. A. D. Aitchison before the Royal Commission on Agriculture, seems to have given offence to a few of the I.V.S. members of the Profession in India. Various rumours have reached my ears ever since the publication of that article. I did not attach much value to them for I fully believed that if there was going to be any move in the matter by them, that it will all be an open and above board affair, a direct challenge to justify my criticism under reference. But alas! it is otherwise. Demiofficial letters, appeals to the Government and indirect pressure on individuals seem to be the methods adopted.

The Secretary of the *Indian Veterinary Service Association* has asked the General Secretary of the *All-India Veterinary Association* to apologize for that article. The Secretary of the I. V. S. Association did not move in the matter when the evidence was tendered by one of its members against a section of the members of the Veterinary profession—even though that section occupied a subordinate position—which could not defend itself or contradict or question the validity of that evidence because it was tendered from a privileged position before a Royal Commission. If the Secretary had moved then, it would have been chivalrous. I am surprised to see that such a responsible body as the Indian Veterinary Service Association should have thought fit to move in a matter that concerns purely an individual. I have not said anything against the entire class of I. V. S. officers in my article. I have not defamed that superior service as such. Mine was a fair comment on the offensive evidence of a particular individual who ought to take steps personally to redress his grievances, if he feels he has been blamed without cause. I take the full responsibility for the article in question. The General Secretary has had nothing to do in the publication of that article. I can only apologize to the General Secretary for any little inconvenience that the article might have caused him.

I have read and re-read that article and I honestly feel that the comments therein are fully warranted by the

evidence on which they are based. Where Mr. D. A. D. Aitchison could have helped the profession a good deal, he has harmed it beyond measure. I would request the members of the Indian Veterinary Service Association to go through his evidence in full and impartially judge for themselves if such an evidence would have been tolerated and allowed to pass unnoticed in their own native land.

Out of sheer sense of duty imposed on me as an Editor of a Journal intended to safeguard the interests of the profession in India, I have written that article. If in the discharge of that duty I should have given room for offence, I can only say that it is all due to the inexorable obligations of honest journalism. But one thing I can assure is, that nothing in that article has been written with malice, nothing out of any personal pique, nothing out of any other extraneous consideration even and above all no insult was intended to the person of Mr. D. A. D. Aitchison.

P. SRINIVASA RAO,

EDITOR,

The Indian Veterinary Journal.

P. S.—After writing the above, I have received a communication from the Veterinary Adviser to the Government of Central Provinces, when requested to supply me with the latest Civil Veterinary List of his province, to the effect, that, "as the journal has been publishing articles attacking members of the I. V. S., no such list will be supplied. The staff in this department are entirely against subscribing for copies of the journal."

Comment is needless. I allow the readers to judge for themselves the fairness of the procedure adopted. *Ed.*

Notes.

We invite the attention of our readers to an account of a conference the of Veterinary Graduates in Mysore, which we publish elsewhere in this issue. It makes our heart leap in glee to see the hearty co-operation extended by the head of the department. It is as it ought to be. We are sure bright days are in store for the newly born association in Mysore, under the able and sympathetic guidance of Dr. L. C. Coleman and Major R. W. Simpson. We wish the new association every success.

* * * * *
Our congratulations to the Government of Madras and its Veterinary Adviser for opening a new circle with headquarters at Vellore from the 1st of July, 1928. This was long overdue. Even now the circles are too extensive for a single officer to manage each. We hope that more circles will be added on year after year until there is one officer for each district, as in the case of the medical department.

* * * * *
Another new step the same Government has taken is that each Circle Officer is now given a Personal Assistant. We welcome this step also as conducive to the efficiency of the department. Under this scheme the Circle Officers will be able to find more time to devote to the professional side of their administration.

* * * * *
We make no apology for extracting in this issue articles from an eminent contemporary of the West—The North American Veterinarian—not out of vanity, but just to let the profession in India know that our activities are watched with interest even in such far off lands and that we have to play our part well in the advancement of Science.

* * * * *
We wonder if the same could be said of the members of the profession in India. The Veterinary Journal of England is widely read no doubt in this country. But we fear, not so is the case with The North American Veterinarian. The latter is also an interesting and instructive journal and we commend it strongly to the profession.
* * * * *

"*Rural Reconstruction*".—In this country we speak of "farm relief." India, judging from the leading editorial, in a current issue of *The Indian Veterinary Journal*, the same order of distress gets the more distinguished title of "Rural Reconstruction." We presume, however, the problem indicated is no more serious than our own tussle to keep farming from sinking down to the level of archaic peasantry.

We have never expressed ourselves on farm relief in such forcible language although always prompted to do so and lest what we have said or quoted from our own expert economists may have seemed a harsh treatment of the subject, we are pleased to have the editor of *The Indian Veterinary Journal* unwittingly portray the American farm situation so well.—
N.A.V. April.

* * *

The Indian Veterinary Journal.—One of the most interesting and instructive journals which comes to us is *The Indian Veterinary Journal*, a quarterly publication and the official organ of the All-India Veterinary Association, published at Madras, South India. The insight it gives of the veterinary situation in far-away India and adjacent territory is little less than fascinating to anyone bent upon knowing what is transpiring in this big, wide world and in this art of ours which has to do with domestic animals, from the tiny canary bird to the ponderous elephant and patient camel, all of which present a staggering heterogeneous medley of animal diseases and infirmities.

It is interesting to note that Indian Veterinarians support an active national association, a system of veterinary education of no mean proportions, and a journal that promotes and holds together the sorely needed national veterinary service.

N.A.V. April.

* * *

Rai Saheb Debaker De, Assistant Principal, Bengal Veterinary College has published a book on "The Maintenance of Cattle in Health and Disease" in Bengali. We dare say it is a useful treatise to the ryot of Bengal. We are glad to read an appreciative review of the book by Amrita Bazar Patrika.

General Articles.

S. S. INOCULATION FOR RINDERPEST WITH LOCAL VIRUS.

BY

S. SESHADRI AYYANGAR,

Veterinary Assistant Surgeon, Madras.

I was camping in some interior village in Peddapur Taluq on systematic tour, thinking how to spend the required number of tour days, when I received a telegram from the Circle Officer, Vizagapatam, asking me to proceed to Biccavol village in Ramachandrapur Taluq. I left for the place on the same day and met the Officer in the train who was also proceeding there. We reached the village the next day, i. e. 11th January, 1928. From enquiry, we learnt that Rinderpest was prevailing in a very severe form and there was a toll of more than a hundred head of cattle. The Circle Officer M. R. Ry. H. C. Sampath Iyyengar Avl., explained to the ryots about the advantages of S. S. inoculation and the ryots were willing for any kind of inoculation with the sole idea of saving their animals from the ravages of the disease. Serum was wired for and in the meanwhile measurements of the animals to be inoculated were taken. This is the first village, I think, wherein S. S. inoculation was conducted with local virus on a wide scale in the First Circle.

Introduction:—There was the least difficulty in getting the consent of the people for S. S. inoculation, especially in the months of December, January, February and March, as most of the ryots can afford to forego the little work they have in the fields. We were in search of a fresh case so that we can draw the virus and commence inoculation as soon as the serum is received. There was a little difficulty in the village to convince the owner of the first control about the harmlessness of drawing blood from the sick animals. With a little persuasion people were willing to allow the drawing of virus from their sick cattle and in some villages controls were offered voluntarily to get their healthy cattle inoculated.

Twelve controls were selected in six villages where S. S. inoculation was carried. Virus was drawn from these controls when they had a temperature ranging from 103.8° to 106.8° F. with typical mouth lesions and without diarrhoea. Out of the 12 controls used, 9 recovered without any complication; one, after a good deal of treatment and nursing as the disease was in a very severe form; two died in spite of good treatment and nursing. A pound of blood was drawn from each control and 50 to 80 c. c. of special serum were injected for each control and for some 15 to 20 c. c. of Tr. of Iodine in 40 c. c. of aqua distillata were given subcutaneously. The recovery in 9 of the controls was marvellous and the temperature came down to 102° or so the next morning with a little diarrhoea, (perhaps due to bloodletting and injection of serum).

Drawing of Virus :—The bottles, instruments and the bleeding trocar were cleaned thoroughly and sterilized. The animal was thrown down for bleeding from the jugular and after the cleaning of the part, the trocar introduced into the vein. An assistant held a sterilized pound bottle containing coils of copper wire to collect the flowing blood. As soon as sufficient blood is drawn the trocar is removed and the bottle is stoppered at once tightly, wrapped round with a cold wet towel and shaken briskly for about 20 minutes to half an hour to defibrinate the blood.

Transference of Virus :—The virus is then distributed to previously sterilized 4 oz. and 8 oz. stoppered bottles. The idea in transferring the virus into 2 or 3 small bottles is to avoid opening them many times for injection and also to avoid oxidization as far as possible. The mouth of the bottles are stoppered well and covered with a thick fold of sterile cotton, wrapped over it with a thick paper and then tied with a strong twine. The bottles are again rolled up with a folded wet towel and kept in a basin of cold water in a cool and airy place. The virus is thus kept cool and used at varying times from 2 to 24 hours. There was no change in the colour of the virus even though it was kept like this for 36 hours as a test. Before bleeding, smears were taken and examined microscopically for Piroplasms and Trypanosomes, and in all cases proved negative for both.

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S. S. Inoculation for Rinderpest with local Virus 9

Dose of Virus:—The dose of virus used in the six villages varied from $\frac{1}{2}$ to 3 c. c. according to the age and condition of the inoculated animals. I did not find any extraordinary severe reaction when the animals were given even 3 c. c. of virus.

Dose of Serum:—The dose of special serum given is 10 c. c. per 100 lbs. body weight. Ordinary serum was also used in inoculating about 400 head of cattle with a dose of 12 to 15 c. c. per 100 lbs. body weight. The use of balloon syringes was dispensed with as it would take a good amount of time in injecting the serum and as greater number of animals could not be inoculated within 24 hours after drawing the virus. Two 20 c. c. "Reliance Standard" syringes were used, one to inject and another to draw the serum. A little care will prevent wastage of serum if any.

Thermal Reaction:—In the first village, Biccavol, morning and evening temperatures were recorded daily for the first batch of 200 and odd animals inoculated, from the third day after inoculation. More than 60 showed at thermal reaction with morning temperatures of 102° and above. Then daily temperatures were recorded for a few animals in each batch. In all the batches the percentage of reaction varied from 60 to 90%. From my experience of three months in the S.S. camp, I find there is no necessity to record daily temperature and there is no uncertainty in reaction when inoculated with local virus. It is enough if one remains in the village to watch the inoculated animals for a week and to attend to any inoculated animal when reaction is severe.

Pregnant Animals:—About 70 animals of varying periods of pregnancy from 1 to 6 months were inoculated. There were no untoward results till to-day.

Suspected Infected Animals:—As a test, 4 sick animals with a temperature ranging from 104° to 105° F. were inoculated with virus and serum. All the animals recovered without giving us any anxiety.

General Remarks:—In all 1835 animals were inoculated by S. S. method in 6 villages of Peddapur and Ramachandrapur

Taluqs. in the months of January, February and March, 1928. More could have been done had it been possible to get more serum. There was practically no difficulty either for virus when the disease was prevailing in a severe form or for the consent of the ryots when it was explained to them that the duration of immunity conferred by this method of inoculation was longer. The first batch of S. S. inoculation was conducted in the affected herds in Biccavol. The disease was checked at once. The news spread like wild fire in both the taluqs. After observing the efficacy of this kind of inoculation for a month, the people from the affected villages were requesting us to go to their villages, through telegrams, mahazars and personal requests. We were not able to comply in time. There was lot of difficulty to brand the animals on the left quarter as the ryots had a sentimental objection to it and many of them had to be branded on the left thigh. Subsequently we were supplied with a "Tattooing" set. Inoculations and "Tattooing" were done simultaneously and a good amount of trouble and time were saved.

Within a few years Rinderpest can be controlled to a very great extent in this Presidency. Already, the ryots are losing what little faith they have in our serum alone method of inoculation against Rinderpest as it confers only a transitory immunity. They become disgusted to get their cattle for inoculation every week till the disease subsides in the village.

Ordinary serum was used in inoculating about 400 head of cattle by S. S. method. The reaction was not at all severe. I find there is no danger in using the same. There was only one casualty among the 1835 animals inoculated, a buffalo calf, 3 months old,—cause of death being due to impaction of the rumen and acute tympany.

Treatment of affected cattle:—About a hundred of affected animals were treated with the injection of Tr. Iodine with a dose varying from 15 to 20 c. c. in 40 c. c. of sterile water in the six villages where S.S. inoculation was carried. More than 80% recovered. Some were given 2 or 3 injections. Injections of Iodine in febrile stage had very good effect in reducing the temperature and the animals had an easy recovery.

THE PARATHYROIDS IN HEALTH AND DISEASE *

BY

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Within the last 25 or 30 years the attention of scientists has been directed to a group of seemingly unimportant organs scattered about in various parts of the body, and the ceaseless devotion and untiring energy of a band of reputed workers in this extremely fascinating branch of Physiology have brought to light such astonishing facts about their functions, that these bodies, formerly regarded as only of morphological interest, have now been placed in the category of organs essential to the well-being of the individual. These are the organs or glands of internal secretion or endocrine organs as they are called. They are invariably ductless, and the secretion formed within them is passed directly into the blood-stream by the veins leaving the gland, or indirectly into the same stream by the lymphatics from the gland. The functions of these glands are closely related, acting either as synergists or antagonists.

At the present time several such organs have been identified and the exhaustive researches of future investigators will alone show if anymore are to be added to the list. In the present paper it is desired to briefly survey the present state of our knowledge regarding one of these, namely the Parathyroids, and to indicate some pathological conditions possibly connected with these bodies.

The Parathyroids are usually four minute bodies situated in the thyroid region, one or two of them embedded within the thyroid and the others attached to the capsule of the same gland, but extremely difficult to be identified by their naked-eye appearance. Formerly regarded as only immature thyroid tissue, they are now known to be distinct organs playing an important role in the animal economy. Although so closely associated with the thyroid, they are peculiar in

* Read at the Fifth All-India Veterinary Conference, Bombay, December 1927..

that they contain no Iodine, the presence of which and in such abundant quantities is such a remarkable feature of the thyroid secretion.

Complete surgical removal of the glands proves fatal, most of the animals dying in from a few days to a few weeks. Young animals are more susceptible to the effects of parathyroidectomy than adults. If one of the four parathyroids be left, or if there happens to be an accessory parathyroid which has escaped removal, the animal develops an increased excitability of the nervous system, chiefly of the peripheral nerves, a principal symptom of which is tetany (muscular spasms and twitchings). Disease of the parathyroids (atrophy or degeneration) also leads to the same train of symptoms. Chronic tetany is always accompanied by general wasting, indicating that the nutrition of the body is greatly affected. As carnivorous animals and those which are put on a flesh diet, are much more susceptible to tetany than those on a vegetable or milk diet, it was thought that the parathyroids in some way influence the metabolism of proteins in the body, especially of those of muscles, and that it was the failure of this regulation, resulting in the accumulation in the blood of certain products of protein metabolism, that brought on the symptoms of tetany. One such product is guanidine and this has been found to exist in considerable quantities in the blood of parathyroidectomised animals, as well as in their urine and muscle. There is thus evidence to show that the spasms and twitchings of tetany are in all likelihood produced by the accumulation of this toxic agent. Normally the major part of guanidine is very probably metabolised into creatin and thus rendered nontoxic. Another striking fact brought to light in the course of observations is that in parathyroidectomised animals and in disease of the parathyroids there is a deficiency of Calcium salts in the body and this brings about a condition of hyperexcitability of the nervous system with the resulting tetany; the presence of guanidine serves to aggravate the condition. Injection of parathyroid extracts increases the Calcium content of the blood, and if the increase be excessive, symptoms of Calcium poisoning supervene, followed by death. In such cases the blood also becomes thick and does not flow easily. In chronic tetany imperfect calcification processes

have also been observed. From the facts stated above it may be concluded that the parathyroids furnish an autacoid (parathyrin) which passes into the blood and regulates Calcium metabolism; it also prevents accumulation in the blood of toxic agents of protein metabolism and thus maintains the integrity of the muscular system.

There may be some possible connection between diseases caused by disordered Calcium metabolism and insufficiency of the parathyroids. We may take rickets as an example. Without going into details, it will suffice to say that the etiology of the disease is not yet clearly understood. The only thing definitely known about it is that it is due to a deficiency of Calcium in the organism, (and incidentally that of phosphorus). Whether this arises from a lack of the anti-rachitic vitamine, or endocrine deficiency, or some sort of infection, or the simple one of keeping animals confined in badly-ventilated places and feeding them with foods poor in lime salts, or exposing them to such conditions as would prevent them from getting the adequate amount of lime for their food, are all debatable points, though all these undoubtedly act as contributory causes.

Rickets usually affects young animals, chiefly the young ones of carnivora, and as "convulsions are also frequent prodromal symptoms, especially observed in pigs, and may accompany the disease even in the later stages when enlargement of the bone is already noticeable" (Hutyra and Marek, *Special Pathology and Therapeutics of Domestic Animals*, 1926 Ed. Vol. III p. p. 238) and as in a large proportion of rickety children tetany is also an accompanying symptom, may it not be suggested, especially in the absence of a definite etiological factor, that there is some relation between this condition and parathyroid insufficiency? Besides, as has been stated above, deficiency of Calcium is the only thing understood about rickets, and a chief function of the parathyroids is to regulate Calcium metabolism; if animals are placed in such conditions that they fail to get the proper Calcium supply for their food, it is possible that such a condition may react on the parathyroids, inducing a state of hyposecretion of the glands, and both prolonging and aggravating the rickety condition.

Though an attempt has been made to indicate a line of connection between rickets and parathyroids, it is not in the least intended to suggest that parathyroid medication (which by the way should always be accompanied by Calcium administration) should replace the recognised standard methods of treatment followed in rickets, and even if we wanted to resort to such form of treatment, we could not possibly do it, except in the case of very valuable animals, as parathyroid preparations are so expensive.

In osteomalacia and osteoporosis we have conditions allied to rickets. In chorea and epilepsy we have nervous disorders accompanied by spasms and convulsions. There is a peculiar locomotor disturbance occurring in horses characterized by jerky action of one of the hind limbs; this is known as 'stringhalt.' As in the case of rickets it may be that the parathyroids are at fault in all these conditions.

In Hæmophilia the parathyroids may be well worth a trial.

REJUVENATION OF DOMESTIC ANIMALS.*

BY

B. B. JOSHI, G.B.V.C.,

Modern methods of rejuvenation are based on a number of organs known as the ductless glands, that is, glands with an internal secretion; they are called Endocrine glands and the secretion is known as Incretion.

Incretion necessarily changes the composition of the blood as it hurries to distant parts of the body. Naturally this secretion has an influence on all the organs that are nourished by the blood. Therefore the products of the endocrine glands are not without consequence for the health and growth of the body as a whole. It has now been conclusively proved that the internal secretion of these glands play a great part in building the body and the mind. Though these glands seem to be without a means of discharge they

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communicate with all parts of the body by means of Hormones which are contained in the blood. The generative glands contain two principal groups of cells—the first performs the function of external secretion namely sperm cells which are discharged from the body—the second group of cells are the so called interstitial laying cells, in their interity called the interstitial glands. These cells produce the internal secretion which is most essential for the individual's normal sex characteristics thus differentiating the male and female in physical as well as mental make-up.

The question is not yet solved whether a definite differentiation is possible between the glands that generate only external secretion which possess visible ducts and the other which have no ducts but discharge their secretion into the blood or the lymph.

Steinach however assigns the leading part of the in-cretory function of the generative glands to the interstitial cells which he calls the 'Puberty glands.' Working on this theory he deprived young animals of the generative glands and soon found that these checked the development of certain organs. He then experimented on another set of animals by ligation of the sperm ducts and found that the animals developed a virility which astounded him. From this he concluded that the pathological and physiological influence of the internal secretion was of paramount importance in the building of the animal body and mind.

Steinach Operation:—This operation consists in severing the duct of the generative gland in such a way that it will not be possible for the severed ends to meet again. For this reason a simple severing of the duct would not be sufficient because without providing for permanent separation of the severed ends they would knit again and the secretion would be again discharged. Another difficulty would arise from the possibility that from the severed end of the duct the secretion would leak into the abdominal cavity. As it is important that there shall be no discharge of secretion whatever, it seems wise not only to severe both the vas deferens, but also to ligate it in two places and this closes the ducts permanently. Besides a fragment from each of these two

places of ligation are removed long enough to make the union impossible.

This operation is a minor operation but great care is necessary when performing it to see that none of the blood vessels or nervous tissue surrounding the ducts are injured.

N. B.—Another method which has been found very successful in depriving the animals of this procreation power is by simple ligation of the vas deferens.

EXPERIMENTS PERFORMED

1. An old dog about 12 years of age, a stray dog, was operated upon by the method of Steinach's operation. The dog was well looked after and fed after the operation and the results were astounding indeed. An old dog with practically no teeth in its mouth, began to show signs of virility; began fighting with other dogs; the coat improved considerably and it began to behave like a young dog in every respect.

2. An old Sindhi stud bull not now used as such, being about 18 years of age was operated upon and showed signs of virility and youth but not like the dog above referred to.

As regards depriving the animals of their procreative power by simple ligation of the vas deferens I had had no opportunity to perform an operation. I am however of opinion that bulls castrated by this method will be teasers, and as such the operation will be a failure in a country like India where bullocks are required for Agriculture. In a farm where cows are necessary the operation is bound to be a failure as the bulls castrated by this method will only be teasers and worry other animals.

However, with all the facts mentioned, it is worthwhile to give a trial to the operation with a view to rejuvenate as well as to deprive procreative power.

As far as rejuvenation is concerned I am of opinion that if the operation were to prove a success there will be enough practice for veterinary profession in this country. The chances of operation with a view to rejuvenate old bulls are rare in this country and it is worthwhile to try it on a large scale.

BRIEF NOTES ON DISEASES COMMON AMONGST THE WORKING ELEPHANTS IN BURMA.

BY

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1. *Constipation*:—Properly speaking it is not a disease but a symptom.

Causes:—Innumerable. Impaction of the intestine through eating dry fodder. It may be also due to worms and bad liver.

Symptoms:—No passage of fæces. Dullness of appearance. The mucous membrane of mouth and eyes is of a yellowish tinge; breath foetid; animal eats little or no fodder; excessive thirst. The beast is in a feverish state of health and in some cases the temperature rises 2 degrees above the normal.

Treatment:—Animal may be tempted to eat a little tamarind and after he takes it, Epsom salt may be freely administered up to 2 lbs. and the animal should be given plenty of water to drink. If there is no enema syringe, fæces must be removed by hand from the rectum. To do this the arm should be soaped well with hot water and soap and passed carefully into the rectum as far as it can reach and then the fæces must be removed. Great care must be taken not to injure the mucous membrane at the time of passing the hand. After the rectum has been cleared, warm water enema by the aid of a bamboo syringe should be given. This treatment should be repeated twice daily until relief is obtained.

2. *Diarrhœa*:—Unless severe, no diarrhœa is to be checked. The causes should be ascertained and treatment prescribed accordingly. When elephants suffer from worms, they resort to eating mud and purging commences in about twelve hours to expel worms. Diarrhœa caused by drinking dirty water in the pools should be treated by giving a few packets of Epsom salt. It is sometimes sequel to constipation. Excess

of food, poisons, nervousness, excessive secretion of biles may be the predisposing causes. When due to error in diet a pint and half of castor oil may be given to remove the irritation. Change of fodder is necessary and the patient should be given fresh green fodder and plenty of common salt. Gupta's Tonic Powder, a patent medicine is to be given daily for a month after an attack of diarrhoea.

3. *Worms*:—Elephants are generally subject to worms. The presence of worms in the faeces may or may not be a sign of ill-health, but it is well to take precautions. There are several varieties of worms of which round worms are very common. In certain cases worms not only attack the intestines but other organs such as the heart and the lungs. The elephant "Mo Ku Le" was attacked by a large number of "bots" and these parasites attacked her heart and lungs and thereby perforated those organs and hence hastened her death. I have seen many deaths by worms; but this is the first instance where vital organs were perforated.

The infection generally comes from fodder, stagnant water and from drinking water polluted by the faeces of an infected animal. As we have recently lost a good number of elephants by worms it will not be out of place to give a little history of the disease. The Company had an epidemic of worms in the Kabaung Forests in 1912, at the Pyu Kun in 1915 and also at Swa and Kabaung in 1922, 23, & 24. The disease (Internal Parasites) sometimes assumes such a virulent form that animals, from outward appearance quite healthy, die very suddenly and these sudden deaths lead one to suspect that Anthrax or Surra was responsible for them. The fluke disease is common in Burma. A long account of an outbreak of disease due to liver flukes which occurred in 1867 amongst the Commissariat elephants stationed in Rangoon was elaborately dealt with between the Commissariat-General Burma, and the Superintendent, Government Kheddahs, India (Dacca). I read the whole interesting correspondence and made some notes of the epidemic. The disease is caused by *Fasciola Jacksoni*. It is an acute or chronic inflammation of the liver and bile ducts, more commonly the latter. In the chronic form it leads to serious loss of condition. The liver fluke parasites are leaf-shaped and elongated. The body is broader towards the

middle parts. The eggs of the matured flukes are passed out with the faeces and embryo develops under suitable conditions of temperature and moisture in about 3 to 6 weeks in the system and occasions death. The elephants generally carry the infection in the autumn during the rainy season grazing and develop the disease in the spring. In Europe it is called the spring disease and a parasite *Fasciola Hepaticum* belonging to the same family as *Fasciola Jacksoni* causes epidemic amongst sheep so much so, that in certain districts 50 to 90% of the sheep die.

Treatment:—The following procedure is generally adopted to treat an elephant for worms:—Tie the elephant in the evening at 6 o'clock and tie him up without any food till 8 o'clock next morning. After tying up the beast, a dose of Epsom salt should at once be given. In the evening at about 9 or 10 o'clock a dose of two drams of Santonin mixed with equal part of Calomel should be given in tamarind followed by a second dose of Epsom salt (usually 4 oz. packet) early next morning. Santonin, though an expensive drug is a sure remedy for worms. *Areca nut* is a substitute with no certain results. It is important that the elephant should be tied up from 6 in the evening till 8 next morning.

Prophylaxis:—The simplest and best known prophylactic measure is the avoidance of moist low-lying land where larvae of flukes, generally wait to be devoured by the final host inside which it develops into a matured fluke. It is also safe to burn up all the worms expelled by an elephant after taking "Santonin" in order that infection may not spread amongst other beasts.

4. *General Debility*:—The most common ailment amongst elephants is general debility. In cases of general debility one may find swellings in the neck, chest, belly and sometimes the legs. In other cases there is no dropsical swelling, it is more of a wasting disease in which the animal falls gradually away to mere skin and bone. Both kinds are extremely fatal when the disease gets the elephant a firm hold. They are very common amongst the newly-purchased elephants. The disease is generally induced by the radical change of food and habits. Medicine is of little avail; and

if the disease is once allowed to become serious, there is every probability of a fatal termination. When an elephant shows signs of debility it should be removed to a better grazing ground where all the natural sceneries are present and there if he is allowed to graze at will, with protection from an undue exposure to sun or inclement weather, there is every chance of its coming round its former healthy condition. Sometimes drugs are prescribed in order that an elephant may regain condition. Gupta's Tonic Powder - - a patent medicine should be given according to the direction. In prescribing Liqr. Arsenicalis no Sinok (elephant headman) is authorised to prescribe this drug. As it is one of the poisonous medicines, great care should be exercised for its use.

5. *Lymphangitis* :—Among ailments affecting the working elephants in the forests of Burma Lymphangitis occupies a very important place. All concerned about the elephants find themselves busy against these serious maladies, which at first furnish a comparatively strong contingent of non-effectives, than a number of chronic hospital cases. The length of treatment, repeated care and attendance which they exact - - put science and the medical personnel to the test.

The two chief types of Lymphangitis actually known are (a) benign and (b) malignant.

(a) *Benign* :—In this form of lymphangitis the joints are not mainly affected, but the glands on the other parts of the body become at first firm and hard, later soft and elastic.

(b) *Malignant* :—The malignant form of lymphangitis is the most complicated one. The joints are mostly affected in this variety of the disease.

The disease is not intimately associated with rheumatism. By the studies of it we are gradually getting a more accurate knowledge of its anatomical and clinical forms.

Causes :—Unusual exposure to cold, wet and damp, errors in diet especially at the beginning of the rains, when the animals gorge themselves on some palatable fodder—such as the new grass coming up at the beginning of the rains—and local injuries through fetters or maltreatment by the riders are all spoken of as possible exciting causes. The

disease occurs both in winter and summer, and in elephants both those that are well-conditioned, as well as among debilitated animals and those suffering from parasitic skin diseases and a condition of ill-health. In the majority of cases it is a result of some infectious process.

General Features :—Temperature—no perceptible elevation of temperature in elephants has so far been observed. It is rather lower. The blood often shows a slight anæmia, which is not marked as might be expected from the appearance of the patients. The urine does not show any change of moment. Muscular atrophy is common and sometimes advances very rapidly. In some cases the bony atrophy is very marked.

Course :—General progressive form; this occurs in two varieties, acute and chronic. There is an involvement of a joint or joints. The general condition usually remains good, though in malignant cases the animal may become emaciated. Some cases *progress* very rapidly; they lose weight and strength and suggest a progressive septic process without showing any external signs of suppuration in any of the affected joints.

In chronic cases gradually the shape of the joint is greatly altered. Ultimately the joints become completely immobile. A majority of the cases finally reach a quiescent stage, in which they are free from pain, but suffer from permanent deformity and crippling necessarily associated with the disease.

Treatment :—Much depends on the proper management and pessimistic attitude is not justified. Certain things are important; early diagnosis and careful attention to the general condition. The bowels should be kept open. There is no drug which essentially influences the disease. The salicylates is an aid in relieving pain and swelling, but should not be given for long periods.

Other swellings which are common may be fomented first with hot water fomentation and internally a course of Epsom salt should be given for a month. After the hot fomentation a brisk massage with mustard liniment may be tried.

6. *Wounds*:—Under this heading abrasions, galls, boils and other varieties of wounds may be classed. Galls and abrasions are generally caused by bad fitting of the elephant gear. The *Theye* should on no account be wet when loading an elephant. In the rains proper care should be taken to keep them dry. To prevent flies sitting on an elephant which is really a great nuisance in the rainy season an antily mixture may be rubbed on the skin before the elephants go out to work.

(a) *Poisonous Wounds*:—(i) *Tiger bite*:—This is not uncommon amongst our elephants when they roam at night in the forests. The wounds should first be washed with corrosive sublimate lotion for three times a day for the first three days and then a liberal quantity of Antiseptic Powder with a coating of Antiseptic Ointment may be applied at least twice a day.

(ii) *Snake bite*:—No reliance could be placed on such diagnosis made by the Sinok (elephant headman) in a very haphazard way. If distinct fang marks are to be found with swelling around, the diagnosis may be confirmed.

7. *Abscess*:—The definition of an abscess in a few words is a localised collection of pus surrounded by a wall of lymph. When an abscess is ripe it should be lanced with an abscess knife. A large and free incision is the best. The direction of the opening should be judged from the position of the abscess. After draining the pus it should be dressed daily by syringing with hot Cyllin, Izal or Zoral lotion (1 in 20) washing the part thoroughly and then drying it with carbolic tow and applying antiseptic powder and ointment. No dirty clothes are to be plugged in the sore. Cleanliness should be scrupulously observed in every way. Any sore, cut or abrasions, however trifling they are must be properly looked after.

8. *Mud-Sores*:—The disease was not much known amongst our elephants previous to the year 1916. In the rainy season of that year a large number of elephants suffered from this disease in the North Toungoo Forests. It was then limited to Zadipo Chaung in Swa. A few milk cases also happened in the same district not far from the infected area the history of which points to the fact that the animals might

have been grazed in or near this particular stream. In 1917, there were a few cases of a very mild form at Myohla Chaung, and only one case at the West Swa. There was a fresh outbreak in 1918, at Palabyauk Chaung in the Pyinmana Forests. One herd, consisting of ten elephants, was affected. In the year 1921, the attack was in its most virulent form, and affected largely the working herds at Madan (Pyinmana). It is interesting to note that there are few or no cases amongst the elephants in the South Toungoo Forests.

Causes:—The sores are generally attributed to originate in scratches from thorns or splinters in the jungle. The abrasions of this kind at the starting point are indicated by the fact that the sores rarely occur elsewhere than on the legs below the knees, the commonest sites being the skin, ankles, dorsum of feet and toe-nails. The newly-purchased animals are much more susceptible to attack than the seasoned beasts. Ill-health and debility do not seem to predispose the complaint—the robust are attacked as often as the weak. Amongst human beings, as far as my experience goes, the disease is common to those men who do rough out-door work and keep their legs wet in slush and mud. The same theory is applicable to elephants.

Treatment.—The sores should be washed first with 1 in 20 cyllin lotion followed by mud-sore lotion. The parts are to be kept wet with the lotion for quarter of an hour. After drying the parts, the mud-sore powder is to be applied. Half an hour after this, the ointment should be put as a coating over the sore.

Note:—As both the lotion and powder are subject to deterioration these medicines should be kept out of sun and air as much as possible. The ointment is to be treated a little on fire just before application.

9. *Rheumatism*. *Causes*:—Some poison in the blood (probably uric acid) which affects the muscles, tendons and joints. Animals when in debilitated state of health generally get the attack. Cold, exposure to wet, and damps are regarded as chief predisposing causes.

Symptoms:—An animal, apparently quite sound in the morning, when tied in the evening appears stiff and lame without apparent cause. There is severe pain and swelling of the affected parts. Sometimes there is fever with the rise of temperature up to 101° F. The peculiar characteristic features of rheumatism are the shifting nature of pain from one part to another and the stiffness and lameness wear off after exercise.

Treatment: Internal:—The bowels should always be kept open by giving regular doses of Epsom salt. A prolonged course of Salicylate of Soda may be tried with advantage.

Local:—Hot water fomentation followed by the friction of mustard liniment twice a day.

INFECTIOUS DISEASES.

10. *Anthrax*:—Of all the infectious diseases Anthrax, as we all know, is the most virulent disease amongst the elephants. General symptoms of Anthrax in a few words are:—high fever, dull appearance, haggard look about the face, eyes watering profusely and swellings in any part of the body. Whatever the other symptoms may be, if the temperature rises and there are swellings either in the neck or belly the case should at once be suspected as Anthrax.

Segregation:—(1) The elephants with their attendants should be kept quite separate for at least a fortnight. The animals should be inspected twice a day. Any case of sickness should be forthwith isolated; the healthy animals divided into small groups and kept well apart and tied up in the stalls and to windward of the sick camp. Temperature of the healthy animals should be taken twice a day and recorded daily in the chart. This will facilitate to detect any fresh cases in the earliest stage of the disease. If this very necessary aid of detecting cases be adopted early, the disease can be effectively dealt with.

(2) The isolated area should be near a stream and situated well below far away from other camps. The rejected fodder, moist dung and discharges should not be allowed to lie about on any account. Pits should be dug to collect the refuse.

During the dry season the refuse must be destroyed by fire. In the rainy season quick lime is to be thrown over the refuse before filling in the pits.

(3) Ropes and other gear should be burnt, soaked in disinfectant, or passed through the flame, before bringing in contact with animals again. Everything about the camp that can be destroyed should be destroyed. The men themselves should be instructed to use disinfectant in their washing water. Their clothes should either be burnt or soaked thoroughly in disinfectant.

(4) The carcasses of animals that die of Anthrax must not be opened on any account. All natural openings must be plugged with disinfected material; then the whole carcass must be burnt. After burning the remains should be buried and covered with lime. If the tusks must be removed, great care should be taken with the men doing it and the tusks themselves should be placed in boiling disinfectant solution. Slides should be taken during the illness and within an hour or two after death. The Anthrax graves should be marked in some way, such as by fencing with ropes.

Treatment:—When there are swellings, the surgical treatment is first indicated. Deep crucial incisions of the swellings and to cauterize them with strong Carbolic acid are the best. Hypodermic injections of equal parts of strong Carbolic acid and Glycerine (2 drams each) have been used extensively with some good results. As the action of the heart generally fails, strychnine tabloids may be judiciously injected to keep the animal's strength. Ampsalves has been tried with some definite success.

The technique of administering the substance in elephants is generally to inject the drug hypodermically in any convenient part of the skin in the body. If the animal is of violent nature, and does not allow this operation, intra-rectal injection may be tried. The drug has a depressing effect and therefore the patient must be watched carefully. When giving "Ampsalves" stimulants in the form of strychnine tabloid injections may be given to keep the heart's action. The temperature falls so quickly after the injection that if stimulants are not given at once, the animal

may die of failure of heart. In the last outbreak at Minbyin the temperature of an elephant fell from 104°F. to 96°F. four hours after injection.

11. The second important infectious disease is "Surra". It is due to presence of Trypanosome in the blood.

T. evansi.

I have had no practical experience of "Surra" but it may not be forgotten that we have lost good many elephants that died of this disease some years ago. The method of infection is by ingestion, usually from the bites of arthropods (generally blood-sucking flies) which is the intermediate host of the flagellate form. The symptoms in the acute form of disease is that the animal appears to be attacked by paralysis of the hind quarters very early. Although in apparent good health the elephant gets down and is unable to rise and dies within a few days. Therefore, the disease in the acute form is fatal. The chronic form is subject to arsenical treatment, and does not inconvenience the animal a great deal. In the chronic form there is a general wasting, with a good appetite, and considerable variation in temperature, with the usual signs of weakness and debility, dullness, watery eyes, tight dry skin, pale membranes, dropsical swellings about throat and belly.

Treatment :—In the acute form intra-rectal injection of Neo-Salvarsan should have good results in the treatment of this form of the disease, as actual arsenic treatment is too slow. In the chronic form one ounce of Liqr. Arsenicalis daily with Gupta's Tonic Powder and Epsom salt should be given. Slides must be taken periodically to ascertain whether parasite still exists. As soon as the animal appears fit (occasional examination of slides) an occasional course of arsenic should be sufficient to keep the animal fit. Segregation measures should be followed in the same way as Anthrax.

When an elephant is ill he requires treatment at once. From my personal experience with the men of the elephant establishment for the last eighteen years, I have found that almost all the drugs prescribed by the Burmese and Indian Mahouts are worse than useless and if success is to be attained

this sort of treatment should always be discouraged. The proper treatment should be based on proper scientific basis. We have now about a dozen standard prescriptions for elephants. The formulæ of these prescriptions have been based on my last eighteen years' experience with elephants. I first started with a nucleus of a few medicines such as Black Ointment, Tinct. of Iodine, and a few more stuffs, now the whole treatment is based on a proper scientific plan of treatment. With a proper diagnosis, and a little patience it is hoped they will be proved efficacious in eradicating the diseases from the elephant system.

Instead of compounding the medicines in the forests, which as a matter of fact is not practicable, the formulæ should be compounded at the headquarters under the direct supervision of a qualified man. The medicines used as far as possible should be genuine and free from adulteration.

The following are the medicines and sundries generally used for the treatment of the sick elephants:—

- | | |
|---------------------------|---|
| 1. Antiseptic Powder. | 14. Mud-Sore Lotion. |
| 2. " Ointment. | 15. " Powder. |
| 3. Black Ointment. | 16. " Ointment. |
| 4. Arecanut Powder. | 17. Corrosive sublimate B & W Tabloids. |
| 5. Liqr. Arsenicalis. | 18. Vaseline (pure) |
| 6. Santonin Powder. | 19. " (carbolyzed) |
| 7. " mixture. | 20. Eye Lotion. |
| 8. Salicylate of Soda. | 21. Red Ointment. |
| 9. Izal. | 22. Carbolic Acid. |
| 10. Cyllin. | 23. Ampsalvs. |
| 11. Epsom salt. | 24. Pot. Bromide. |
| 12. Gupta's Tonic Powder. | 25. " Iodide. |
| 13. Mustard Liniment. | |

STANDARD PRESCRIPTIONS FOR ELEPHANTS.

- | | |
|--|------------------------------|
| I. <i>Tinct. of Iodine (Methylated).</i> | II. <i>Mustard Liniment.</i> |
| R Pure Iodine 8 ozs. 2 drs. | R Mustard oil 3 lbs. |
| Pot. Iodide 4 ozs. 7 drs. | Oil of Turpentine 1 lb. |
| Distilled water 6 ozs. | Castor oil 8 ozs. |
| Methylated- | Methylated- |
| spirit of wine 5 lbs. | spirit of wine 8 ozs. |
| To be tested and passed before being issued. | Camphor 8 ozs. |

III. *Antiseptic Powder.*

R_x Boracic Acid 1 lb.
Starch Powder 1 lb.
Zinc Oxide 1 lb.
Iodoform 1 lb.

IV. *Antiseptic Ointment.*

R_x Zinc Oxide 3 lbs.
Boracic Acid 3 lbs.
Iodoform 2 lbs.
Vaseline 20 lbs.
Earth oil 20 lbs.
Izal Plain 2 lbs.
Mix well.

V. *Black Ointment.*

R_x Vaseline 30 lbs.
Olive oil 3 lbs.
Coal Tar 3 lbs.
Pine Tar 3 lbs.
Izal 3 lbs.
Mix well.

VI. *Mud-sore Ointment.*

R_x Bees wax 4 viss.
Hnan Si
(Gingeli oil) 6 viss.
Catechu 1 viss.
Izal 1 lb.
Oil of Turpentine 5 lbs.
Dikamali (powdered)
1 viss.
Gallnuts (powdered) 1 viss.
Mix well.

VII. *Mud-sore Powder*

R_x Boracic Acid 5 lbs.
Chloride of Lime 5 lbs.
Mix well.

VIII. *Mud-sore Lotion.*

R_x Boracic Acid 3 ozs.
Chloride of Lime 3 ozs.
Aqua 5 lbs.
Shake the bottle.

IX. *Anti-fly Dressing.*

R_x Oil of Turpentine 1½ lbs.
Cocoanut oil 1½ lbs.
Camphor 1 oz.
Mix well.

X. *Zinc Ointment.*

R_x Zinc Oxide 8 ozs.
Vaseline 8 ozs.
Carbolic Acid ½ oz.
Mix well.

XI. *Carron oil.*

R_x Olive oil 40 ozs.
Lime water 40 ozs.

XII. *Eye-Lotion.*

R_x Boracic Acid 40 grs.
Zinc Sulphate 8 grs.
Rose water 4 ozs.

XIII. *Carbolised Vaseline.*

R_x Vaseline 5 lbs.
Carbolic acid 5 lbs.

XIV. *Carbolic Oil*

R_x Carbolic Acid 1 oz.
Cocoanut oil 1 oz.
Mix.

(Sd.) M. C. GUPTA.

RABIES IN KEDAH.

(A *rèsumè* of measures pursued).

BY

R. S. NARAYANAN, G.M.V.C.,

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Since the first recorded occurrence of rabies in Malay about the middle of the 19th century, reports of isolated occurrences in dogs have been noted in some of the States in F.M.S. The only outbreak that occurred in Kedah during the last twenty years was the one in the year 1925; and, since then, this department is faced with minor outbreaks from some of the outlying districts. The outbreak which started from North Kedah was traced to a case of rabies in a dog in the neighbouring State of Perlis which lies to the north of this State and south of Southern Siam. The Perlis case was further considered to have originated from the then prevalent outbreak in the Province of Singorra in S. Siam.

Rabies is one of the oldest known diseases and it is generally understood that dog is the common reservoir of this dread disease, pathogenic to man. The veterinarian, as the one best informed in the matter of diseases of animals communicable to man, is primarily concerned in protecting the public from this animal disease. Here is the part taken by this department in the public health scheme. The prevalence of rabies is a serious question for the veterinarian for reasons personal, as no one is more exposed to rabies than the veterinarian; and hence he is necessarily anxious to see the danger from dogs minimized.

There numbered 12 cases of rabies in dogs in N. Kedah during the early part of the year 1925 and 37 more cases were recorded before the year was out. The disease spread in the southern direction to Central Kedah and later to S. Kedah. The total number of cases in dogs is about 60 since the outbreak commenced.

Rabies is now decreasing due to the local laws under the "Quarantine and Prevention of Diseases (Animals) Enactment." Little difficulty is experienced in enforcing destruction

of dogs due to the help of the police—one dog-shooter—being detailed to the notified areas to destroy dogs and enforce the law.

It is recognized that rabies is spread primarily by the dog and no record is available in this country of the transmission of this disease by other common domesticated animals. This relatively less frequency may be due to the difference in the anatomical structures in the mouth (in ruminants) so that no saliva is inoculated.

Bulletin No. 1 of 1925, issued by Institute for Medical Research, Kuala Lumpur, contains a table, compiled from figures obtained from abroad, giving the relatively less frequency of human infection from different species of common animals.—

<i>Animals.</i>	<i>Approximate percentage.</i>
Dog	87.1
Cattle	6.6
Cats	3.8
Swine	0.8
Sheep	0.8
Horses	0.7
Goats	0.1
Other animals	0.1

Canine Rabies :—Text books refer to 2 forms of rabies—furious and dumb, but the type commonly met with in this part of the Middle East is the type with the period of excitement short and less pronounced and the paralysis setting in early. The stage of melancholy is rather often overlooked. Suspicion arises not until it is observed that the dog has become vicious and bit somebody without any cause for provocation and mad dog scare is uttered.

Incubation :—Depends on such factors as site (bites in the richly nervous parts as the face, head and neck are much more likely to be followed by earlier symptoms than bites in other parts), severity of the wound, age of the bitten animal and the virulence of the virus. The longer the incubation period, the less virulent is the form of disease. The average incubation periods in Dogs, Ruminants, Swine and Man is

from 14 days to 2 months; in solipeds 20 to 45 days. The largest number of specimens found 'positive' for rabies were those sent in during the months of January, February and October.

Symptoms :—The symptoms in dog present a rather constant clinical picture. Attention is first attracted by the appearance of general depression, capricious appetite; then hyperæsthesia, snapping at imaginary objects and ptialism.

As the condition advances, that is about the third day, difficulty in voiding urine, paroxysms at intervals, occasional hoarse howling and the dilated pupils look blood-shot.

Later, with the commencing paralysis, the mouth is held open, tongue protruded, saliva hanging from the mouth in long strands due to the difficulty in swallowing; the paralysis in the majority of cases begin from the anterior part—lower jaw and tongue. Hanging lower jaw and tongue is diagnostic of this form of rabies.

Rabies in dogs runs its course and acute illness usually lasts 5 to 8 days from the day of the appearance of symptoms. The fatal termination is rarely earlier than 3 days and later than 10 days. Death follows exhaustion.

Diagnosis :—1. Constitutes the following and is difficult by any single method. It is considered wise to consider every dog which bites any one as suspicious until proved otherwise. One can only be guided by the *symptoms shown and the whole history* of the case and cannot be definitely diagnosed until after death.

When a person is bitten by a suspected animal, the latter must under no circumstances be killed—much more can be learned by watching it while alive than by other examinations. History and clinical symptoms do form an important link in the chain of evidence before rabies is confirmed and especially so in places where no laboratory for rabies examination exists.

The one thing that is impressed on police authorities is not to kill the suspected animal if it is at all possible to capture and restrain it. The captured animal is put in a suitable cage and under proper care and is kept for a period of

ten days. If it lives for this time and appears well at the end, it is then released, as it is taken for granted that there was no virulence of the saliva at the time of the bite. It is generally recognized that the saliva of a rabid dog is infective for about three days prior to the onset of symptoms.

2. *Post-Mortem lesions*:—Clinicians should always make a careful and thorough post-mortem examination to eliminate other factors, if any, responsible for the causation of symptoms in life.

Post-mortem lesions are not observed typical in this form of rabies. The presence of foreign bodies in the stomach is not always constant. Contracted stomach, slight hæmorrhages along the alimentary tract, catarrhal inflammation of the pharynx and respiratory passages and cerebral meningitis are not uncommonly present.

3. *Bacteriological examinations*:—Resolves into the following:—

(a) *Direct examination of the 'touch preparation'* (without staining):—The smear for this examination is taken from the hippocampus portion of the brain section preserved in the bichromate fixative. A small quantity of the nerve tissue to the size of a pin's head is placed on a slide and crushed with a cover glass against the slide and examined with cover glass on.

One requires considerable experience to definitely identify the presence of the Negri bodies as refractile globules within the nerve cells. This is the routine preliminary examination in the I.M.R. at Kuala Lumpur. An inexperienced will mistake the cell nucleoli for Negri bodies, but the point of difference is, the cell nucleoli appear smooth and glistening while the Negri bodies present a characteristic foamy appearance.

(b) *Examination of the stained smear*:—Smears are previously fixed in methyl alcohol for about 5 minutes and stained with weak Giemsa's stain (1 drop of stain and 1 drop of 1 in 1,000 Pot. Carbonate solution added to each 1. c. c. of distilled water) for $\frac{1}{2}$ to 2 hours. The weak stain must always be freshly prepared. Ordinarily there occurs no overstaining. If the nerve cells be deep purple, rinse the slide in 95%

alcohol for a few seconds i.e. to a point till the nerve cells appear a pale blue, the nuclei red, Negri bodies as round or ovoid blue structures containing granules staining red or azure. (If not differentiated the Negri bodies of detectable size stand out as light blue bodies and nerve cells darker and more violet in tint).

If the smears do not show the presence of Negri bodies, the diagnosis is regarded as 'provisionally negative' pending the examination of the stained sections.

(c) *Stained sections*:—These are of special value where the brain is poor in condition due to advanced putrefaction and that typical cells cannot be satisfactorily demonstrated.

The changes in rabies consist in atrophy of the ganglionic cells, which become shrunken and the cell nuclei become ill-defined. These changes taken with the clinical symptoms afford a fairly trustworthy means of diagnosis for rabies.

Giemsa's stain is also used for section staining, but some workers prefer Mann's stain for routine diagnostic work for the reason this method gives an excellent contrast in the Negri bodies which appear red and the nerve cells blue. Mann's stain could be profitably employed for smear staining also.

Parts according to order of merit for examination are Hippocampus major, cerebellum and cord.

Negri bodies are commonly found within the nerve cells; smallest of these bodies appear spherical and structureless; larger ones with a central granule or nucleus; the largest ones appear ovoid or elongated or round containing several granules.

(d) *Animal inoculation*:—This diagnosis requires 14 to 17 days and is falling into disuse.

When an animal is killed in the early stages of rabies, typical Negri bodies of detectable size are not always present. The following is an illustration:—

A Chinaman was bitten by a dog and the animal was immediately destroyed. The history of the case, on enquiry, pointed to a case of rabies. The brain was as usual forwarded

to the laboratory for the necessary examinations and the Pathologist reported as follows:—

“Smears from this dog do not show the presence of Negri bodies and the diagnosis may be considered as provisionally negative pending the examination of the stained sections.”

“Stained sections—In three or four cells, bodies somewhat indefinite but suggesting of Negri bodies are to be seen.”

If the suspected animals be permitted to die of the disease or are destroyed after reaching the last stages of the malady, there is ordinarily experienced no difficulty in demonstrating the typical bodies.

DIFFERENTIAL DIAGNOSIS.

1. *Canine distemper* (Nervous form):—Clinically differential diagnosis becomes easy if the dog is well known. Symptoms and length of the course of the disease make diagnosis easy.

2. *Epilepsy*:—Comes on suddenly; lasts for some time to disappear completely until the next attack.

3. *Cerebral meningitis* (Pseudo-rabies):—This form of the malady is likely to be confused with the furious form of rabies. The disease develops suddenly, runs a more rapid course; the paralysis of the lower jaw is uncommon.

Recently a similar affection came under the writer's observation. A dog bit 2 coolies on 12-1-28 and the animal was kept under observation by the veterinary officer. The animal died on 14-1-28, within 2 days of the onset of the symptoms.

The veterinary officer reported that the dog was off feed, manifested excitable stage, would bite at or rush towards any imaginary object and was suspected for furious form of rabies.

The brain was forwarded to the laboratory for rabies examination. The pathologist reported that the smears on examination did not show the presence of the Negri bodies. Examination of the stained sections however showed the presence of small uniform bodies occasionally seen in the cell

protoplasm, to a certain extent resembling Negri bodies but not entirely typical.

It may be mentioned here that typical bodies are constantly present in animals which die of the disease.

Rabies in cattle:—For the diagnosis of rabies in food animals the history especially the determination of a bite from a canine species, is of importance. Bites in cattle are usually dangerous owing to the habit of these animals lowering the head and get bitten invariably about the head or neck. The general symptoms in cattle though slightly different in the way of manifestation, are usually constant and excitement is comparatively pronounced.

Cases of rabies in heifer calves:—A dog suspected for rabies bit the two animals on the face and neck on 21-3-27 and 22-3-27 respectively.

Symptoms in the first calf:—First appearance of symptoms was noticed on 13-4-27. General uneasiness, excitement and stamping. Later, depraved appetite and frequent bellowing. There was great loss of condition and the animal was apparently very much exhausted. The animal went down on 18-4-27 and could not get up due to the commencing paralysis on the hind limbs. The animal died on 21-4-27.

The clinical symptoms in the second animal were almost similar but more pronounced and the fatal termination was comparatively earlier—symptoms were observed on 21-4-27 and the death on 23-4-27.

The foregoing may be taken for cases from known history and the following may be considered atypical as no definite history could be traced:—

A full grown buffalo bull, one of the arrivals from B. was admitted in the quarantine station at P. B. on 9-9-27. On the morning of 16-9-27 the animal was reported behaving in a peculiar manner. It was off feed and indicated a temperature of 100·2°.

12-9-27—Same as above. Temperature 99·8°F.

18-9-27 :—Excited and furious, colicky symptoms, bit large pieces of earth and also butted the ground at intervals. Died at about 10. 30. P. M.

P. M. lesions :—Bloody frothy discharge from both nostrils. Viscera all apparently normal but lungs and kidneys were slightly congested. Rumen, reticulum, omasum, abomasum and intestines contained variable quantities of earth. Brain highly congested.

Blood smear taken immediately after death presented Leucocytosis and was negative for organisms of pathological importance. The brain was sent to the laboratory and the pathologist reported that smears and sections showed presence of large numbers of Negri bodies and opined that the animal must have been suffering from rabies.

It is not understood if the virus of rabies could remain dormant and become pathogenic when vitality is reduced consequent on prolonged train journey as is observed with H.S.

TECHNIQUE OF REMOVING THE BRAIN.

In removing the brain of a rabid animal great care must be taken not to touch any part with the naked fingers for fear of infection. Apron and surgical rubber gloves are very necessary when conducting post-mortem. No antiseptics should be allowed to come into contact with the brain during removal.

1. It is suggested that the easiest way to remove the brain of a dog is to cover the head with a thick cloth or gunny bag cloth and fracture the skull in several places with a hammer. The cloth is then removed, skin, bone and muscles removed, fragments of bone being removed with bone forceps.

The success of the above technique depends on the severity of the blow with the hammer. Occasionally a heavy blow mutilates the brain substance out of form.

2. The routine procedure adopted by the writer is to denude the cranial bones of muscles. Then, saw on each side of the zygomatic arch, supra-orbital process of the frontal, about the styloid process of the occipital, along the interparietal junction and also transversely on the parietal and

frontal bones. With the chisel and hammer complete separation is effected. Detach attachments, lift and remove roof. The brain in whole is taken out and is divided longitudinally. One half is immediately put into a small jar containing pure glycerine; the other half put into a similar jar containing bichromate fixative (Pot. Bichromate $2\frac{1}{2}$ parts, Corrosive sublimate 5 parts, Glacial Acetic Acid $5\frac{1}{2}$ and water 100 parts.) The quantity of each fixative should be 20 times the bulk of the tissue. A stock solution of Bichromate fixative may be kept but the acid should be added only before use.

The hippocampus major is identified by making a sagittal hemisection of the brain and on opening the lateral ventricles, where it appears as a curved eminence along the floor of the inferior cornu.

*The following constitutes the routine procedure of this department :—*At present each case of rabies is reported to the nearest police officer, who in turn informs the veterinary officer concerned. On receipt of the information the veterinary officer visits the scene and makes enquiries regarding the history and other circumstances relating to the bite. The dog, if captured, is kept under the observation of the veterinary officer; if the capture is impossible, the animal is destroyed and the brain prepared and sent to Kuala Lumpur Research Institute, for rabies examination. The bitten persons are sent to the nearest hospital to get the wound cauterized. The Medical Officer is informed as to the negative or positive results immediately on the receipt of the report from the Pathologist of the Institute. If rabies is confirmed, the bitten patient is given Pasteur treatment which is now available in the State General Hospital.

PROTECTIVE INOCULATION IN DOGS.

*Protective inoculation in dogs with canine anti-rabic vaccine :—*This vaccine is now prepared in the Kuala Lumpur Research Institute. The method is the one originally employed by the two Japanese scientists, Umeno and Doi. This is also termed the 'single injection' method.

The vaccine is prepared from the brain and spinal cord of a rabbit killed in the last stages of the disease after being inoculated with 'fixed' virus. One part of the nervous tissue is mixed with 4 vols. of a mixture of glycerine 60 parts, water 40 parts and carbolic acid 0.5 per cent. This emulsion is stored at room temperature (18°–22°C.) for 2 weeks or in an ice chest for 3 weeks to reduce its virulence and is then ready for use.

* The institute employs sheep for rabbits if the latter is inadequate to meet the demand.

The vaccine retains its properties for over 3 months at room temperature, but is not to be kept longer than 2 weeks after it has been first opened.

Dose:—1 c. c. for every 7 lbs. body weight and injected subcutaneously in one dose.

The vaccine is despatched from the institute in quantities of 45 c. c. and the bottles closed with rubber cap and covered with paraffin. The bottle is vigorously shaken before use, surface of the rubber cap sterilized with 5% carbolic lotion, the bottle inverted and the needle plunged through the cap. After withdrawing the required quantity of vaccine, the paraffin wax film is warmed in order to seal the puncture.

The effects of vaccination:—Though the vaccine contains a foreign protein to dogs, no lasting ill effects have been observed so far. The dogs may be drowsy for a day or two following inoculation and may have indifferent appetite for a short time, but this calls for no serious attention.

This prophylactic vaccination against rabies is claimed to confer a degree of immunity sufficient to protect a dog for one year.

During the year 1925, over 600 dogs were inoculated in the State of Selangor. It was recorded that no cases occurred in the inoculated group although vaccination was mostly on dogs kept in the vicinity of infected cases.

In the State of Kedah, 109 dogs were inoculated since the outbreak commenced and of these, one subsequently died of rabies.

The results of these inoculations indicate that the Japanese anti-rabic canine vaccine has established the effectiveness of protective vaccination. It is also observed by some that vaccination is capable unassisted in not only protecting animals inoculated but also against the extension of the disease. Anti-rabic inoculation primarily benefits the dog and the owner. The single injection is gaining in favour as is evidenced from the frequent requests from the owners of dogs.

Curative treatment:—Dogs bitten by rabid dogs may be subjected to a course of Pasteur treatment which is identical to that given to human patients. This treatment is designed to forestall disease and confer immunity by inoculation before the onset of the disease.

QUARANTINE MEASURES OF CONTROL.

1. The quarantine order provides:

(a) The muzzling order:—Whenever it appears that rabies exists in any part of the State it shall be lawful for the State Veterinary Surgeon to issue an order that all dogs within the State or part thereof as shall be specified in the order shall wear a muzzle of an approved pattern and be tied up or led on a chain and it shall be the duty of the owners of dogs to comply with any such order.

(b) The owner of every such dog which is suspected for rabies shall at once report the fact at the nearest police station who in turn shall report it to the veterinary officer of the area.

(c) Interstate quarantine regulations to control the movement of dogs:—Whenever information is received that rabies exists at any place within or without the State it shall be lawful for the President of the State Council to issue an order prohibiting either absolutely or conditionally importation or exportation of any dog from or to such place.

This notification is not rescinded until a period of six months has elapsed after the last case.

(d) The conditions regarding the importation of dogs:—

1. No dog shall be brought into the State from any place outside the State except under the written permission from

State Veterinary Surgeon and which must be produced to the Veterinary Officer at the place of import.

2. A certificate from a Veterinary Surgeon that for six months prior to departure no case of rabies has occurred in the country where the dog was kept.

3. A certificate of a date not more than seven days prior to the production of the Veterinary certificate to the Veterinary officer from a Veterinary Surgeon that the dog is free from diseases of infectious or contagious nature.

PREVENTABLE LOSSES FROM POULTRY DISEASES

BY

D. C. MATHESON, F.R.C.V.S., D.V.S.M. (VICT.),

*Professor of Pathology and Bacteriology,
Royal Veterinary College of Edinburgh*

SCOTLAND

(Read by Title)

WORLD'S POULTRY CONGRESS, OTTAWA,
CANADA. 1927.

Loss occurs among poultry from preventable diseases for the following reasons:

1. The poultry keeper frequently delays in seeking skilled advice when disease appears among the flock.
2. The disposing causes of disease are not adequately recognized.
3. The beginnings of disease are overlooked.
4. There is failure to follow up the post-mortem report by an examination of the flock for similar cases.
5. Sufficient advantage is not taken of exact methods of diagnosis.
6. The beginner is not always aware when purchasing a setting of eggs or day-old chicks, or even adult birds, that

he may safeguard himself by purchasing only from tested stock.

Precise knowledge as to the prevalence of disease is the first step towards its reduction; and in order to discover what the major sources of loss are, I have scrutinized the records of my laboratory for the past thirteen years. Table No. 1, based on records extending over thirteen years is, I believe, the first of its kind relative to fowls to be published in Great Britain.

The table draws attention also to the high percentage of loss from peritonitis among fowls in general, while tables 2 and 3 give weighty emphasis to the prevalence of this disease.

Peritonitis, associated in many cases with impaction of the oviduct, appears to be one of the gravest diseases of the laying fowl.

Attention is also drawn to the loss which occurs from internal hæmorrhage; these cases were not associated with tuberculosis:

For brevity I have confined my scrutiny to fowls, but the principles of disease prevention indicated apply to poultry in general.

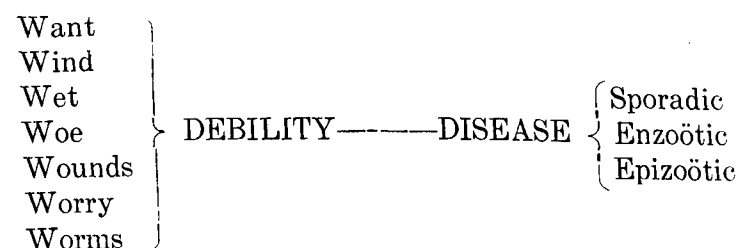
For comparison I have tabulated in tables 2 and 3 the results of my post-mortem examination of fowls belonging to two distinct flocks kept under the best conditions and controlled by skilled management.

In each case the birds were drawn from all parts of Great Britain. As my immediate object is the demonstration of the major sources of loss I have excluded from consideration disease causing a loss of less than 2·3 per cent.

CONSIDERATION OF THE SOURCES OF PREVENTABLE LOSS.

1. A survey of the letters accompanying specimens shows that the bird is by no means the first to ail or to die. An ailing bird should receive immediate attention, that is the profitable course.

2. Disposing causes of disease are indicated in the sub-joined diagram :—



The significance of the diagram may be briefly illustrated :—

Wind—Ventilation is necessary ; draughts are dangerous.

Woe—Bullying.

Wounds—Cannibalism.

Worry—A notable number of birds sent in to my laboratory affected with various diseases suffered from scaly leg in addition, and if their vitality had not been impaired by the worry of scaly leg, it is certain they would have resisted the graver disease better and they might have overcome it.

Reference to table 3 will show that among the birds dying 19 per cent perished from enteritis ; 75 per cent of these birds were affected with tapeworms.

3. Notwithstanding the fact that tuberculosis constitutes 11.08 per cent of the cases examined in the laboratory during the past thirteen years, I have never had an early case submitted. The majority of cases were examples of extensive infection and of advanced disease. Such a bird must have been ailing for some time and was a source of infection to other members of the flock for a considerable period.

4-5: The post-mortem report should be a stimulus to prevention and never an end in itself.

The owner receives a report stating that his bird was tuberculous and is advised that the flock be examined for further cases. Usually nothing further is heard of the matter. That is unfortunate for it means that the poultry keeper goes on keeping a bird or birds which are entirely unprofitable and which are also a menace to the healthy birds.

Preventable Losses from Poultry Diseases 43

On farms the tuberculosis birds are a menace to the hogs and sheep. When tuberculosis is reported in the flock all incontact birds should be tested after the piners have been culled.

6. The remedy here lies in propaganda ; the beginner should subscribe to a poultry paper ; join a poultry society ; and obtain the leaflets published by the agricultural authority in his country.

I have excluded bacillary white diarrhoea as this disease stands in a class by itself and is receiving adequate attention from other sources.

TABLE 1
Percentage loss based on the post-mortem records
of 424 fowls.

	Per cent
Enteritis ...	15.09
Tuberculosis ...	11.08
Peritonitis ...	10.40
Impaction of the alimentary tract ...	10.10
Coccidiosis ...	6.30
Roup ...	5.80
Internal hæmorrhage ...	5.80
Tumors ...	3.30
Impaction of the oviduct ...	3.10
Congestion of the lungs ...	3.00
"Leukaemia" (Leucosis) ...	2.50

TABLE 2
Number of fowls in the flock—402. Death rate for twelve months—7.4%. Percentage loss calculated on the number of dead birds.

	Per cent
Peritonitis ...	36.6
Tumors ...	13.3
Impaction of the alimentary tract ...	10.0

Internal hæmorrhage	...	...	Per cent
Tuberculosis	...	...	10.0
Enteritis	...	...	6.6
	...	...	3.3

TABLE 3

Number of fowls in the flock—516. Death rate for twelve months—8.1%. Percentage loss calculated on the number of dead birds.

Peritonitis	...	...	Per cent
Enteritis	...	...	23.8
Tuberculosis	...	...	19.0
Internal hæmorrhage	...	...	9.5
Impaction of the alimentary tract	...	...	9.5
"Leukaemia" (Leucosis)	...	...	7.1
Impaction of the oviduct	...	...	7.1
Inflammation of the oviduct	...	...	2.3
	...	...	2.3

A BRIEF NOTE ON THE ORIGIN AND DEVELOPMENT OF SERUM SIMULTANEOUS INOCULATION AGAINST RINDERPEST IN THE MYSORE STATE.*

BY

K. KRISHNIENGAR, G.B.V.C., (*Mysore C. V. D.*)

Discussion.

1. Mr. B. B. Joshi inquired if the method of serum simultaneous inoculation was tried in localities free from infection of rinderpest.

2. Mr. M. S. Sastry inquired whether controls were kept at the scene of S. S. inoculation; whether the animals were branded to show that they were inoculated; whether there were any complications in inoculation campaign; and whether there was no piroplasmosis in those parts.

* Read at the Fifth All-India Veterinary Conference, Bombay, Dec. 1927
Vide p. 319, No. 4, Vol. IV.

3. Mr. B. K. Badami inquired into the procedure adopted to collect data regarding the effects of S. S. inoculation especially in view of the fact, that the department is understaffed and occupied with work elsewhere.

4. Mr. R. N. Naik :—S. S. inoculation can be introduced in infected areas as there is no fear of freshly disseminating the disease and the people will readily take recourse to it.

5. Mr. V. N. Kulkarni inquired if virus loses its virulence if received after 5 or 6 days, also if the Mysore Government can supply virus to parts of Bombay Presidency close to it, as it takes a long time for virus to reach there from Muktesar.

6. Mr. M. A. Merchant inquired if there was legislation in Mysore for compulsory inoculation, and if movement of cattle was checked from village to village.

7. Mr. K. R. S. Ayyar inquired the result of inoculation with piroplasma infected blood from one animal to another.

Mr. Aiyangar's reply:—

1. As good many localities were infected and there were not sufficient hands to look after the affected animals it was not possible to take up the work in non-infected areas.

2. Sometime at the commencement of the campaign, controls were kept whenever S. S. inoculations were carried out, and hyperimmunisations were also carried out on 6th or 7th day from those controls, that showed a decided thermal reaction to rinderpest.

3. Branding of inoculated animals is not carried out. It is not easy to make the people understand the necessity for branding. People are also averse to the idea of branding or tattooing on the ears.

4. Animals showing high temperature and suspected for piroplasmosis were injected with trypanblue.

5. Statistics are collected correctly. The Veterinary Assistant Surgeon goes to the scene of outbreak and stays a fortnight when S. S. inoculations are carried out, then instructions are left with the village officers, to inform the

Veterinary Assistant Surgeon if any untoward occurrence happens, and the Veterinary Assistant Surgeon again visits the village after a fortnight and sends his final report in the matter.

6. Virus could not be supplied to British Territories at present but in course of time, if we have the laboratory extended, then it may be possible.

7. No legislation has yet been introduced for compulsory inoculation nor for preventing the free movement of cattle from infected areas; but in the majority of cases people can be trusted to carry out our instructions.

8. Virus blood is always examined before issue to the field worker, and in case the Veterinary Assistant Surgeon suspects an intercurrent infection with piroplasmiasis among the inoculated, he injects trypanblue immediately.

Clinical Articles.

TRAUMATIC MENINGITIS IN A BULLOCK.*

BY

L. M. DAS GUPTA,

Veterinary Assistant, Bilashipara.

Subject :—A red country bred bullock, in excellent condition, 6 years.

History of the case :—On the 15th September, 1926, I was called by one Tafiz Mondall of Hamneralgarchar to attend on the case. On enquiry I learnt from the owner that while the animal was grazing in the field it was hit by another bullock on the forehead, as a result of which the frontal bone was pierced through and the blood was coming out in a jet. The cow-herd who was near, in order to stop the bleeding, stuffed the wound with some mud and tore his napkin and tied the wound in the way of a bandage.

* Paper read at the Second Annual Conference of the Veterinary Graduates' Association, Assam, held at Gauhati, on the 27th December, 1926.

That was the first aid rendered to the poor animal which the cowherd's juvenile presence of mind suggested. When the bullock was brought home, it was unable to stand on its legs, kept lying down constantly for the first 3 or 4 days, was in a semi-conscious state with dilated pupils and luminous eyes and was totally off feed. When it was made to stand, it could not do so without resting its head on some support. Any attempt to make it walk resulted in its stumbling down in front with a jerk of the head upwards and backwards. It was on the 7th day after the infliction of the injury, I had the chance to see it.

Symptoms :—I found the animal in a recumbent position. The temperature was 102°F, respiration normal, ears drooping, eyes glaring, pupils dilated, but there was no total loss of vision. The animal was unable to open its jaws; when any soft food was thrust in it could swallow without mastication. There was impediment of the movement of the jaws and tongue. There was no actual lock jaw. Heart beats were normal. M. M. was congested and the mouth hot. When I made it to stand it could do so by resting its head on some object. Urine was high coloured and bowels costive. There was no salivation. The wound was elliptical and situated on the frontal bone about a quarter of an inch from the median line to the left. There was a little pus—about half a dram—inside the wound. No fragment of bone could be detected. There was inco-ordination of muscles. When I made it to walk, it stepped high, as if partially blind and turned round and round, taking a big circle, stood with legs wide apart resting the head on the wall of the shed. There was inappetance.

Treatment :—On removing the dry scab of the wound the sinus was laid bare, the mud plug mixed up with pus was carefully removed. With a small swab dipped in sodium chloride solution the wound was wiped off, then a little hydrogen peroxide was poured in. After removing the froth, a little Tinct. of Iodine in a swab was lightly applied and a bandage put on.

Internally Tinct. Iodine B. P. in 1½ an ounce doses in a pint of water was given once a day and was continued for 6 days. Mag. Sulph 4 oz, Ammon. Chlor. 4 dr. and Pot. Nitrates 4 dr.



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Internally Tinct. Iodine B. P. in $\frac{1}{2}$ an ounce doses in a pint of water was given once a day and was continued for 6 days. Mag. Sulph 4 oz, Ammon. Chlor. 4 dr. and Pot. Nitrates 4 dr.

was also continued to relieve the bowels. The animal made an uneventful recovery in about 3 weeks' time.

Conclusions :—The most extraordinary thing in this case is that the animal survived even after showing all the symptoms of meningitis. It is evident that there was accumulation of blood inside the cranial cavity which caused pressure over the brain. It is amazing how the resolution could take place in rather such a short time, and that the mud did not set up tetanus.

I therefore lay the case before you my professional brethren, for discussion.

KUMREE AS A SEQUEL TO FILARIA OCULI.*

BY

DEWAN FAIZUDDIN AHMAD, G.B.V.C.,

Veterinary Assistant, Mariani, Assam.

Subject :—A Bay waler mare was seen with worm in the off eye on 13th October, 1926. It disappeared on the next day and did not reappear till the evening of the 15th. On the morning of 16th October, the owner found the filaria wriggling in the eye again. He sent the pony to my dispensary at once which reached at about 11 A.M. As I was out on tour in the morning I could not do the operation before 5 P.M.

I sterilized my instruments and prepared 5% solution of Cocain Hydrochlor, to perform the operation.

Then the pony was cast on the near side by means of a rope with great care. A few drops of Cocain solution I poured into the eye, after washing the eye and surrounding parts with Boric lotion. In about 15 minutes' time the eye got anæsthetised when I performed the operation on the upper part of outer canthus just below the junction of corner with sclerotic coat by means of a small human scalpel as I had no eye lancet on hand. The filaria gushed out with the aqueous humour and was preserved by me. I washed the eye again,

* Paper read at the Second Annual Conference of the Veterinary Graduates' Association, Assam, held at Gauhati, on the 27th December, 1926.

pouring a little Boric lotion into it and dusted a little Hydrargyri-subchlor on the cornea and kept the eye closed for about a minute by placing the palm of the hand very gently over it, just to allow Hyd. subchlor to be dissolved in aqueous humour and the wound and cornea to be washed out with it. Then I allowed the animal to stand and put a bandage over the eye which was kept ready for the purpose.

I prescribed Atropin sulph gr. ii, zinc sulph gr. ii, and Acid Boric gr. x. in an ounce of water to be dissolved and put into the eye twice daily and advised to keep the eye off from light till opacity completely passed off.

Then the pony was taken back to Dhooli T. E., a distance of about 9 miles from the dispensary while she walked quite all right.

I visited the pony on the 25th, and found the eye much better and clearer than before. She walked out and was backing and jumping quite all right when I tried to put medicine in the eye and showed no sign of weakness of the loin. I found that the medicine—eye lotion—I prescribed, used to be syringed into the eye from a distance, which—use of syringe—did more harm than good. So I prescribed calomel to be blown into the eye and practically showed the process to Doctor Babu of the garden.

I attended on the pony on 3rd November again and found the eye quite clear but a small portion of faint opacity on the lower part of inner canthus. The pony walked out showing partial paralysis of the hind quarters. She flinched when she was pressed on the loins. On enquiry from the owner I came to learn, it was only 3 days since she showed such symptoms.

I, considering that she might have got a fall as a result of which she had congestion of the spinal cord or sprain of the loins, prescribed Pot. Iodide and Nuxvomica internally and fomentation and stimulating liniment externally.

few seconds after which she was walking in a manner that she had not much control over her hind part. The owner and the syce said that the pony did not get a fall or injury on the loins in any way to their knowledge.

Another pony of Mr. Sim of Katonibari T. E. also showed similar symptoms at the outset, without developing worm in the eye which ultimately proved Kumree.

These two cases of similar nature one with filaria oculi and the other having been free from it, led me to think over the matter to bring out the un-worming probable causes of paralysis of hind quarters *i.e.* Kumree.

It is to my belief that when an animal eats grass or drinks water, infected with eggs of filaria, one or more eggs may go to the alimentary canal along with it. Those which get into the blood stream, may happen to be carried to and lodged into any organ, serous cavity and tissue and may develop filaria and set up irritation and produce hydatid cysts or tumour but in the case of serous cavity they all along may remain filaria having sufficient space to move about but would produce fluid. If one egg of filaria reaches the blood stream through the alimentary canal it lodges in one place and produces its action there being developed a filaria. If more than one egg reaches the blood stream they may be carried to more than one place and may develop worms and produce their effects in those different places where they would lodge. There is no hard and fast rule, I believe, that they will be always carried to a particular place such as eye or spinal cord or any other particular place. When one of them would reach the eye, would develop a parasite named filaria oculi and would produce its action there; if one is carried to the spinal cord through blood stream it would develop a filaria and would set up irritation and produce fluid or tumour by the pressure of which on the cord the animal would get Kumree. If one is carried to the brain it would develop a worm and produce Turn-sick by its pathogenic action.

The above facts may be corroborated by a few examples of hydatid cysts in different organs found in the same animal in postmortem examination and by those of big leg *i.e.*

Elephantitis and Hydrocele in the same person in the human being. I may also be permitted to cite that I saw fluids on the meninges of spinal cords of two Kumree cases, post mortem examinations of which were held by Dr. McAlester and the Superintendent, C. V. D. Assam, at Tezpur, while I assisted them.

In conclusion I may point out that ingestion of eggs of filaria (or any other thread worms) may be one of the causes of Kumree, either with or without development of a worm in the eye; as in case of one egg ingested and carried to the eye the animal would get filaria oculi only, without producing Kumree. If it is not carried to the eye but to the spinal cord, the animal would get Kumree alone without developing any filaria in the eye. If two or more eggs are ingested and one of them is carried to the eye and another is happened to be carried to the spinal cord the animal would get both the filaria oculi and Kumree even after the removal of worm of the eye.

I being led with the afore-said idea, wanted to give injection of Iodine solution intravenously to this pony to help the fluid in the spinal canal, if any, to pass off but the owner was in favour of Novarsenobillon, as the garden medical officer informed him the benefit of it in human practice in cases of blood diseases.

I put up this case before the "Veterinary Graduates' Conference" to discuss on the subject to get out the real causes of such cases of Kumree and to discuss about the efficacy of Iodine and Novarsenobillon in this particular case and similar such cases.



HYDROPATHIC TREATMENT OF FRACTURE OF
HORN IN CATTLE

BY

M. C. JOSHI, G.B.V.C.,

Shree Gujarat Cattle Hospital, Umreth, Kaira Dt.

Sometimes a fracture of horn occurs from its bottom and the skin remains in tact. There is no wound and consequently no air can enter the horn. The horn appears to have been fractured from the frontal cranial and other bones and when shaken, is found loose, lowered and sometimes hanging. These cases are treated by the Hydropathic treatment as follows:—

The fracture of horn is set and brought into its natural position and is secured by means of bamboo-splints and bandages. A bamboo splint or a string is fastened to the upper portion of the fractured horn and is connected with the sound horn and secured in such a way that it occupies its former normal position. The owner is advised to keep the bandages in the affected horn constantly wet with cold water for one and half months till the fracture unites.

Swelling due to fracture soon goes down and the bleeding through the nostril of the affected side, gradually stops.

Sometimes the owner has no belief in water-treatment. In such a case he is supplied with alum lotion to pour on the bandages already kept wet constantly with water.

I have treated three cases of bullocks by the above treatment very successfully, one in Viramgam, one in Dakor and one in Umreth. The treatment not only saves the trouble of the operation, but is also less painful and saves also the trouble of dressing the wounds caused by the surgical operation.

My brother-Veterinarians will find the above treatment very simple, time, labour and expense saving and the least disturbing to the patient and the owner.

CEREBRO-SPINAL MENINGITIS IN LARGE
CARNIVORA*

BY

MR. D. N. MADON,

I/C, Zoo, Victoria Gardens, Bombay.

It is in the lot of a favoured few Veterinary Surgeons to be in charge of a large zoo, and I, being one of the lucky set, beg to place for your kind consideration a certain case that came under my care, with the hope that the same will prove to be instructive as well as interesting.

A full grown female Leopard (*Felis Pardus*) was suddenly seized with fits. The symptoms were exactly similar to those occurring in sporadic cases of meningitis which we meet with in ordinary practice. These may appear suddenly or may be preceded by a staggering gait and inco-ordination of movements. In the former as we are aware, the animal falls to the ground and is unable to rise, he struggles in a convulsive manner, the spasms chiefly affect the anterior regions of the body; the head is constantly forced backwards the conjunctiva are deeply injected, dilatation of the pupils and nystagmus are present; short periods of ease are observed, but without any warning, violent convulsive fits occur, so that great care is necessary in approaching or handling the animal; marked hyperesthesia of the skin is also present. I believe that Cerebro-spinal meningitis also occurs as a complication of Distemper in Carnivora.

Coming back to our particular case, the following line of treatment was adopted:—

Cold douche to the head when fits were on and a dose of Castor oil oz 1½ given in a chunk of meat. The patient had no motions and fits continued to appear three to four times a day.

Santonin in 5 gr. dose was administered twice a week, some worms were noticed in the fæces but the fits appeared as usual.

* Read at the Fifth All-India Veterinary Conference, Bombay, December 1927.

I now tried the following sedative treatment:—

R. Pot. Bromide,
Chloral. Hydras a. a. grs. XV.
Syrup dr III.
M. Ft. Electuary.

Such electuary twice a day.

This line of treatment was continued for a week and during the period although fits appeared they were not so severe or frequent as before. The patient at this time looked very much emaciated and refused food; all attempts were made to excite her appetite by constantly changing the diet. At this juncture I thought it advisable to change the entire line of treatment. Bromides were substituted by stimulants and the following No. 2 prescription administered:—

R. Spt. Ammon. Aromat.
Spt. Aetheris Nitrosi.
Spt. Chloroform. a. a. dr II.
Tr. Nuxvomica m VI.
Aqua. Menth. Pip. ad oz IV.
M. Ft. haust.

For eight consecutive days, No. 2 was pushed on morning and evening; great improvement was noticed and the attacks of fits were few and far between. The patient now looked cheerful and her appetite improved to such an extent that she willingly partook of beef, mutton, milk &c.

The same treatment was continued for another eight days, though only once a day. During the period of these eight days the animal was free from the attacks and was at ease.

Medicine was discontinued and replaced by nourishing diet such as beef, mutton, milk, Cod Liver oil, Eastern Syrup &c. It is nearly four months past that our friend the Leopard had no more fits or trouble of any sort.

I am glad to inform you that my patient has gained considerably in health and she is a "Thing of Beauty" in our public Park.

TREATMENT OF BURSATI WOUNDS.*

BY

S. N. CHATTERJEE,

Veterinary Inspector, Ranchi, Bihar & Orissa.

Before speaking anything about the treatment of the Bursati wound, the first and foremost question that arises in our mind is about its definition or description. Bursati wound is nothing but a kind of ordinary wound caused chiefly by the flies, which are not rare in the monsoon season.

Here, I am going to relate the detailed history of a most troublesome case, (in which a pony was suffering from the Bursati wound) and this will show how the animal was miraculously cured without the medical help, thus adding much to the store of my experience.

At the time while I was in charge of one of the first class important hospitals at Bhagalpur, District Bhagalpur, in the province of Bihar and Orissa in the year 1909, so far as my memory goes, a pony, about the size of 13·2 hands, which was then newly purchased by a Muhammadan hackney carriage owner, resident of Bhagalpur, unfortunately fell a victim to that disease, was seized by the police under 'cruelty to animals' act, and the owner was prosecuted and fined by the District Magistrate, Bhagalpur, and the owner was also ordered to have the animal treated at the local veterinary hospital till it was thoroughly cured and certified by the doctor of that hospital.

Under the circumstances, the above pony was brought to the hospital, and admitted by me.

The animal had a big wound on the seat of saddle, about the size of 4" in length and 3" in breadth and the surface of the wound was shallow and very unhealthy. On enquiry, it appeared that the said pony had a small wound about a month ago, and it was treated by the quacks by applying the country medicines, such as, slaked lime, indigo and burnt leathers, but all their attempts were in vain.

* Read before the Annual General Meeting of the Bihar & Orissa Veterinary Association, held at Patna on 23rd October 1927.

However, when the animal was admitted in the hospital, it was cast in the operation-shed, and unhealthy parts and tissues were removed by operation and the parts were thoroughly cauterized by firing iron: afterwards simple ointment was applied. But I really regret to say that in spite of all our possible measures being taken during its stay in the hospital for three months (i.e. though it was operated thrice and all sorts of medicines were applied), all our attempts to cure it were frustrated.

I was very much disappointed, and seeing no other chance of its recovery, duly brought the matter to the notice of the Chairman and the District Magistrate of Bhagalpur who passed orders for the discharge of the animal as permanently incurable and unfit for any further work.

The diseased pony was removed from the hospital by the owner and he let it loose in a neglected mango-garden situated about 3 miles off from the town of Bhagalpur.

Then about six months rolled on from the date of discharge of the said animal. One day, I was rather amazed to see the same pony harnessed in a hackney carriage passing vigorously by the hospital. At first I could not believe my own eyes; then, had the animal brought in, and, observing closely, I found the same big scar-mark on the seat of wound which was then thoroughly cured. Not being able to make out any clue from the coachman, regarding the cure of the pony, I, out of curiosity, went personally to the owner of the pony at Sujaganj, situated about a mile and a half from the hospital and questioned him about it. He reported that he had let the pony loose in a mango-garden, that very day when it was relieved from the hospital and that it was allowed to graze there freely; that, after three or four months, the "Malli" came to him and reported that the said pony was cured; that the pony was thereafter brought to his house and seeing no wound at all, he began to use it again in harness since that time.

This explanation of his, however did not satisfy me and I could not account for its recovery; on the other hand, I was rather very much ashamed to think that it was either cured

by somebody else or by nature. However, I proceeded at once to the above mango-garden, met the "Malli" there and asked him many questions, but I could not trace, how it was cured; the only thing he told me was that the said pony frequently used to rub its body against the trunk of an old mango-tree and I really found that there was a mark of rubbing its body there; it was so much rubbed there, that the inner layer of the bark was out and visible. From this I made a conclusion that most probably that bark has done some good effect to its wound somehow or other.

Subsequently, for the sake of experiment, I treated some three or four cases by the decoction of the mango-bark and it gave a very good result in each case.

The decoction was prepared and applied in the following manner:—

8 ounces of inner cortex of the mango-bark, being cut to pieces, should be boiled in 2 lbs of water till it is reduced to 1 lb; it should then be cooled and strained.

A few drops of Formalin is added, (i. e. 20 to 30 minims.) in order to prevent decomposition.

The affected parts are washed with phenyle lotion (in the interior of villages, where phenyle is not available, the decoction of "Neem" leaves may be substituted); after drying it up thoroughly, a piece of cotton to be saturated with the decoction of mango-bark and to be tied up over the wound.

— Ordinary Bursati wounds are generally healed within seven to ten days, but in case of severe type, it takes about two or three weeks, in worst cases even a month.

The first two or three days the unhealthy tissues and overgrowths with kunkers are sloughed off and the wound becomes more or less healthy.

When the wounds become a little healthy (i. e. after 2 or 3 days), the decoction of the mango-bark should be made a little weak by adding ordinary cold water. Strong or milder decoction should be used after seeing the condition and progress of the wound.

FOLLICULAR MANGE IN CATTLE*

BY

BABU B. L. MOITRA,

Laboratory Assistant, North Bihar Range.

Recently two sets of pus smears were sent to the North Bihar Range Laboratory from the nodules of two calves about two years of age, the property of Sepay Farm. On microscopic examination *Demodex Folliculorum Bovis* were found in them and accordingly they were declared as cases of Follicular Mange.

The symptoms of the cases so far as could be gathered are as follows:—

Nodules varying in size from a pin head to a pea appeared all over the body but chiefly on the trunk. These nodules looked slightly reddish in appearance containing thick white granular odourless oily pus with varying number of parasites. There was no loss of hair from the affected parts nor any irritation was noticed whereas in canines the hairs from the affected parts fall off, the skin becomes reddened and then thickened, small papules which turn into pustules now appear followed by wrinkling of the skin with swelling of the affected parts.

The two affected calves used to remain side by side in the same shed with other cattle but these two only were affected, the rest were free from this affection. The exact cause of this infection is unknown.

The method of contracting the disease, I believe, has not yet been fully worked out. A great number of experiments have already been made without success.

Prognosis in cattle is not known to me as yet, though in dogs it is very grave and in most cases treatment seems to be of little value.

In conclusion I give my sincere hearty thanks to Babu R. P. Singh of Gopalganj for furnishing me the materials for this case and I must consider myself fortunate if any of my colleagues is benefited by it.

* Read before the Annual General Meeting of the Bihar & Orissa Veterinary Association, held at Patna on 23rd October 1927.

“SPONTANEOUS RECOVERY IN TRAUMATIC PERICARDITIS”

BY

E. G. PARCHURE, G. B. V. C., P. G. (LAHORE)

Agricultural Laboratory, Gwalior.

Although Traumatic Pericarditis is generally considered as a fatal disease, it will be interesting to know that there are cases, though accidental, of patients having recovered from this disease by the spontaneous shooting out of the foreign body—which is the cause of the disease. Recently, a case of this type happened here. I give below details thereof:—

A cow was brought to the Civil Veterinary Hospital at Lashkar for treatment. Apparently there did not seem to be anything wrong with the animal except that the animal was in poor condition and also had a swelling a few inches below and behind the right elbow. From the information given by the owner it was further ascertained that the swelling was of 3 or 4 days duration. We thought it to be due to some internal injury. On further examination the cow was found to keep normal temperature and was not off feed. Therefore there was little ground to suspect any possibility of Traumatic Pericarditis. The swelling was however hot and painful. The doctor in-charge treated it locally with stimulating liniment and fomentation for four days. This brought the swelling to a head. This was opened and a large quantity of pus removed. The doctor further wanted to clear the wound from inside. When doing so he put his finger, with a little cotton-wool inside the wound. There he found some obstruction to his movement. On careful examination, point of a sewing needle was found to protrude—which was pulled out. It was rusty and $2\frac{1}{2}$ inches in length. But it was quite intact. The wound was attended to and was quite alright in a week's time.

Therapeutical Notes.

Sodium chloride:—Subcutaneous injection of a hypertonic solution of sodium chloride is one of the old treatments for muscular atrophy (scapular, crural, etc.)

The North American Veterinarian, Jan. 1928.

Catechu is the best known drug for intestinal coccidiosis, but whether its powerful astringent action only deceives by checking the diarrhoea or is parasitocidal is a question.

N. A. V. January 1928.

Purified Turpentine intravenously in the horse:—Essence of turpentine may be injected without any danger into the jugular vein of the horse in daily doses of 2 to 3 c. c. Its partial elimination through the mucous membrane of the lungs makes it an ideal remedy in affections of the respiratory organs; the author attributes to it the cure of a certain number of grave cases of equine typhus with pulmonary localisations. Besides its oxidizing power, which is not negligible, essence of turpentine has the property of developing, in the few hours or days following its introduction into the blood-stream, considerable hyperleucocytosis, the anti-microbial action of which appears in a rapid fall of fever and the regression of disturbing symptoms. Subcutaneous injections and the abscesses they produce have analogous, but less rapid results. Intravenous injections must therefore often be preferred, since they are easy, painless, and do not involve the troublesome consequences of an abscess.—R.L. Higgins in the *Veterinary Record*, London,

Veterinary Medicine, April 1928.

Treatment of Chronic Eczema of the horse by injections of sterilized milk:—The usual treatment of chronic eczema (sulphur, arsenic, cade oil in cutaneous applications) having given no beneficial result in a seven-year-old horse, 20 c. c. of whole cow's milk were injected after sterilization, subcutaneously in the neck in two places. Five separate injections

were made at intervals of two days. A complete cure resulted in less than three weeks. A recurrence several months later was treated in the same way and with the same result.

Nutritional troubles (retention of the chlorides and phosphaturic diabetes) explain the recurrence and the impossibility of a definite cure. *V. M. April, 1928.*

Glucose in delayed recovery of a cow affected with Milk Fever:—In the case reports printed in *The North American Veterinarian*, I like to muse over what I would do under similar circumstances and then recall how other veterinarians succeed with perhaps a different treatment. Recently, I read about the cow affected with milk fever which did not respond to several inflations of the udder and strychnine and then responded to injections of glucose.

I was able to try this method to-day (March 1, 1928) for on Sunday last about 8-30 in the morning I inflated the udder of a cow that went down about twenty-four hours after an easy parturition. The cow seemed normal but could not rise. In the afternoon she was still down, so I re-inflated the udder, administered strychnine and prescribed fluid extract of nux vomica. She could eat and drink. She was still down at 10-30 the next day when a third inflation was practised. I intended to visit her again the same evening but was prevented from doing so on account of bad weather and roads and therefore did not see her again until one o'clock the next (3rd day) day when I found her still recumbent whereupon I injected about two teaspoonfuls of thick glucose in four ounces of warm water into the jugular. I cannot say just how much glucose was given but presume there was between 3½ and 5 drams in the solution injected. No other treatment was given as the udder still contained some air from the last inflation. The cow was up at 4-30 P.M. which was three and a half hours after the glucose was given.

From now on I shall try glucose on every cow that requires more than one inflation for I have observed that all cows affected with a mild attack are much slower in responding to inflation than those which are badly prostrated and also that after a second inflation recovery does not occur in

less than six hours although all of them to my recollection have been up in twelve hours. ("All" is not many in this instance as I have only been practising since January, 1927.)—*M. L. Wendler, D. V. M. Littlestown, Pennsylvania.*

N.A.V. April, 1928.

Luminal Soda in Canine Practice.—By G. Mayall, M.R.C.V.S., Bolton.—Luminal is a white, odourless, somewhat bitter powder known chemically as phenylethylmalonyurea, and is a synthetic hypnotic and sedative. It is almost insoluble in water, but dissolves more readily in alcohol. Its sodium salt is freely soluble in water. It is especially useful in epilepsy and other neuroses, chorea, pertussis, menstrual and climacteric disorders, hyperthyroidism, migraine, and pre-and post-operative cases. Dr. Sands used it on ninety-two epileptics in the Manhattan State Hospital, and noticed:—(1) Decided decrease in the number of seizures; (2) diminution in their severity and duration; (3) definite decrease in the unpleasant after-effects of the fits; (4) the patients became much quieter and more amenable to care and treatment. The general dose given was $\frac{3}{4}$ grain three times daily in tea or coffee. Dr. Stanton of Detroit used it on 100 cases and largely in children, and the seizures were modified, diminished, or arrested, and the mental state of practically all the patients was markedly improved. The use of the drug may be prolonged indefinitely.

After reading the above and other reports in the leaflet of the Bayer Products Ltd., and also a report in English medical literature which I cannot trace, I resolved to try the drug in epilepsy and epileptoid attacks in the dog due to distemper, worms, teething, etc. Recently I have had many cases in young dogs, where one moment they have been quite normal and the next convulsed, foaming at the mouth, champing the jaws, falling and kicking spasmodically, etc.

Case 1. On November 28th I was called at 10-30 P.M. to a Sealyham dog puppy five months old. He was convulsed through his whole frame, jaws working, foaming at the mouth, hemispheres of the brain throbbing plainly and then violently sick, vomiting clear fluid. His breathing was hurried. His sides were rubbed with menthol and winter-green

cream and a flannel jacket put on. A dose of 1 grain of pheno-barbital was given and instructions left to repeat the dose in four hours. In the morning he was easy and quiet and inclined to sleep, but when roused was sensible. The pheno-barbital was continued three times daily in $\frac{1}{2}$ grain doses. On the third day he was still breathing rather quickly, his pulse was 104 and temperature 102° . He was given a hypodermic injection of 40 minims of camphor oil (1 in 5), and soon became less languid and depressed, and walked about briskly when lifted out of his basket. Briefly, he made a very good recovery, and there has been no return of the attacks.

Case II.—A fox terrier puppy six months old. Running about yapping and showing great fright at any moving object or person, hiding, falling, and champing his jaws. Quarter-grain doses of pheno-barbital were given him three times a day, and he made a fine recovery. The lady owner made a request for a supply of the medicine to keep by her, but so far she has not needed it.

Case III.—A mongrel dog nine months old, with encephalic disturbance—hysterical, crying out, and almost unapproachable. Very like a sudden attack of virulent distemper. One-grain doses given three times and subsequently $\frac{1}{2}$ grain doses. This dog made a very good recovery within four days.

Case IV.—A spaniel bitch, yapping and running about excitedly and champing her jaws, not actually falling, but little control over her hind limbs. She was treated with pheno-barbital in a similar way and so far has done well.

I have tried small doses on two cats with loss of power in their legs and off food, and it has done them both good.

I have not been using the pheno-barbital as a powder, but as an elixir made up by a local wholesale chemist. Each fluid drachm of the elixir contains 2 grains of pheno-barbital. It is far handier to dispense than the powder. Dogs and cats take it well, and I have seen no bad after-effects. When I recollect how cases like the above have frequently terminated unsatisfactorily in the past, I am pleased that better successes can now be recorded.

I am anxious now to see its effect in typical cases of chorea.

The Veterinary Journal, January, 1926.

In our experience nothing less than 3 to 5 grains had the desired effect in controlling fits case of distemper. *Ed, I.V.J.*

Cage Paralysis cured by Violet Rays.—As a result of experiments conducted by Dr. Charles V. Noback at the Bronx Zoo, it would seem that a cure has been found for "cage paralysis," a disease which afflicts wild animals kept in confinement and which nearly always ends fatally. It was found that by the use of ultra-violet rays animals so affected can be completely restored. The experiments were carried out on two monkeys and three lemurs. The first patient was a red howler monkey from British Guiana, a species which rarely survives long in captivity, its average life when in confinement ranging from three to thirteen months. This specimen by careful dieting was kept for nineteen months when it developed cage paralysis and it sat huddled up on its perch like a decrepit old man. After steady treatment with ultra-violet rays both directly and with food exposed to the rays, the monkey completely recovered and regained its former agility. Another case was a Grivet monkey which after a month's treatment, also recovered. One of the lemurs was restored after a month. The other two were very bad cases. They would hardly walk and could not climb at all. After six weeks they were both practically normal. Treatment by the rays will now be applied whenever the first symptoms of cage paralysis appear. Artificial sunlight has been used with great success on monkeys and other animals at the London Zoo for some time past.—*Central News.*

The Practical Medicine, February, 1928.

Chaulmoogra Oil in Tuberculosis.—Chaulmoogra oil has been used for some time in the treatment of leprosy, with favourable results. It has been shown that it is 100 times more bactericidal, for acid-fast bacteria, than is phenol. Dr. Lessner reports encouraging results in tuberculosis following the weekly intravenous injection (later extending the interval to 2, 3 or 4 weeks) of i c. c. of the ethyl ester of

Chaulmoogra oil.—Dr. L. Eichelberger in *Bull. Chicago Tuberc. San.*

The Practical Medicine, October 1927.

If Chaulmoogra oil is effective in tuberculosis, there is reason to believe that it may be effective also in Johne's disease in cattle. It is hoped that research will be made in this direction by research workers and the result made known to the profession through the columns of this Journal. *Ed. I. V. J.*

The Treatment of Bovine Coccidiosis by Ichthargan.—By Yakimoff (W. L.). Infected animals are treated with 1 gramme dissolved in 1 litre of water (not in salt solution) twice daily. The author claims that he has treated several dozen animals with success in every instance. Two or three days suffice to effect a cure.

One case is specifically referred to and in this instance 3 species of coccidium were recognisable in the faeces—*E. zurni*, *E. smithi*, and a third of large size.

Tropical Veterinary Bulletin, March 1, 1928.

Carbon Tetrachloride for Distomatosis in Sheep.—By De Blicke (L.) & Baudet (E.A.R.F.). The author finds that a dose of 1 cc. is efficient, and he does not appear to have experienced any untoward results. Emphasis is laid upon the necessity of having the pure drug. The best times for treatment are July, October, December and February.

T. V. B. March 1, 1928.

"Cadju" Fruit as cure for Leprosy.—Story of remarkable recovery.—Colombo, June 21. The story of a leper living among the beasts of jungle and subsisting entirely on Cadju fruits, (*Anacardium Occidentale*) has brought forth the claim for the fruit that it is a cure for leprosy.

A well-known native physician of Ratnapura, recently deceased, last year found roaming in the jungles of the Kakul Korle, a leper in an advanced stage of the disease, who following ostracism by the people of Jaffna, his native place, took to the jungles and lived on fruits, chiefly Cadjus. The physician made several subsequent visits to the

jungle culminating in the evidence of the leper's almost complete recovery. Later experiments by the physician proved that Cadju is beneficial in other bad skin maladies also.

The Hindu, June 21, 1928.

Notanda.

(R. S. N.)

Pip Gargil:—A sore at the end of the teat duct and the sore scabbed over between each milking. It is a very troublesome affection.

Treatment.—Mild ointment of corrosive sublimate or injection of a few drops of carbolic oil.

(T. C. Fletcher)

The nine don'ts of the principles of diagnosis.

1. Don't be too clever. It is always dangerous in diagnosis to make large deductions very small indications.
2. Don't diagnose rarities.
3. Don't be in a hurry.
4. Don't be faddy. This is the besetting sin of specialists. Try to see the case steadily and see it whole.
5. Don't mistake a label for diagnosis.
6. Don't diagnose two diseases simultaneously in the same patient. Make it a rule to account for all the clinical features of the case by assuming the presence of only one pathological process.
7. Don't be cock-sure.
8. Don't hesitate to revise your diagnosis from time to time in a chronic case. Things may change, new signs may appear which put a totally different complexion on the matter, and the original and provisional diagnosis may no longer be able to stand.

9. Guessing is to be avoided at all costs. It is better, however, to be wrong on sound principles than right by chance.

(Dr. Robert Hutchison).

Atropine in one grain dose is found useful in cases of hæmorrhage; in fact, it had acted when adrenalin had failed. In cases of castration in nine cases out of ten the hæmorrhage stopped and without recurrence.

(R. Hudson.)

In flushing of wounds with boiled boric solution the addition of a little alcohol to the solution will remove grease.

Subcutaneous injection of oxygen for dogs suffering from distemper or pneumonia has produced surprisingly good results. It is also an antidote to excessive chloroform anæsthesia and should such occur whilst operating.

Region.—Insert needle half way up the back but slowly. When the swelling has crept around the abdomen and progressed as far as or beyond the scapula remove the needle; but the animal's skin is now blown up away from its underlying muscles and fascia and the dog becomes cold in consequence. This must in all cases be compensated for by applying a large and warm coat. Oxygen is absorbed in about 48 hours. The worse a dog is the quicker does it absorb oxygen and conversely.

(Veterinary Record)

For demonstrating *Microfilaria* in the blood, the best method is a thick blood smear, de-hæmoglobinised by water and stained overnight by dilute Leishman's or Giemsa's stain—about 1 in 40.

(G.B. Purvis.)

Treatment in paralysis in small animals.—By suspending the animal by its hind legs and swinging it. The idea is, if due to suffering from an effusion on the spine, the action will help to diffuse the effusion and thus relieve the pressure on the spinal column. If the condition has been in

existence for sometime you get an anæmia of the muscles of the quarters and on swinging the animal all the blood rushes to the head. Then, upon returning the animal to its normal position, the blood rushes back to the parts affected and that acts as a tonic.

(G. Mayall.)

In paralysis after a motor accident when a complete paralysis posterior to the dorsal region has occurred, suppositories of Chloretone compound (Parke, Davis & Co's) into the small bowel are found very useful.

Imrie's treatment, familiarly known as 'putting on boards' in traumatic pericarditis is raising of the forequarters 18 inches higher than the hindquarters along with the usual treatment. The idea is to throw the contents of the abdomen away from the diaphragm.

Dietetic treatment in pernicious anæmia in dogs.—Liver or its extract which have the same nutritional value as that of the red bone marrow could be profitably employed. Fats increase intestinal putrefaction and hence contra-indicated.

Ethyl Acetate, applied to adhesive tape bandages dissolves the adhesion and renders their removal painless to the patient even when hairs have grown into them.

Garlic as a vermifuge.—There was evidence that garlic causes paralysis of the worm, preceded by a phase of intense irritation. A 10 per cent extract of garlic kills the ascarid in 45 minutes. The action of the alcoholic extract was stronger than that of the ethereal extract. Allyl sulphide appeared to be the active substance of the garlic. It remains to be seen whether the sulphur or the allyl kills the worm.

(J. T. Rico.)

Santonin as a vermifuge.—To get the fullest anthelmintic action from santonin the dose should be given in the evening and allowed to act for 12 hours during the period of intestinal rest, and then purged out with castor oil.

Hemoplastin.—(Parke, Davis & Co's Hæmostatic serum) when given orally to dogs shorten the period of coagulation. The dose for oral use is 5 c.c. and it is desirable for prophylactic purposes to administer the dose 3 hours before operations.

Extracts

INTROCID IN BOVINE PRACTICE*

BY

H. J. MAGENS, VMC. V. S. Kerrville, Texas

If one reviews the European contemporary literature with regard to the uses and indications of Introcid in solutions and ointments, one cannot help but be surprised and perhaps even become sceptical at their large number but if one understands its inception and its forerunners as well as the history of its development and if one thinks in terms of chemo-therapy then one will readily see the many different indications and uses for this new drug. Prof. Ehrlich's dream of a *Therapia Magna Sterilisans* and the many medicinal agents contributed by him, such as Salvarsan, etc., gave the basic thoughts leading to the development of this drug introduced to the medical and allied professions by Prof. Pfeiler, Jena.

In the light of Ehrlich's theory the field of indications for Introcid is inexhaustible. It will act specifically, where bacterins, anti-sera, sera, vaccines and sero-vaccines will exhaust one's patience. Its irritable influences will stimulate cellular activity, thus increasing and stimulating resistance. Wherever the cumulative action of an iodine compound is wanted there it ought to be the drug of one's choice. The product is bactericidal in action and will abort bacterial growth and development. In the following an attempt is made to describe some of our experiences with it in the field of bovine pathology.

The first case we used Introcid on was a very severe case of septic metritis and cervicitis combined with a suppurative interstitial mastitis of the most grave aspect. The subject was a Jersey grade cow, aged 5 years. The general condition of the animal was very poor. Temp. 104.6° F., respiration laboured and evidently painful, still no pathological respiratory murmurs were heard, visible mucous membranes pale and jaundiced, pulse intermittent, hard and wiry, animal's coat was dry and lifeless.

The condition of the udder was, as stated before, very grave. All quarters were very oedematous partly doughy, heavily infiltrated with pus, surface temperature high in spots and in other places lowered. The teats issued a cream colored stringy pus yellowish in color.

There was a copious discharge of bloody, stringy pus-like material from the vagina. Manual exploration revealed partial retentio secundiarum and a very severe cervicitis and metritis.

* Veterinary Medicine, April, 1926.

Diagnosis :—Septic metritis and cervicitis and suppurating interstitial mastitis.

Prognosis :—Very guarded and not encouraging.

Treatment :—Subcutaneously : Camphor in oil.

Intravenously : Sol. Introcid 15 mil Aqua dist. 15 mil.

Per os : Aloes. Barb. pulv. Hydragryrum chlor. mite., Ac. salicyl., Mag. sulph. several gallons of water, lukewarm.

Ad partes : Tinct. Iodi, Camph. trit. 01. Lini.

Intrauterine : Lavage with chlorin and saline sol. until returns were clear. Uterine capsules (Sodii perborate, Sodii bicarb. Sacch.)

The above treatments were continued for three days except that the dose of introcid solution was increased daily by 2cc. plus the corresponding amount of distilled water.

The udder became harder at first, but then commenced to discharge freely, the surface tension became less and the surface temperature became normal and even throughout. The doughy infiltration slowly yielded and the udder became normal in size.

The appetite gradually increased, still water had to be given daily for several days via the stomach pump.

From the fourth day medication was changed to : Gentian. pulv. Nuc. Vom. pulv. Ac. Salicylici. Subcutaneous inj. Camph. in oil discontinued. Maximum dose of sol. Introcid of 20cc. in an equal amount of distilled water was given daily up to the sixth day and then discontinued.

Uneventful recovery occurred.

The *second* case presented was a very severe case of suppurative mastitis partly due to traumatism (gunshot) coupled with a retentio secundarum and the ensuing metritis. The subject was a purebred Holstein cow aged 4 years. The general condition of the animal was only fair. The temperature 105.1° F.; respiration was laboured and evidently painful, no pathological respiratory murmurs; visible mucous membranes pale and jaundiced; pulse very irregular, hard and wiry; animal's coat harsh and dry; mucous discharge from nostrils; expression of eyes stary and glassy.

The condition of udder was very grave. All quarters were doughy and heavily infiltrated, surface tension marked, on right hindquarter spot of size of hand hot, painful to touch, and revealing fluid pus under it. Discharge from the corresponding teat, was a bloody pus.

The vagina revealed lacerations due to forced extraction of the fetus before our arrival and a copious discharge of a bloody, pus-like character at times stringy. Manual exploration revealed partial retentio secundarum, metritis and a small tear in the cervix.

Diagnosis :—Suppurating, traumatic, interstitial mastitis, simple metritis.

Prognosis :—Unfavourable with regard to the udder, otherwise fair.

Treatment :—Subcutaneously : Strych. sulph.

Intravenously : Sol. Introcid, 15 mil aqua dist., 15 mil.

Per os : Formalin, sodium hyposulphit. nuc. vom. pulv.

Ad partes : Tinct. iodi., tinct. opii., petrolati liqu.

Intrauterine : Lavage with chlorin disinfectant, manual removal of parts as indicated, until return flow cleared. Uterine capsules as before.

These treatments were given for two days. All medications except to parts and sol. Introcid cum Aqua dist. intravenously then discontinued.

These treatments were given for four more days and discontinued. Uneventful recovery. The hindquarter of the udder atrophied. Due to terrible condition of the entire udder this result is little short of marvelous.

These two cases were selected for their severe and seemingly hopeless character. The results amply justified the efforts.

We used the drug in solution in five more cases and had coupled with internal and external treatment to the affected parts very good results. We cannot help but feel that the drug will prove valuable for others in working under similar conditions where stock vaccines or sera will not answer or where so much valuable time is lost until the proper biological (autogenous) can be obtained. We do not agree with the European investigators as to the doses, we have had better results with much larger doses than are advocated by them. They will be tolerated without any ill-effects whatever.

The next series of selected cases deals with another subject namely mixed infections of the uterus, vulva, vagina, the tubes, etc. All these cases have been treated simultaneously with bovine abortion bacterins (mixed) and bovine abortion vaccine (living cultures). All of these cases were treated immediately after parturition or abortion by uterine lavage and if needed by manual removal of the placenta. All cases began with loss of appetite, slight elevation in temperature and more or less pronounced discharge from the vagina.

Case 3. Jersey Grade Cow. Condition very good; age 8 years. temp. 100° F, respiration normal; visible mucous membranes normal; heart normal; pulse normal; coat stary and dry; condition of udder normal; appetite poor; ruminatory sounds normal; milk production lowered considerably; slight muco-purulent discharge from the vagina.

Diagnosis :—Pyometra, possible ovarian tubular involvement.

Prognosis :—Fair.

Treatment :—Per os : aloes Barb. pulv., calomel, nuc. vom. pulv.

Intravaginal : Capsules ½ oz. as in cases 1 and 2.

Subcutaneously :—Sol. Introcid, 10 mil aqua dist., 10 mil.

The subcutaneous injections were given these cattle every second day until five injections had been given.

All these cases, five in number, responded except one older cow, which persisted in showing a mucous vaginal discharge. In this case the cow was given a daily lavage besides the uterine capsules and the dosage of the introcid sol. was doubled. She showed a marked improvement after the seventh injection.

All cases were bred promptly and so far have not shown any symptoms of failure to conceive.

The result in these cases was gratifying since it offers a solution for the treatment of those cases where the use of bacterins and vaccines have only a limited success for some reason. Autogenous vaccines are to be desired, of course, but will our clients pay for them and especially will they wait long enough and take chances on negative results due to improper cultures, etc? Distances are long in this locality and much time is consumed in transit. The third series of cases shows a general infection. The subject selected for presentation was a Jersey male, registered, age 5 years. General condition of animal fair; temp. normal; resp. normal; visible mucous membranes pale; ruminatory sounds sluggish; pulse normal; appetite poor; expression of eyes tired; coat stary and dry. Examination revealed several abscesses in lower part of the sheath. They were partly hard and painful to touch; partly soft and discharging pus.

Diagnosis :—Multiple furunculosis in region of sheath.

Prognosis :—Good.

Treatment :—Subcutaneous injection of Sol. Introcid at the point of sheath and posterior to the abscesses. 30 cc. of the Introcid solution mixed with 30 cc. of distilled water was the amount injected.

No other treatment was given. The Introcid injection was repeated in three days and again three days later.

The appetite became normal and all lesions were dried up after the third injection.

The other cases of this class were similar in character. All yielded to treatment as did the subject selected for description.

Conclusions :—After the experiments described above we consider Introcid in solution a valuable aid in such conditions. Of course due to the small number of cases described the experiments are not conclusive but they show the way for rational treatment of some conditions where biologicals fail to give entire satisfaction.

THE INEFFICIENCY OF CARBOLIC FLUIDS AS TICK DESTROYERS.

As Carbolic or Coal Tar Fluid Preparations are largely used in some countries for treating tick-infested cattle, it is desirable that it should be known that such preparations possess only a very low degree of tick-killing power.

When Professor Newstead paid a special visit to Jamaica to investigate the Tick Problem, the efficiency of a number of the more popular of these Carbolic Fluids was carefully tested, with the result that the number of ticks killed was never more than 65 % and in some cases as low as 5 %.

The Inefficiency of Carbolic Fluids as Tick Destroyers 73

The following reference to the Jamaica tests referred to above is taken from a paper by the Hon. H.H. Cousins, M.A., F.C.S., Director of Agriculture in Jamaica, entitled "Practical Measures for the Prevention of Ticks in Jamaica :—

"Professor Newstead, and the Jamaica Department of Agriculture, carefully tested the efficacy of all the dip washes offered for sale in Jamaica, and it was found that the bulk of these remedies were Carbolic or Coal-Tar Emulsions.

We found, however, that these preparations had not a high standard of 'Wetting Power,' and tended to 'bead off' the ticks on the skin of the animal, much as plain water beads off a duck's back.

Again, we found that *none of these preparations would kill ticks unless used at a strength that was very liable to strip the skin of the cows under treatment, and in no case did we obtain a high efficiency of tick destruction.*"

These statements have been confirmed by many investigators in different countries, as will be seen for example, from the following extract from United States Department of Agriculture Bulletin 144, in which are given full particulars of a large number of tests, the result of which was to show that *arsenical preparations alone are really efficient and satisfactory tick destroyers* :—

"Ever since the fact that the tick is the agent of transmission of Texas Fever was established, investigations have been carried on for the purpose of discovering some substance which, when applied externally to the bodies of tick-infested cattle, would free them from ticks without injury to the animals themselves. Several remedies which give good results in the case of such external parasites as mange mites and lice are of little or no use in the case of ticks. For example, Lime and Sulphur, tobacco, and *carbolic or coal-tar dips have been found to have no practical value in the destruction of ticks.*"

The same conclusion was arrived at as the result of similar tests carried out at the Central Agricultural Station in Cuba. The following is a quotation from Bulletin 8, entitled "Texas Fever and the Cattle Tick" :—

"Cattle Ticks upon animals are very difficult to destroy, but we have been making a careful search for some cheap and efficient remedy for them"

"*Creoline and other carbolic and coal-tar products were tried, mixed with water, and also with alcohol, in 2, 3, 4, and 5 per cent solutions.*

"*The stronger applications will kill some ticks, but not enough to warrant their use, as the skin of the animals is irritated by them.*"

The continued use of ineffective Carbolic Preparations for the destruction of ticks is no doubt due to the fact that most owners of cattle look upon ticks as a pest that will always exist whatever is done, and regard

the struggle against them as a hopeless, never-ending one. They are consequently more or less satisfied so long as the number of ticks on their cattle is kept within reasonable bounds, and are reconciled to the belief that, so long as they have cattle, so long will they have to keep on treating them at intervals for ticks. They do not realize that it is perfectly possible to eradicate ticks completely from a property within a period of two or three years.

To get rid of ticks completely, once for all, it is only necessary to treat the cattle regularly with some properly prepared arsenical preparation, for it is now generally recognised that arsenical fluids alone can be relied on to kill every tick with which they come into contact.

To employ a Carbolic preparation which will not kill more than 60% of the Ticks is merely trifling with the Tick Problem, for the multiplication of ticks takes place with amazing rapidity. One single adult female tick has been known to lay 5,000 eggs. But if we take 2,500 as the average number, and assuming that all these 2,500 eggs matured, and that one half were females, the following figures show the number of ticks that might be produced in one year by a single tick:—

1st Generation	...	...	2,500
2nd Generation	...	...	3,125,000
3rd Generation	...	...	3,906,250,000
4th Generation	...	...	4,882,812,500,000
5th Generation	...	...	6,103,515,625,000,000

Total progeny from 1 tick in 1 year...6, 108, 402, 346, 877, 500.

These figures show the importance of using preparations which will kill every single tick.

Even the most effective Carbolic Preparations never kill more than 65% of the ticks, and the use of such inefficient fluids can only result, at the most, in keeping the ticks in check; whereas if an arsenical preparation, such as Cooper's Cattle Tick Dip, be regularly and carefully used, complete eradication is possible within a few years.

INTRA-UTERINE TUBERCULOUS INFECTION.

I wish to report a very unusual case which came to my attention this week.

At the local slaughter house where I have charge of meat inspection, a three-year-old cow was killed which showed caseocalcareous mediastinal, hepatic, iliac, prescapular and mesenteric lymph glands, also a few scattered foci in the liver.

She carried an unusually large fetus which broke through the uterus during evisceration. I was attracted by three cotyledons showing typical tuberculous lesions. The fetus proved to be twins. Out of curiosity, I opened both calves. One showed typical caseocalcareous lesions of the lungs and liver; the other was normal. The gestation period was approximately thirty-three weeks.

LOS BANOS, CALIF.

R. H. PEASE.

Veterinary Medicine, April 1928.

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TRYPANBLUE AND CERTAIN DITHIO-ANILINE DERIVATIVES: THEIR EFFICACY IN THE TREATMENT OF PIRO- PLASMOSIS AND OTHER AFFECTIONS IN THE CENTRAL PROVINCES.*

BY

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INTRODUCTION.

Piroplasmosis, or tick-fever, is the most widespread infection of animals in the Central Provinces. The ubiquity of the infection may be adjudged by the fact that blood smears taken from all animals accessible in a number of villages, chosen at random, disclosed on examination piroplasms of various kinds in the proportion of 75 to 80 per cent. of the specimens. Further, in the great majority of the infected animals, symptoms that would lead a clinical observer to suspect infection with piroplasms were not detected. Nevertheless, the clinical state of most of the animals was indicative of ill-health, with anæmia, general debility and loss of condition amounting to extreme emaciation in three to four per cent. of the cattle population in the villages, as the most noticeable symptoms.

In the course of these examinations, it was impracticable to undertake a minute laboratory examination upon the specific nature of the piroplasms. So far as we know at present, mainly from the recent surveys undertaken by the Muktesar Institute, the cattle of India are commonly infected with two species of piroplasms, namely:—

- (a) *Piroplasma (Babesia) bigemum*, the cause of tropical red-water, or Texas fever. Infection with this parasite is very widespread in India, and indigenous cattle are generally held to be immune from serious ill-effects as the result of infection with it. Their immunity is explained on the assumption that the great majority become infected when they are very young, from the bites of ticks, at a stage in their lifetime when it is known that cattle are relatively resistant. Having recovered from the very slight or inappreciable attack produced by this infection, they are subsequently immune from, at any rate, typical attacks of red-water, unless, by chance, they happen to contract infection with some other disease, such as rinderpest, which lowers their resistance to the piroplasms and allows these parasites to develop again to the status of pathogenic organisms. Attacks of redwater are nevertheless, observed from time to time in Indian cattle, and these attacks are generally

* Reprinted from 'Memoirs of the Department of Agriculture in India' March 1928.

explained on the assumption that circumstances have permitted the cattle to escape anterior infection, when their natural resistance had not commenced to wane. It is our belief, however, from clinical observation of cattle in villages and from the evidence that has been brought to our notice concerning the efficacy of trypanblue and other remedies, which have a specific effect against this type of piroplasm, in producing a very marked amelioration in the condition of the animals, that much of the debility and anæmia observed in Indian cattle is attributable to the persistent effects of the piroplasms.

- (b) *Theileria mutans*. This small piroplasm is now known to be found almost everywhere among Indian cattle, and it is generally held that it sets up no clinical symptoms. With the relatively heavy infection sometimes observed, it is, however, difficult to believe that the presence of the organisms can be wholly without effect upon the animals. It has been reported that very rarely sporadic deaths may be caused by infection which for some unexplained reason has become suddenly highly virulent, and that the changes seen in the carcass after death resemble those of East Coast fever. This phenomenon has been further reported to assume special significance in imported cattle. This type of infection is stated not to yield to the effects of trypanblue.

The piroplasmosis of the canine population of India is also known to be caused by two different species of parasites :—

- (a) *Piroplasma (Babesia) canis*, the cause of the so called malignant jaundice. Infection with this piroplasm has long been known to yield in a remarkable manner to trypanblue.
- (b) *Piroplasma gibsoni*. The affection caused by this much smaller piroplasm differs clinically from that caused by *P. canis*, in that it is usually more prolonged in its effects and the symptoms are generally those of a progressive anæmia, with a frequent tendency to relapses at prolonged intervals. It is known to be surprisingly common now in many parts of India. It does not respond, it would seem, to trypanblue, but good results may be obtained by repeated treatment with certain arsenical preparations, notably tryparsamide.

The dipping of cattle, at regular intervals, in arsenical baths, is now practised on an enormous scale in many parts of the world as a means of destroying ticks, to prevent the development in the cattle of the infections transmitted by them. In the Central Provinces, the proper dipping of cattle is impracticable for many reasons. The cattle owner is not sufficiently educated to appreciate the necessity for the institution of

measures of this kind, and would resent and evade them if they were introduced. The veterinary staff is not strong enough to undertake the proper supervision of the dipping. Added to these reasons, there is a technical reason of paramount importance why it would be altogether unwise to resort to dipping measures in small circumscribed areas, where the circumstances might otherwise permit of their institution. Dipping to be effective in the prevention of piroplasm infections must be practised in a thorough manner within the widest possible geographical limits. Short of this, there will remain some cattle that will carry the piroplasms, which will again infect the ticks of their neighbourhood. It is then likely that the properly dipped cattle will contract infection from these ticks when they have so far advanced in life that they have lost their early immunity towards the disastrous results provoked by the piroplasms. Except, therefore, where cattle are grossly attacked by immense numbers of ticks and dipping is practised merely to reduce their numbers, so as to prevent rapid loss of condition caused by large extraction of blood, it is not recommended for territories circumstanced like the Central Provinces.

It seemed to the writer, therefore, that a line of control meriting trial would be to treat animals therapeutically with drugs known to be effective against certain species of piroplasms on as large a scale as possible wherever the veterinary staff saw good reason to assume that there was ill-health of the kind attributable to blood parasites. It will be appreciated by the reader that proper control of the results was not practicable, for the reason that the subordinate veterinary staffs, to whom the actual treatment necessarily had to be entrusted, were not armed with the means for carrying out precise investigations upon the actual presence of piroplasm infection in the treated animals, or of differentiating the species of piroplasms if they should discover them. Further more, any beneficial effect observed after the treatment might be attributable in no small degree to its action upon disease processes other than that set up by the piroplasms specifically susceptible to the action of the treatment. The employment of drugs in these circumstances must be regarded, as very largely in the nature of empirical therapeutics, which, although the term senses an unscientific implication, is, in reality, the basis of most endeavours in human and veterinary medicine. It has a rational basis, however, in so far as it is a treatment aimed at a certain form of infection known to be very widespread in the Central Provinces, which, again, is known by exhaustive experience to yield in a remarkable manner to the treatment.

In 1921, the writer approached the Veterinary Adviser to Government Central Provinces, (Mr. C. W. Wilson, M. R. C. V. S.) with proposals for undertaking treatment in this manner and for permission to execute them on as large a scale as possible. The writer is much obliged to him for granting readily his consent, and for his encouragement in prosecuting the work.

TRYPANBLUE.

1. *Preparation of solution.* The brand of trypanblue recommended is the *trypanblue* manufactured by the German firm, Merck, of Darmstadt. The drug supplied by this firm is eminently superior in properties to the products the author has been able to secure elsewhere. In the years 1921 and 1922, supplies were obtained from a British firm for trial, and they were found to be less soluble than the German product and frequently became gelatinous in solution on cooling.

The drug, which is a blue dye, of the aniline dye series, is made up in two per cent solution in water. The powder is weighed out into a mortar and finely triturated with a small amount of cold water into a paste, more water is then gradually added until the dye enters completely into solution, which is then made up to the desired bulk. The solution is next passed through ordinary filter paper, and the filtrate collected in a wide-mouthed flask, which is afterwards placed in an autoclave maintained at 120°C for 20 minutes. When the solution in the flask has cooled, it is distributed into sterile bottles, which are then carefully sealed and despatched, to the District Veterinary Assistant Surgeon staff as required.

2. *Dose.* The dose administered is. 40 c. c. for horses and cattle, and 5 to 6 c. c. for dogs. These doses may appear to be rather low. The cattle of the Central Provinces, however, are generally of a small type, and as the drug is usually-employed upon animals that are much sunk in condition, it has been considered prudent to recommend for adoption a dose rate somewhat lower than what is sometimes recommended in treatment. Larger doses were sometimes followed by symptoms of dyspnoea and temporary collapse, and although these symptoms passed off without untoward incident to the animal itself, they caused alarm in the mind of the villager, who might be easily led to refuse further treatment of his animals after the experience. The smaller dose was therefore deemed adequate, to be repeated after an interval of a few days to a week at longest.

The records of the Department show that the following quantities of sterile trypanblue have hitherto been issued annually from the headquarters laboratory at Nagpur:—

		Cubic centimetres.
1922-23	...	9,840
1923-24	...	72,420
1924-25	...	142,600
1925-26	...	139,210
1926-27	...	256,675

3. *Mode of administration.* When the drug was first issued, it was administered by subcutaneous injection. Steps were soon taken, however, to train the subordinate staff in the proper method of administering it by intravenous injection. With the adoption of the requisite precautions regarding sterility at the time of injection, the formation of

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abscesses became increasingly rare. When abscesses did occur, they could nearly always be traced to lack of cleanliness on the part of the operator and in the dispensaries, which, on inspection, were found to be below average in the matter of "Care of Drugs and Instruments," to quote one of the headings in the inspection returns.

While the possibilities of the drug were being explored during the first year it was on trial, some interesting practical information was obtained upon the subcutaneous injection of trypanblue into dogs. Wallis HOARE (*System of Veterinary Medicine*, Vol. 1, page 1032) recites the African experience that injection in this way is attended with untoward consequences in dogs as "There was a great tendency to abscess formation if aseptic precautions were not taken." The experience we gained in the course of our work was similar, so long as the injections were made into the inner, flat surface of the thigh. The proneness to abscess formation at this site was thought to be associated with the likelihood of the animals conveying infection from their anal and genital region to the seat of injection by repeated licking of one part and then the other, and so various other parts of the body surface were tried for inoculation. It was found that abscess formation became extremely rare when the sites chosen were either subcutaneously on the side of the neck, or intramuscularly by deep injection into the gluteal muscles. In fact, abscess formation then was no more common than in the larger animal after inoculation of the drug, and when it did occur, it could be traced to the neglect of elementary precautions in the observance of sterility of the kind already mentioned.

At the present time, the method of administering the drug is entirely by intravenous injection, except at a few outlying stations where the Veterinary Assistant Surgeons have not yet been trained in the proper technique. In the larger animals, the jugular vein is selected for injection, and in dogs the external saphena vein.

4. *Clinical results.* After an extensive trial had been given to the treatment, over five years, the Veterinary Inspectors and Assistant Surgeons were requested to furnish detailed reports upon the results achieved by them in the course of their experience. Unfortunately, it is not practicable to publish in this short article their communications *in extenso*, and so striking records, numbering over a hundred have perforce to be omitted. It is believed, however, that the efficacy of the treatment is fairly summarised in the following excerpts from the reports. In general, the reports dealt with the treatment from two standpoints, namely, first, as a cure for acute piroplasmiasis, and, secondly, as a restorative in chronic affections manifested by symptoms of debility.

- (a) "Its general value as a tonic is undoubtedly a great one. Many unthrifty animals put on condition after one or two injections of trypanblue and its use is getting very popular with cattle owners. In milking cows, injections result in a better yield of milk and the quality and quantity of the

butter is increased considerably. I have found it very useful in cases of chronic skin affections in dogs."

- (b) "Its value as a general tonic is unparalleled. There have been many instances in which animals have shown wonderful improvement in condition after one or two injections."
- (c) "In acute cases an injection of trypanblue almost immediately brings down the temperature and clears the blood of piroplasms. Even if the blood is still free after seven days, a second dose should be given. The present dosage is sufficient. In chronic cases, at least three doses are necessary at intervals of a week, or earlier if the mucous membranes show no blue staining. As a general tonic, it is much more useful than iron, arsenic, etc. Milch animals which give an inferior quality of milk in spite of good food and tonics, yield a large quantity and a better quality of milk after injection. In two recent cases, a cow and a she-buffalo which had dried up almost entirely owing to unknown causes started to give milk after the first injection. I am of opinion that for all debility cases trypanblue should be adopted as a routine treatment whether parasites are found in the blood or not."
- (d) "In acute cases of piroplasmosis early treatment with trypanblue has been found efficacious in over 95 per cent of cases. I have treated many cases of indolent ulcer, which defied all ordinary treatment, by means of trypanblue injections combined with external dressings of an ordinary kind. Other chronic diseases of a constitutional nature such as recurrent colic and tympanitis showed rapid resolution when the dye was used in conjunction with ordinary medicaments which by themselves had failed to effect resolution."

An inspector reports that although he obtained excellent results with the drug in indigenous breeds of cattle, he failed to obtain results that were equally striking in animals that were either imported stock or the progeny of imported stock mated with the local cattle.

5. *Action on Foot-and-Mouth Disease.*—In 1923, injections of the drug were tried upon animals in the scene of outbreaks of this disease. It was found that when the drug was administered during an early stage of the disease, while the animal was exhibiting an acute febrile reaction to infection, rapid improvement took place, and the length of time that elapsed between the first appearance of symptoms and eventual complete resolution was curtailed by a half in the treated animals. The drug, however, was found to have no prophylactic action. It is of interest to note that DAVIDSON (*Veterinary Journal*, 1924, Feb.) has reported similar results with the use of the drug in Hong Kong.

6. *General Remarks.*—From these observations, it may be inferred that the utility of trypanblue in the treatment of piroplasmosis, of the acute and chronic types, has received confirmation in practice in the Central Provinces. The results that may be expected from its use are in no wise surpassed by those reported to have been obtained in other countries. Further, in the numerous cases of chronic debility, slowly healing wounds, and other local manifestations of a probable systematic disturbance, the exhibition of the drug may be followed by rapid clinical improvement, whether piroplasms are readily demonstrable by microscopic examination in the peripheral blood or not. The utility of the drug in the treatment of animals affected with foot-and-mouth disease, in its early stages, has also been confirmed.

INTRAMINE.

In 1922, the writer's attention was attracted by Mr. A. G. Dix, I.E.S., to a report upon a new basic aniline dye prepared by Dr. H.H. HODGSON, College of Technology, Huddersfield; this dye appeared to be allied to the intramine referred to by MACDONAGH in his Hunterian Oration (1916), entitled "Links in a Chain of Research on Syphilis." At the author's request, Dr. HODGSON kindly despatched to him samples of certain Oodithio-anilines for trial. Some of these compounds were soluble only in solutions of sodium thiosulphate or caustic soda, but later samples were received that were soluble in water alone. The preparation known as intramine, although it is referred to here as a dye, is in reality a colourless substance, and it is administered in one per cent watery solution.

During the years 1923 and 1924, a series of experiments was carefully executed upon these drugs to test their efficacy in piroplasmosis, trypanosomiasis, and foot-and-mouth disease. It would extend beyond the limits of this short contribution to reproduce in detail the records of these experiments, which can, however, be readily furnished on request by the author for scrutiny.

The total number of animals treated in hospital for piroplasmosis was 38, namely, 6 ponies, 12 cattle, 3 buffaloes and 17 dogs. The chemical substance designated intramine was administered both subcutaneously and intravenously. Smear preparations of the blood of these animals were examined daily microscopically, and temperature readings taken. It was found that the piroplasms disappeared from the blood stream within 24 hours after administration of the drug. The blood of nearly all of these animals was examined from time to time for periods extending to two or three months, and in only two of them were there any signs of persistence or recurrence or parasitic invasion.

As the drug is colourless, it has an advantage over trypanblue in that it does not stain the mucous membranes and other tissues after injection. This characteristic is not of such consequence in India as it might be in countries like England, where the prolonged staining caused by trypanblue is considered very objectionable. The intramine preparation, however, did not seem to exercise any tonic or restorative effect, in the manner

already indicated in describing the properties of trypanblue. Perhaps this defect need not be looked upon as a grave deterrent towards the use of the drug in countries like England, where, after specific destruction of the piroplasms, treatment can be readily continued by the administration of a course of so-called tonic medicines. In India, however, the conditions of treatment differ greatly, for a skilled veterinarian has official charge of a large tract of country and finds it generally impossible to keep individual animals under prolonged observation. The dithio-aniline preparation again seemed to exert no appreciable inhibitory effect upon trypanosomes.

Action upon Foot-and-Mouth disease.—The following is a brief summary of experiments carried out to determine the efficacy of the drug in the treatment of this disease.

Experiment No. 1.—Three calves were used, two of which were injected intravenously with 30 c. c. of a solution of intramine, in a one-third dilution of the usual one per cent. strength, while the third was allowed to remain untreated as a control. All three calves were then artificially infected, by feeding them on grass heavily contaminated with saliva and discharges from the foot lesions of animals naturally affected with the disease; in addition, the gums were scarified and infective saliva applied to them. The two calves that were injected in the meantime with intramine showed very considerable resistance to infection: one calf remained normal in appearance throughout the period of observation, while the other calf showed on the eighth day a rise in temperature (103.6° F and 103.8° F.), which, however, subsided to normal on the following day, and no outwardly visible symptoms developed. The control calf showed a rise in temperature amounting to 104.6° F on the eighth day, and shortly afterwards on the same day there appeared on the upper lips and gums erythematous spots, some of which developed into ulcers by the 11th day and were considered to be sufficiently characteristic of typical foot-and mouth disease lesions.

Experiment No. 2.—This experiment was carried out on a herd of 45 bullocks, cows and calves belonging to the Nagpur Jail. On April 26th, foot-and-mouth disease appeared in this herd, and on the following day six bullocks were injected intravenously with 30 c. c. of the one per cent. intramine solution. On April 28th, that is, 48 hours after the first appearance of the disease in the herd, one of these bullocks developed a foot lesion, with a rise of temperature of 104° F. On May 3rd, the remaining five bullocks were given a second injection: on the same day, two fresh calves and three bullocks were injected with the drug and introduced into the infected herd. None of these ten treated animals showed subsequently any febrile disturbance or symptoms of foot-and-mouth disease: they were the only animals in the jail herd that escaped clinical affection.

Experiment No. 3.—This experiment was undertaken in the field, under the supervision of Mr. R. V. Pillai, G.B.V.C., on a large herd of cattle in which foot-and-mouth disease had already appeared. It was found that the injection of intramine cut short the course of the disease to an

even more striking degree than had been observed by DAVIDSON and in our own experience with the use of trypanblue.

Foot-and-mouth disease assumes a much less virulent form among indigenous cattle in India than it often does among European herds. It was considered therefore that the drug was worthy of trial upon the more virulent European disease, and while he was on leave in England, the author approached the late Sir Stewart STOCKMAN with the object of putting him in touch with Dr. HODGSON to get samples of the dithio-aniline preparations to test in actual outbreaks. It was explained to the author, however, that any attempt at therapeutic treatment was contrary to the declared policy of the Ministry of Agriculture, and so the tests could not be carried out. It is believed, however, that it would be worthwhile for British practitioners to test the preparations upon clinical cases of red-water, especially in view of the advantage they possess in not giving rise to discolouration of the tissues. The author feels a sure that Dr. HODGSON would be prepared to put at their disposal any material they required for the purpose.

From the economic standpoint, the employment of intramine has the considerable merit, that the actual cost of the drug is relatively negligible. The dithio-aniline compound, intramine, is a bye-product in preparation of other aniline derivatives, and it can be sold now at a price of about one shilling a pound. Three grammes are sufficient to make 300 c. c. of solution for intravenous injection, and the quantity of solution required for an average sized beast is 30 to 40 c. c. The actual cost of the material for one dose therefore amounts to less than one-hundredth of a penny.

Acknowledgments.—The author wishes to express his indebtedness to all the Deputy Superintendents, Veterinary Inspectors, and Veterinary Assistant Surgeons in the Central Provinces for the manner in which they have carried out the trials recorded in this paper and for the reports received from them upon the results. He has also to thank Messrs. R. V. Pillai and P. S. Nair for their assistance in consolidating the information contained in the reports. In addition, he wishes to express his gratitude to Dr. Edwards, Director of the Muktesar Laboratory, for much valuable help in the preparation of this short paper for publication.

A NEW VACCINE FOR RINDERPEST IMMUNIZATION.*

BY
KELSER (R.A.)

The author first refers briefly to Boynton's vaccine—a heated, glycerinized and phenolized mixture of blood and finely ground tissues taken from animals in the acute stages of the disease. This has to be kept in a refrigerator for two to three months before it can be used with safety, but thereafter it must be used within a short period or it loses its potency. This vaccine, apart from the disadvantages attaching to its

* Tropical Veterinary Bulletin, March 1, 1928.

nature and method of preparation, is said to have been found to possess considerable merits.

"The Research Board has shown that the blood entering into the preparation of Boynton's vaccine is of no value as an immunizing agent. Thus, the active portion of the vaccine is diluted with a substance which, because of its nature, detracts very materially from the keeping qualities of the vaccine which is not a sterile product. The high glycerin content further dilutes the product $33\frac{1}{3}$ per cent.

"As a result of research work conducted by the Medical Department Research Board, working in co-operation with the Insular Bureau of Agriculture, a new vaccine has been prepared which overcomes the shortcomings of the Boynton product."

Susceptible cattle are inoculated with 2-10 c. c. of fresh citrated blood taken at the height of reaction. When the thermal reaction begins to subside the animals are bled to death and the spleen, liver, kidneys, testicles and various glands (apparently lymphatic glands are referred to) are removed with aseptic precautions and placed in sterile covered retainers. The mesenteric glands are not taken, as they are frequently found to contain pathogenic sporulating organisms.

The fat and fascia are trimmed from the organs which are then placed in 5 per cent. phenol solution for 15 minutes. They are then rinsed in two changes of sterile water.

The tissues are cut in pieces of suitable size to put through a large sterilized food chopper, the ground material being collected in a sterile container as it comes through the machine. This ground tissue is then carefully covered to prevent contamination and placed in an ice-box (at 2° C.) till the following day. After thus standing the tissue grinds better.

This minced meat is then reground in a special grinder, which will so reduce it that it can readily be worked through a forty-mesh sieve. The tissues are put through this machine 6 times. Sterile salt solution is added in the proportion of 1 cc. per gram. This has added to it .75 per cent. chloroform and it is thoroughly shaken. The stoppered bottles are then dipped in 10 per cent. liquor cresolis compositus and placed in the refrigerator.

The tissue must be very finely ground up so that the chloroform may kill the virus within a few hours, but it is not detrimental to the immunizing constituent of the vaccine.

In most of the experiments the author states that the vaccine has been used within 24 hours of preparation.

The dose is 20 cc. and three doses are given at intervals of a week. The test animals have been infected (sic) with 2 cc. of virulent blood a fortnight after the third dose. Such tests are said to have demonstrated that the animals are fully immune.

It is suggested that it may be possible to reduce the dose and the number of doses.

A full report is promised.

In a footnote to this paper the Surgeon General U. S. Army disclaims responsibility for the opinions expressed and the conclusions reached.

EXPERIMENTAL STUDIES ON OSTEOMALACIA IN THE HORSE. FIRST REPORT. ETIOLOGICAL SIGNIFICANCE OF CALCIUM DEFICIENCY IN THE DIET. PART I, (1)

BY
NIMI (K.)

Two horses were fed upon barley, which the author finds to be very deficient in calcium, and after about 5 months symptoms of osteomalacia developed.

The symptoms were licking, gastro-intestinal catarrh, and loss of appetite. There was gradual loss of condition, and the bones, particularly those of the face, became slightly swollen. There was evidence of pain in the bones. Neutrophil polynuclear leucocytes increased in numbers, and there appeared at first an increase in the basophil leucocytes. The amount of urine was increased in both animals, and it had an acid reaction. As the animals lost condition the amount of phosphorus pentoxide present in the urine increased.

On post-mortem examination complicated phenomena of resolution absorption, new formation, and proliferation of bone tissue were observed in the spongy calcareous trabeculae of the ribs.

Johnin for Johne's Disease.(2) The diagnosis of this disease has been extremely difficult because laboratory animals are not susceptible to the infection. The use of cattle is too expensive and should they be used, it requires six or eight months to obtain results. The organism is extremely difficult to grow, hence culturing from suspected individuals is of little value as a means of diagnosis. Sometime ago it was suggested that avian tuberculin produced reactions in animals affected with Johne's disease and such seems to be the case, but this product is reliable in only a relatively small percentage of cases.

Recently, it has been possible to grow the Johne's bacillus and prepare Johnin, an agent that corresponds to tuberculin. This product is being used with apparently fair success in the diagnosis of Johne's disease.

The test is applied by an intravenous injection of Johnin, the reaction, consisting of a rise in temperature. The temperature ranging from 104

(1) Tropical Veterinary Bulletin, March 1, 1928.

(2) Veterinary Medicine, June 1928.

to 108° F. This rise in temperature usually becomes evident three to five hours after the injection of Johnin, and persists until about the 8th or 10th hour. In making the test, it is advisable to obtain at least one pre-injection temperature. Inject the Johnin and begin at once to take the temperatures every two hours until ten or twelve hours after the injection.

The principle thing to observe in making the Johnin test, is to see that the Johnin is injected intravenously, otherwise the reaction will be inconsistent.

In addition to the rise in temperature, in a few instances there are systemic disturbances consisting of trembling and possibly also diarrhoea.

Some advanced cases of the disease will not give a reaction. The reliability of this test is still to be determined. However of 30 reacting animals that have been slaughtered, 29 showed diagnostic symptoms of the disease.

The rate of spread of the disease is evidenced in one herd, in which 45 head of cattle were taken out of the herd from 1910 to 1920. Another instance was three pure-bred Jersey heifers purchased in 1910. One of these died of John's disease in 1911, a second one died in 1912, and one of the native animals on the farm developed the disease and died in 1913. From 1910 to 1920, twenty animals died of John's disease in this herd, which at no time contained more than 25 head.

No treatment has been found that is reliable for controlling John's disease. Some have advised the use of chaulmoogra oil. One cow was given 10 cc. of chaulmoogra oil for two years, and ultimately died of the disease. Further than this, little can be offered at this time in the treatment of this malady.

(G. H. Wooldridge in his Encyclopædia says, 'Johnin is used in the same way as tuberculin and in a number of affected animals produces the positive temperature reaction, but it fails in a considerable number of cases and is therefore not a very reliable agent.

Ed. I. V. J.)

Association News

PROCEEDINGS OF THE INAUGURAL MEETING OF THE MYSORE VETERINARY MEDICAL ASSOCIATION, BANGALORE, HELD ON THE 23RD AND 24TH MAY, 1928.

I Day—23 May, 1928. 8. A. M.

The function commenced with the taking of a group photo of members with Dr. Leslie C. Coleman, M. A., Ph. D., Director of Agriculture, Mysore, in the centre. 62 members, whose names are published at the end, were present on the occasion. They then assembled in the Central Hall of the Office of the Civil Veterinary Department, at No. 10, Lal Bagh Road, Bangalore City.

Major R. W. Simpson, M.C., G.B.V.C., Superintendent, C.V.D., Mysore, requesting Dr. L. C. Coleman to take the chair and open the meeting, explained in a neat little speech the object of the meeting, viz. the formation of a Veterinary Association in Mysore; and how it was a welcome move and how such Associations foster an esprit-de-corps among the members and afford the best opportunity for exchange of views and discussion of subjects of professional interest, thus conducing for an efficient Veterinary service in Mysore. He also extended a warm welcome to the members and guests from outside the Mysore State and requested for their co-operation to make the function a success.

Dr. Coleman, rising amidst cheers, delivered the following inaugural address:—

“Gentlemen,

I should like to express my great pleasure in meeting you here this morning and especially in a house which was the first for me to occupy as soon as I came to Bangalore. I read through, this morning, the articles of your Association, and as far as I can see from my personal standpoint, the only important function that I can perform in connection with the Association, is in becoming a patron. Well, that is the most expensive of all.



The Mysore Veterinary Medical Association, Bangalore, 1928.
President, Dr. L. C. Coleman.

I do not think I can tell you anything which you do not know so far in connection with the Association except that an association of this kind is extremely important to a body of men who are working with a common object. The more clear ideas you get as to what you are required to do regarding your profession and the more you discuss things pertaining to your profession, the more you realise the importance of the profession and the greater will be the benefit derived by the State and also the greater will be your personal progress.

There are always in connection with the Medical and Veterinary professions two forces pulling a man in opposite directions. He has on one side a force that leads to the necessity of giving immediate relief to the sufferer and on the other a force which draws him in the direction of learning more about the diseases, the treatment of which he is concerned with. They are in other words, what are called in the country from which I come, a General Practitioner on the one hand and a Specialist on the other. I should think that it is very important that every Veterinary Officer should have all the qualifications which go to make him both a successful General Practitioner and a successful Specialist. I am sure that every one of you here know a good deal of the diseases in connection with the animals you have got to treat. But you might perhaps know and also it has been brought to my attention more than once during the time I was associated with the work of the Veterinary Department that there are still many other diseases about which we know practically nothing. I think that in your own spheres you have excellent opportunities to make observations which may be of immense value to those who can devote more attention to the investigation of the various diseases. After all, a man who works in the laboratory investigating diseases sees only half of the existing diseases. I should think that his work in the Hospital is just as important as perhaps even more important in the final elucidation of causes of the diseases than his work in the laboratory with a microscope. Gentlemen, I trust that one of the functions of your association will be not only to benefit yourselves, as it were, but also to foster a spirit of investigation and a spirit of enquiry among its members.

There is a tendency, in connection with associations whatever they are, to lay special stress upon the personal

benefits that such associations can bring to their members. The question of increase in their salaries is a very ordinary one. Of course it is a very important one too from the personal point of view. But I think that in a man the idea of his high salary ought to be preceded by an idea of the amount of service he is expected to render. And I may say this, that a man who regulates the amount of work he does on the basis of the pay he gets, that man should not be in the job. There is one place for him, that is outside the job. If such a man is now in the job, he ought to get out at once. It must be your attitude that whatever work you get into, you must do your best in that work. I think that is straightforwardness and self-respect. I would say that the question of investigation of diseases of animals and their treatment with which you are most concerned ought to be placed just above the question of increase in pay or in status. If that is done, increase in pay or in status will automatically follow. A man who places his pay highest in his mind cannot hope to be efficient in the field and he is not fit for the work he is entrusted to do.

There is one thing that I thought of as I came along this morning, viz., the question of the extent to which members of this association and members of the Veterinary Department in Mysore are able to keep themselves informed of the progress of Veterinary science. I do not know if arrangements are made by Major Simpson to have Veterinary periodicals and journals published from time to time and to what extent those journals meet the demands of Veterinary Officers. I think that this is a very important thing to be discussed by an association of this kind. You form the Civil Veterinary Department of Mysore and I think you should properly receive from the association journal in circulation so as to enable you to keep abreast of the times. I am told by Major Simpson that you have six journals relating to your branch. I am very keen on giving every man all the facilities that can be given to him to keep him up-to-date regarding his profession.

It must be in your mind to insist on a higher training for the men that enter the Department after you, because by your demanding and agitating for a higher training you will be promoting the cause of Veterinary Science in the State.

When I came to India I felt that in an Indian State no European would have a proper function to do unless he devoted his life to the building up of a department manned by Indians. This attitude I have accepted throughout the time I have been in India. I think most men realise the fact that if India is going to be served at all, it must be served by her own people. But we outsiders who have been in India are here only to lay a foundation and if we do not do that, I do not think we will be doing our work properly.

I do not think there is anything more to say. I shall be glad in my official capacity to help you, members of this Association, and others outside of your Association as much as I can. I am here to help you if your agitation and demand are in the right direction. I think you find me approachable. But the most unfortunate thing is that I cannot command much leisure for interviews these days. I regret to say that one of the changes that has taken place during the last two years is that there is twice as much correspondence as there was when I was away. That makes my position awkward. I can assure you that the members of the Veterinary Department in Mysore stand to me on the same position as the members of the Agricultural Department. I have the same feeling for your work as I have for the work in the Agricultural Department. I can just as fully realise the importance of your Department as I have been realising the importance of the Agricultural Department."

Mr. P. Srinivasa Rao, G. M. V. C., Editor, The Indian Veterinary Journal, Madras, who was requested to speak, addressed the Meeting and said as follows:—

Mr. President and Gentlemen,

Let me first of all thank the members of this Association for having extended a hearty invitation to me to take part in the deliberations of this meeting. I can recognise very well that this invitation has been extended to me more as the Editor of the Indian Veterinary Journal than to me personally, because this is the meeting of the Veterinary Graduates of Mysore and that shows that the love that you bear towards the Veterinary Journal and the appreciation of my humble services in that connection have prompted you to

give me this invitation. You know that the Indian Veterinary Journal is the organ of the All-India Veterinary Association and I take it that it is your wish to affiliate this Association to the All-India Veterinary Association. I do not think I am wrong in saying so, because there is no reason to think otherwise and if that is done, Mysore will be a model State in this respect also as in other walks of life, since Mysore will be the first Indian State to have organised a Veterinary Association and to affiliate it to the All-India Veterinary Association. Well, Gentlemen, even in the formation of the All-India Veterinary Association, credit must go to Mysore, because it is one of her sons in our midst to day, that took an active part in the founding of this All-India Veterinary Association and the Veterinary Journal with a few of his ardent co-workers, in spite of many risks and inconveniences. It must be a source of pride to him to see that his own native province stands first to form this Veterinary Association and to hold this Conference for the first time among the Indian States. I do not think I need tell you to whom I refer—it is to the worthy son of the soil who is present here to-day, Mr. M. S. Sastry. And to me it is a matter of great pride as a Karnataka, because Karnataka province will be the first among the Indian States to form a Veterinary Association and hold a Conference.

You might know that in the past, some Veterinary Journals were published under the guidance and direct supervision of the Superintendents of the Civil Veterinary Departments in some provinces and some of them were flourishing for a time very satisfactorily but later on unfortunately for the profession those Journals ceased to be published. But one thing, they were publishing only the general professional articles and the clinical notes about the cases but excluded everything important for the welfare of the profession as a whole. You who have been reading the English and the other Veterinary Journals, would have found in recent years how eminent Veterinarians make use of the journals for improving the status and the welfare of the profession as a whole in every way possible. In some countries, these professional journals receive some kind of patronage from the state. But that is not the case here in India. As the Indian Veterinary Journal is the only journal so far

published in English, in India, all the Veterinarians in India ought to make it a point to subscribe for it. And now it is left to you to see that the journal flourishes to the best advantage of the profession. There is no other organization in the profession which is so willing to do every thing and help the individual Veterinarian to keep him in touch with the technical and professional progress of the Veterinary science as the All-India Veterinary Association and if members of the Veterinary Departments in India become members of this Association they get every advantage and every benefit which such membership affords them and the Indian Veterinary Journal, its organ, which goes to them every quarter keeps them in touch with the latest mode of treatment of diseases and their control. There has not been a more important time than the present one when the journal requires all the help from the profession because the more the number of subscribers, the stronger is the influence against any agency that may come in its way. If you are a subscriber for the journal you will at once urge your colleague to become one and if you are not, I would request and urge you to enroll yourself at once as a subscriber. I am told that there are 66 Veterinary Surgeons in the Civil Veterinary Department of Mysore. You will be surprised to know that only 12 are subscribers so far for the Indian Veterinary Journal. Therefore, my present appeal, I feel sure, will make you all subscribers and thus strengthen the journal and the association. Of course I happen to be the first elected editor of the journal and the success of the journal depends upon the co-operation I receive from the profession. It is not an easy thing, as our worthy President and your Superintendent may know, to edit a journal and my relation to the journal is only that of a nurse to a babe. I depend upon you for the milk which this babe so badly needs. Therefore the success depends upon the co-operation that I receive from every one of you. If there is any drawback or shortcoming in the Journal, I take it on myself, but if anything praiseworthy comes of the journal I attribute it to you.

Perhaps you will be glad to know how our journal has been received outside India. In the last but one issue of the

journal, i.e., January issue, an article on the "Rural Reconstruction" was published. About this article, "The North American Veterinarian" for April 1928 writes as follows:—

In this country we speak of "farm relief". India, judging from the leading editorial in a current issue of *The Indian Veterinary Journal*, the same order of distress gets the more distinguished title of "Rural Reconstruction." We presume, however, the problem indicated is no more serious than our own tussle to keep farming from sinking down to the level of archaic peasantry.....

We have never expressed ourselves on Farm relief in such forcible language although always prompted to do so and lest we have said or quoted from our own expert economists may have seemed a harsh treatment of the subject, we are pleased to have the Editor of the "Indian Veterinary Journal" unwittingly portray the American Farm situation so well."

"One of the most interesting and instructive journals which comes to us is the Indian Veterinary Journal, a quarterly publication and the official organ of the All India Veterinary Association published at Madras, South India. The insight it gives of the Veterinary situation in far-away India and adjacent territory is little less than fascinating to anyone bent upon knowing what is transpiring in this big wide world and in this art of ours which has to do with domestic animals, from the tiny canary bird to the ponderous elephant and patient camel, all of which present a staggering heterogeneous medley of animal diseases and infirmities. It is interesting to note that Indian Veterinarians support an active national association, a system of Veterinary education of no mean proportions and a journal that promotes and holds together the sorely needed national Veterinary Service".

Well, Gentlemen, when others appreciate our work so much, is it too much on my part to seek the co-operation of one and all of you? I am sure that my appeal to-day will make you all subscribers and that you will help yourselves.

and help the Association. This is the only organization and the only journal to improve your status in every way possible. Perhaps you will be surprised to learn that there are subscribers for this journal from America, Germany, Japan, China, Holland, France, Australia, and Malay States. If you do not take your own child into your arms, how can I ask others to do it? I once more request you all to extend your help to the Journal.

Mr. M. S. Sastry, G.B.V.C., Secretary, the All-India Veterinary Association, Madras Branch (Anantapur) being called upon to speak, thanked the organisers for the kind invitation and warm welcome extended to him and other visitors and conveyed the fraternal greetings from the All-India Veterinary Association. He said he eagerly looked forward for this pleasant function to come off since 1923, when at the conclusion of his all India tour on propaganda work, he had a talk on the subject with the prominent members of the profession in Bangalore and it gave him immense pleasure to be present there that morning in their midst. He felt that the Editor of the Indian Veterinary Journal had exaggerated the humble services of the speaker who feels it always a great privilege to work for the members of the profession. He paid a warm tribute to his colleagues Messrs. B. K. Badami, Syed Raza Hussain Sahib and others who have played a prominent part in the formation of the All-India Veterinary Association and he narrated his experience on the formation of the Association. He found anxiety, fear and doubt in the minds of some and suspicion in some other quarters but on the whole, most of the rank and file of the profession expressed the necessity for a strong all-India organisation with equally strong provincial branches. He felt glad to see the members in Mysore were fortunate to start the Association under favourable auspices, securing the presence and patronage of the heads of the Department. It could not be otherwise in a State whose august Ruler—a modern Asoka—remembered the dumb creatures and expressed his solicitude for their welfare in his great message to his loyal subjects on the happy occasion of the celebration of the Silver Jubilee of his benevolent rule last year. It is this solicitude of their Maharaja combined with the strenuous efforts of the Department that has made Mysore a model

State even in matters Veterinary by starting the Serum Institute—the first of its kind among all the provinces and states in India and by carrying on an extensive campaign against Rinderpest with S.S. inoculations in the State. The speaker thought that the above facts would encourage the members in Mysore to organise themselves and do all that lies in their power to advance the cause of the Veterinary science for the service of the State. In fine, he expressed the hope that under the sympathetic guidance of Dr. L.C. Coleman and Major Simpson, the Mysore Association would soon become a “*strong limb*” of the All-India Association.

Mr. B.K. Badami, G.B.V.C., (Hyderabad, Deccan) next thanked the President in a humorous speech, explained the difficulties in the formation and working of the Associations, from his own experience in Hyderabad and elsewhere, narrated his personal impressions of the Veterinary Surgeons who were all decent men and said that with Dr. L.C. Coleman in office, it was a good opportunity to strengthen the Association and place it on a sound basis.

Dr. Coleman in reply said that he was sanguine that the Association would look to the efficiency of the members and that he was not afraid of agitation and advised that in all cases where higher status and emoluments are asked there should be higher education among its members and exhorted the senior members to educate their juniors in the highest education pertaining to the investigation of animal diseases etc.

The resolution to form the Mysore Veterinary Medical Association was duly proposed, seconded, supported and passed nem com.

The next item of the programme being the discussion and adoption of the articles of the Association, every rule was read out from the Chair and adopted unanimously by the General Body.

The resolution that the Government be requested to recognise the Association was duly proposed, seconded and passed unanimously.

The meeting was then adjourned for tea kindly provided by Mr. S.D. Achar.

On re-assembling Dr. Coleman expressed his desire to go away as he had to preside over the Agricultural Conference in the Daly Memorial Hall and wished the function all success.

Mr. M.S. Sastry, who was at this stage requested to propose a vote of thanks to Dr. Coleman said that it was again his pleasant duty to thank the Chairman for his presence in their midst and sympathy towards their cause which was also the cause of every true agriculturist. He said he had heard a good deal about the several qualities of head and heart of Dr. Coleman and of his achievements, but the speaker was really happy to have known him personally that day. He felt sure that all the members would join him in heartily thanking the Chairman. He further expressed the hope that Dr. Coleman who had several achievements, to his credit during the tenure of his office in Mysore for her welfare, would also take steps to establish a Veterinary College in the State affiliated to the Mysore University to give the highest Veterinary education to her sons who have been wandering at present from place to place seeking admission into one of the four existing colleges in India. This much-needed-step would further establish the claim of Mysore to retain the name 'Model State.' He said there might be some amongst them who might say that the idea was premature at the time. To them he would reply that the ideas of those who said some fifteen years ago that Mysore should have her own University, Engineering and Medical Colleges, were also similarly considered at the time by some as premature and they were subjected to a lot of criticism and ridicule. But to-day they are accomplished facts to the great advantage and credit of the State.

The above facts may be corroborated by a few examples of hydatid cysts in different organs found in the same animal in postmortem examination and by those of big leg i.e.

In conclusion, on behalf of all the members present, he thanked the Chairman for his valuable guidance, instructive and inspiring address and requested him to always guide the Association on the right lines.

The vote of thanks was carried unanimously with great acclamation.

Mr. K. Krishna Iyengar next garlanded Dr. Coleman who then left the hall amidst cheers.

After this, Major R. W. Simpson proposed and Mr. S. D. Achar seconded Mr. M. S. Sastry to the chair to conduct the remaining part of the programme. This was carried unanimously.

Mr. M. S. Sastry took the chair, thanked the members for the honour done to him in recognition of his humble services and called upon the members to formally elect the President of the Association.

Proposed by Mr. S. D. Achar, seconded by Mr. K. Ranganatha Rao, it was unanimously resolved that Major R. W. Simpson, M. C., G. B. V. C., Superintendent, C. V. D. Mysore, be the President of the Association.

Mr. K. R. Ramachandra Rao proposed and Mr. P. K. Shama Rao seconded that the Managing Committee do consist of ten members.

Mr. B. V. Venkatachar proposed and Mr. S. D. Achar seconded an amendment that the Managing Committee do consist of eight members. The amendment was put to the vote and carried by a great majority.

The next item on the programme being the election of 8 members to the Managing Committee, this was duly done, the voting taking place by ballot, with the following result:- Messrs. K. Krishniengar, K. Ranganatha Rao, B. V. Venkatachar, S. D. Achar, K. N. Srinivasan, P. V. Nayar, R. M. Patankar and T. Chandu.

The Chairman, in announcing the above result, exhorted the newly elected members to do their utmost towards the progress of the Association and justify the confidence placed in them by the general body; as the first set of the Managing

Committee members, it was their privilege to lay a solid foundation of the Association.

Bringing the morning function to a close, the Chairman thanked the members for the trust placed in him as a humble representative of the Association in British India and wished the newly born Association a long and useful career.

Major Simpson thanked the Chairman for his presence and help. After the Chairman was garlanded, the meeting terminated.

At 3 P. M. the members met again under the Presidency of Major Simpson and elected a Vice-President, a Secretary and a Treasurer of the Association, from among the newly elected members of the Managing Committee.

Vice-President.—Mr. K. Krishniengar.

Proposed by Mr. K. Ranganatha Rao and seconded by Mr. P. V. Nayar, was carried unanimously.

Secretary.—Mr. K. Ranganatha Rao.

Proposed by Mr. P. V. Nayar, and seconded by Mr. T. Chandu, was carried unanimously.

Treasurer.—Mr. S. D. Achar.

Proposed by Mr. K. Krishniengar and seconded by Mr. K. Ranganatha Rao, was carried unanimously.

The President announced that next morning the members and visitors would meet at the Bangalore Serum Institute on the Race Course Road.

At the invitation of Mr. M. A. Chengeri, Superintendent of the Tasker Memorial Veterinary Hospital, C. & M. Station, Bangalore, a party of the members and guests visited that Institution in the evening and was interested in seeing the fine arrangements for the comforts of the dumb patients there.

II Day—24th May, 1928.

Precisely at 8 A. M. all the members and visitors (the latter included Mr. H. C. Sampathaiengar of Madras C.V.D.)

assembled at the Serum Institute, where Dr. Parthasarathy showed and explained the several processes in the manufacture of virus and serum. The gathering dispersed at 11 A.M. after spending an interesting and instructive morning at the Institute.

In the afternoon after tea, the meeting re-assembled at 3 p.m. in the C. V. D. Office, with Major Simpson, President of the Association in the chair.

Dr. Parthasarathy, the officer in charge of the Serum Institute further explained many points with the aid of graphs in the manufacture and use of virus and serum for the purpose of S. S. inoculation against Rinderpest and answered many interesting questions on the same subject.

The President thanked Dr. Parthasarathy for his having kindly attended the meeting, shown and explained the several processes adopted in the Institute and other interesting points.

Mr. M. S. Sastry thanked the President and complimented him for the practical interest and sympathy shown by him for the welfare of the members of the profession and the C.V.D. He further exhorted the members of the profession to realise the sacred character of the work and responsibilities of the Veterinary Surgeon who has to deal with the dumb patients and thus to spiritualise the profession and carry on their duties towards the patients with the spirit and enthusiasm of a religious missionary. By so doing his work, the speaker was sure, the Veterinary Surgeon would soon be recognised as an important factor and a great asset in society and thus his profession would also gain an honourable place amongst the learned professions. He concluded his thanks giving, with the suggestion to the new born Association to take early steps to invite the All-India Veterinary Conference to Mysore, to hold one of its early if not the next sessions in Bangalore.

With three cheers to H. H. the Maharajah, the pleasant function terminated.

Messrs.

Members Present.

- | | |
|--|---|
| 1. R. W. Simpson (Major)
M.C., G.B.V.C. | 30. V. S. Rajagopala Mudaliar, G.B.V.C. |
| 2. K. Krishniengar, G.B.V.C. | 31. G. Narayanamurthi,
G.B.V.C. |
| 3. B. V. Venkatachari,
G.M.V.C. | 32. K. Srikantiah, G.B.V.C. |
| 4. R. M. Patankar, G.M.V.C. | 33. V. Jagannatham,
G.M.V.C. |
| 5. C. Narayaniengar,
G.B.V.C. | 34. M. Subba Rao, G.M.V.C. |
| 6. N. Krishniengar, G.B.V.C. | 35. B. Venkatesiah, G.B.V.C. |
| 7. S. D. Achar, „ | 36. B. Somasundaram Pillai,
G.B.V.C. |
| 8. N. R. Srinivasiengar „ | 37. K. Krishnamurthi,
G.M.V.C. |
| 9. S. R. Bapu, „ | 38. N. Narayana Rao,
G.M.V.C. |
| 10. G. Subramania Iyer „ | 39. P. C. Adaikalam, G.M.V.C. |
| 11. L. V. Shellem Iyengar,
G.B.V.C. | 40. V. S. Kuppusami Mudaliar, G.B.V.C. |
| 12. M. Sundararajiengar,
G.B.V.C. | 41. R. M. Purushothama
Naidu, G.B.V.C. |
| 13. C. Ranganna, G.B.V.C. | 42. K. R. Ramachandra Rao,
G.B.V.C. |
| 14. Abdul Rahiman, „ | 43. K. S. Gopala Rao,
G.M.V.C. |
| 15. P. V. Nayar, G. Ben, V.C. | 44. H. N. Doraiswamiengar,
G.M.V.C. |
| 16. K. Ranganatha Rao,
G.M.V.C. | 45. N. Serhagiri Rao, G.M.V.C. |
| 17. C. V. Govinda Rao,
G.B.V.C. | 46. S. G. Keshavaiengar,
G.B.V.C. |
| 18. M. R. Kenchiah, G.B.V.C. | 47. S. M. Pantambekar,
G.M.V.C. |
| 19. M. R. Naidu, „ | 48. Syed Musum, G.M.V.C. |
| 20. T. Chandu, G. Ben, V.C. | 49. S. R. Lakshman „ |
| 21. T. V. Venkatachallam,
G. Ben, V.C. | 50. C. Syed Yusuf, G.P.V.C. |
| 22. C. S. Prabakar, G.B.V.C. | 51. S. Ramakrishnan,
G. Ben, V.C. |
| 23. H. B. Kulkarni, „ | 52. D. N. Vasudeva Mudaliar, G.M.V.C. |
| 24. P. K. Shama Rao „ | 53. G. Zachariah, G. Ben, V.C. |
| 25. K. N. Kailasam, „ | |
| 26. B. Sheik Peer, G.M.V.C. | |
| 27. T. Aswatha Sastri,
G.B.V.C. | |
| 28. G. V. Ramiah, G. Ben,
V.C. | |
| 29. C. Nanjundiah, G.B.V.C. | |

Messrs.

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|--------------------------------|-------------------------------------|
| 54. G. N. Srikantiah, G.M.V.C. | 59. T. V. Manickraj, G.B.V.C. |
| 55. S. Parthasarathy, „ | 60. Lt. A. A. Monteiro,
G.B.V.C. |
| 56. A. Suryanarayana, „ | 61. M. R. Chengeri, G.B.V.C. |
| 57. S. K. Sundaram, „ | 62. L. Gurunathan, G.M.V.C. |
| 58. J. P. Wesley, G.B.V.C. | |

Messrs.

Visitors.

- | | |
|-------------------------|---|
| 1. M. S. Sastry. | 5. H. C. Sampathiengar (at
the Serum Institute
only.) |
| 2. P. Srinivasa Rao. | |
| 3. B. K. Badmi. | |
| 4. Viswanatha Mudaliar. | |

Departmental News.**MADRAS.**

M.R.Ry. K. Kailasam Ayyar Avl., G.B.V.C., Officer in charge of V Circle, C.V.D. Madras, was on leave for a month from the 17th of April 1928 and A. J. D'Costa Esq., G.M.V.C. acted for him.

A. J. Wilson Esq., G.M.V.C., Officer in charge of IV Circle, C.V.D. Madras was on leave for a month from the 18th May 1928 and A. J. D'Costa Esq., G.M.V.C., acted for him.

A. J. Wilson Esq., will open the new circle at Vellore on the 1st of July 1928 and A. J. D'Costa Esq. will continue in IV circle.

Mr. A. M. Richards, G.B.V.C., Lecturer in Animal Hygiene, Agricultural College, Coimbatore, is on two months' leave from the 8th May 1928 and Mr. T. Vinayaka Mudaliar, G.M.V.C., is acting for him.

The following gentlemen have been appointed as Personal Assistants in the circles mentioned against their names:—

Messrs.

- | | |
|---------------------------|---------------|
| C. Suryanarayanamoorthi | ... I Circle. |
| C. Venkataratnam Chetti | ... II „ |
| P. A. Parthasarathi Naidu | ... III „ |
| G. Krishnaswami Mudaliar | ... IV „ |
| T. S. Alagappa Pillai | ... V „ |
| G. Avudanayakam | ... VI „ |

The following Veterinary Assistant Surgeons have been selected for the refresher course this year at the Madras Veterinary College :—

Messrs. K. Samirasimha Rao, R. Jayaram, H. Vishwanath, V. P. Subbayya, N. Muniappa and T. Vinayaka Mudaliar.

Mr. V. Janakirama Ayyar has been posted as Third Lecturer in place of Mr. N. Muniappa and Mr. P. S. Kuppuswamy has been brought in as the Asst. Lecturer in place of Mr. V. Janakirama Ayyar in the Madras Veterinary College.

College News.

BOMBAY VETERINARY COLLEGE.

Names of the Final year students that have passed the diploma examination held in April 1928, in order of merit:—

Messrs :

- | | |
|----------------------|---------------------|
| 1. W. D. E. Perera | 11. G. J. Khond |
| 2. M. I. Shaikh | 12. H. Bandiah |
| 3. E. P. A. Fernando | 13. R. G. Deshpande |
| 4. S. P. Deshpande | 14. G. S. Patankar |
| 5. S. J. Khambete | 15. S. B. Shimpi |
| 6. E. T. Joseph | 16. N. M. Deshpande |
| 7. W. Chandrasena | 17. J. P. Wesley |
| 8. L. V. Rishi | 18. D. S. Tamboli |
| 9. K. N. Bedekar | 19. M. G. Paluskar. |
| 10. M. N. K. Kurup | |

Review

REVIEW OF AGRICULTURAL OPERATIONS IN INDIA 1926-27

This handy Government publication is a very useful volume containing, as it does, a brief, resume of the activities of the Agricultural Department in all its branches. A chapter is devoted to "Live Stock" and, as we are mainly concerned with this section, we shall confine our attention to this alone.

This portion is a symposium of the work of Veterinary Department in the different provinces and at Muktesar laboratory. And, as we have at length reviewed the annual reports of the different provinces in the previous issue of our Journal, we shall not go over the same ground again. But, there are one or two points in this report to which we would like to draw pointed attention.

While on the subject of serum simultaneous inoculation for rinderpest, we are told that immunity conferred by this inoculation is not quite so lasting as it was all along believed to be. Till now, we have been under the belief that an animal, once inoculated by this method, "never runs any risk of contracting rinderpest again as long it lives."; but, recent experiments "have revealed that it (immunity) lasts in a solid form for 2 years only, after which it commences gradually to wane." Although these late results are not in accordance with our experiences, still we are bound to say that the information is not a very comforting one. We are also told that steps are being taken to fix the virus of rinderpest in goats so as to get it free from the parasites of virulent red-water. But, how far this will be successful is, to our minds still problematical. Goats are not so susceptible to rinderpest as cattle and, as the strength of the immunity depends upon "the degree of reaction" which in turn depends upon the virulence of the virus, this step of supplying goat virus for active immunization is to be taken in with great caution.

The report also says that "canine piroplasmiasis caused by *P. gibsoni* has not proved amenable to treatment with trypanblue, but yields, at least temporarily, to repeated injections of trypanamide." In Madras where this disease is fairly common, satisfactory results have been obtained from injections of Novarsenobillon.

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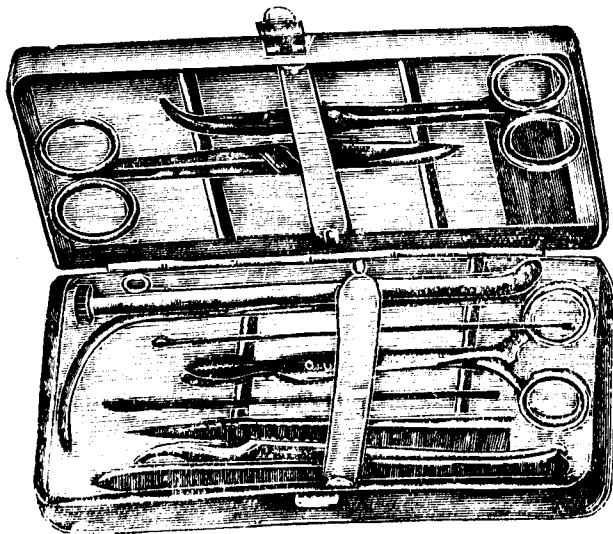
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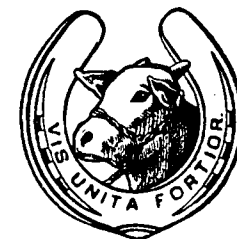
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EDITED BY

P. SRINIVASA RAO, G.M.V.C.,
Veterinary Surgeon, Madras, South India.

Office :— 26, Wallajah Road, Mount Road,
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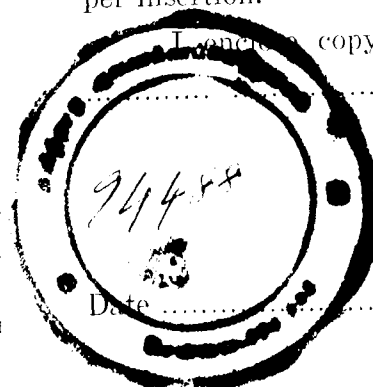
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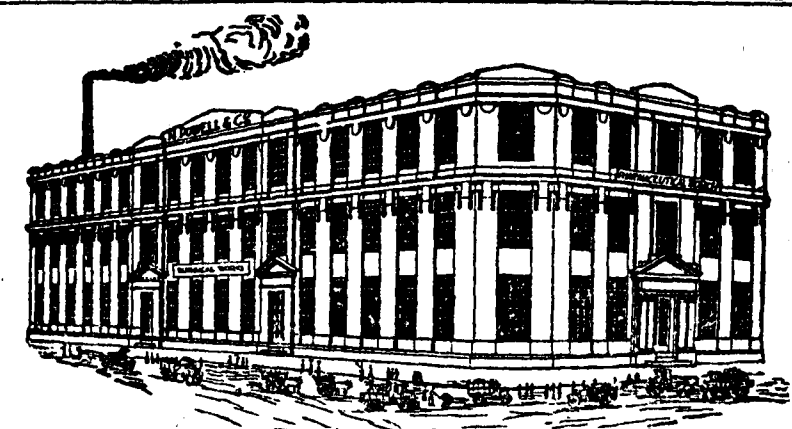
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