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CONTENTS

EDITOR

THE DEPUTY SUPERINTENDENT, CIVIL VETERINARY DEPARTMENT, III CIRCLE, CHEPAUK, MADRAS.

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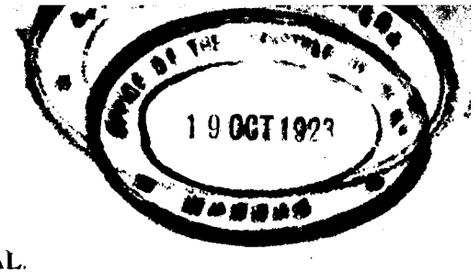


EDITORIAL.

It is with much pleasure that we are able to announce a decided improvement in the amount of material recently received for publication in this Journal,

We imagine that this is, at least in part, due to the remarks that we were constrained to make in the last number, but we trust that it also indicates a genuine desire on the part of Veterinary Graduates in this Province to see that this Journal, which is now completing its fifth year of existence, is not allowed to die for want of support.

As we have pointed out several times before, if each subscriber would make it a rule, and we are sure this would be found quite easy to follow, to send one good article per annum we should have much more material than is necessary to fill the 6 numbers we are now endeavouring to publish.

Some of the articles in this number are of great interest, not to say importance. For instance Mr. Kailasam Ayyar's experiences of the last 3 years in conducting Serum Simultaneous inoculations against Rinderpest should be of great value to those who may have to undertake these operations in future. A fact which seems now to be established beyond doubt is that we have more to fear from Piroplasmosis complications in these inoculations than from the reactions to the Rinderpest virus itself, providing ordinary care is exercised in fixing the dose of serum. It also appears that, providing a suitable dose of Trypanblue is given, there need not be much mortality even when there is complication with Piroplasms, if these are of a local strain. This is important for we know that most cattle in this country harbour Piroplasms and it seems reasonable to presume that a reaction induced by the injection of local Piroplasms into an already infected animal need not be worse than a relapse following the injection of Piroplasm-free virus, such as happened in some of Mr. Kailasam Ayyar's cases.

This point, however, needs further investigation and if the presumption provescorrect it will render it much easier for us to carry out these simultaneous inoculations in increasing numbers in villages actually affected with Rinderpest.

The articles describing the successful treatment of Trypanosomiasis and Nasal Granuloma with Extract of Neem leaves and Tartar

cxamination showed Piroplasma mutans, fairly numerous, but no bigeminum. The condition appeared to be precarious. The temperature ranged between 104°F and 105°F for the next 3 or 4 days and gradually came down to normal (see temperature chart. I). No treatment of any kind was adopted except milk and rice conjee diet. It should perhaps be mentioned here that this animal was said to have had a temperature of 103°F all the time he remained at Madras before inoculation. At the time of inoculation his condition was rather poor but improved considerably after inoculation.

In all, 83 animals as shown below were inoculated at this camp along with the case mentioned above :—

Cows country bred	...	...	18
Bulls do.	...	...	12
Bullocks do.	...	...	30
Crossbred and pure bred		...	18
Buffaloes	...	...	5

About 70 per cent of inoculated animals showed temperature reaction ranging between 103°F and 105°F but in almost all of them the temperature did not remain high for more than a day or two. There was no casualty.

CASE NO. 2.

A half bred bullock about 8 years old ; 873 lbs in weight. This animal was inoculated on 8th April, 1922 at Naduvattam on the Nilgiris with 1 c.c. of virus and 225 c.c. of serum. For the next 7 days there was hardly any temperature reaction and the animal continued to feed well. On the 8th day the temperature commenced to rise varying from 103°F to 106°F for the next 3 days. Blood smears were examined daily after the temperature rose. On the 12th day Piroplasma bigeminum were found. 90 c.c. of 1½ per cent solution of trypanblue in normal saline was administered intravenously. The next day the temperature went down to 103·4°F. and then gradually to normal (chart II).

CASE NO. 3.

A quarter bred heifer 18 months old, 234 lbs in weight. Inoculated on 8th April 1922. Received ½ c.c. of virus and 50 c.c. of serum. No rise of temperature for 8 days after inoculation. On the 9th day the temperature commenced to rise and ranged between 104 and 106 for the next three days. Examination of blood smears did not reveal anything until the 12th day when Piroplasma bigeminum were found.

25 c.c. of 1½ per cent solution of trypanblue in normal saline was administered intravenously. The next day the temperature dropped to 103°F and then gradually to normal (chart III).

The two cases mentioned above were of a herd of 32 animals as shown below, inoculated at Naduvattam camp on 8th April, 1922 :—

Pure bred Australian cows	...	...	2
Half bred cows, bullocks etc.	...	...	8
Quarter bred heifers etc.	...	...	2
Bullocks (Mysore breed)	...	...	20

All these animals received the same virus but none except the two cases mentioned above showed any sign of Piroplasms after the inoculation. There was one casuality—a weak suckling calf sent in by the owner along with its mother to take its chance.

In Jaunary, 1923, 102 animals as shown below were inoculated at the Agricultural College Farm, Coimbatore.

Pure bred and cross bred animals of foreign strain		...	36
Buffaloes (Delhi)	...	...	7
Cows, bulls, and bullocks-country	...	...	59

None of these animals showed any sign of Piroplasms after the inoculation but some of the half bred Ayrshire and Holstin calves reacted rather severely in spite of a liberal dose of serum. Typical mouth lesions, diarrhoea, dysentery, and all the characteristic symptoms of Rinderpest were noticed. The severity of the reaction in these cases could only be ascribed to the quality of serum, as it was subsequently found that the particular brew was over a year old. Fortunately there was no mortality. Twenty three animals of this lot which had a temperature of less than 103°F were given 5 c.c. of virus 8 days after the first inoculation. There was no temperature reaction in any of these.

In March of this year, 54 animals viz., 32 cross breds and 22 country breds were inoculated on the Nilgiris. One of these which showed a severe infection with Piroplasms and ended fatally is recorded here :—

CASE NO. 4.

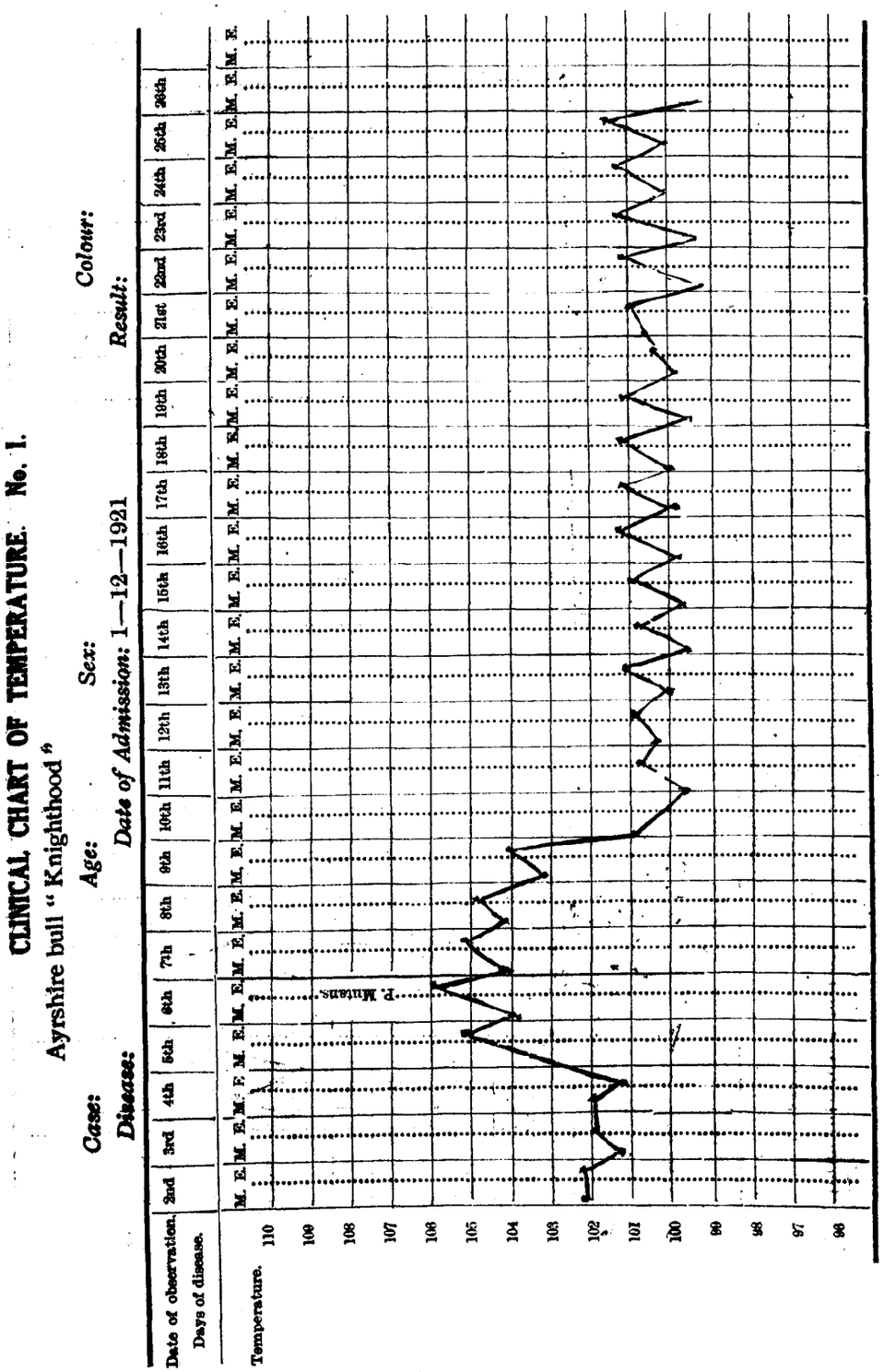
A half bred red and white bull ; weight 415 lbs. Inoculated on 7th March, 1923 ; received ½ c.c. of virus and 90 c.c. of special serum. On the 5th morning the temperature was 104·6°F and in the evening it rose to 106°F. Examination of blood smears revealed a very

severe infection of Piroplasms. Trypanblue was given intravenously but the temperature continued to rise to 107°F till the animal died on the 7th day (chart IV).

The appearance of Piroplasms, as observed in the inoculated animals raises some interesting questions, for it is generally supposed that if the virus used for inoculating animals, is free from Piroplasms there is no fear of this complication arising, but what about the Piroplasms already existing? It is known that Piroplasms are frequently present in apparently healthy cattle of this Presidency. Are these not latent factors of mischief the same as the Piroplasms introduced with the virus? If the virus is the main source of infection in cross bred and pure bred animals of foreign strain, why then do only one or two of a herd of forty or fifty inoculated with the same virus become affected and not the rest which are of the same breed and susceptibilities? Apart from the virus, there are possibilities of Piroplasms making their appearance and producing complication in the inoculated animals. This fact needs to be borne in mind.

5. There is another aspect of this method of inoculation which deserves consideration in view of the possibilities of its being adopted in a natural outbreak of the disease to confer lasting immunity. There seems to be no valid reason why local virus should not be used. The chances of its causing complications in the inoculated animals are by no means greater and in fact logically speaking, local virus should be more suitable than a strain introduced from outside. Some idea of the potency of the local virus used for the inoculations in April, 1922, as compared with that brought from Bareilly may be had from the reactions induced in the two Virus producers shown in charts V and VI. Another material point is that it cannot be said in these cases that infection is being introduced into a clean locality.

Simplicity in procedure and cheapness of cost—two essential factors in a scheme for wider adoption—are in its favour. If this method of inoculation could be made available for immunising cattle exposed to an outbreak of the disease, the question of eradicating Rinderpest will be nearer solution.

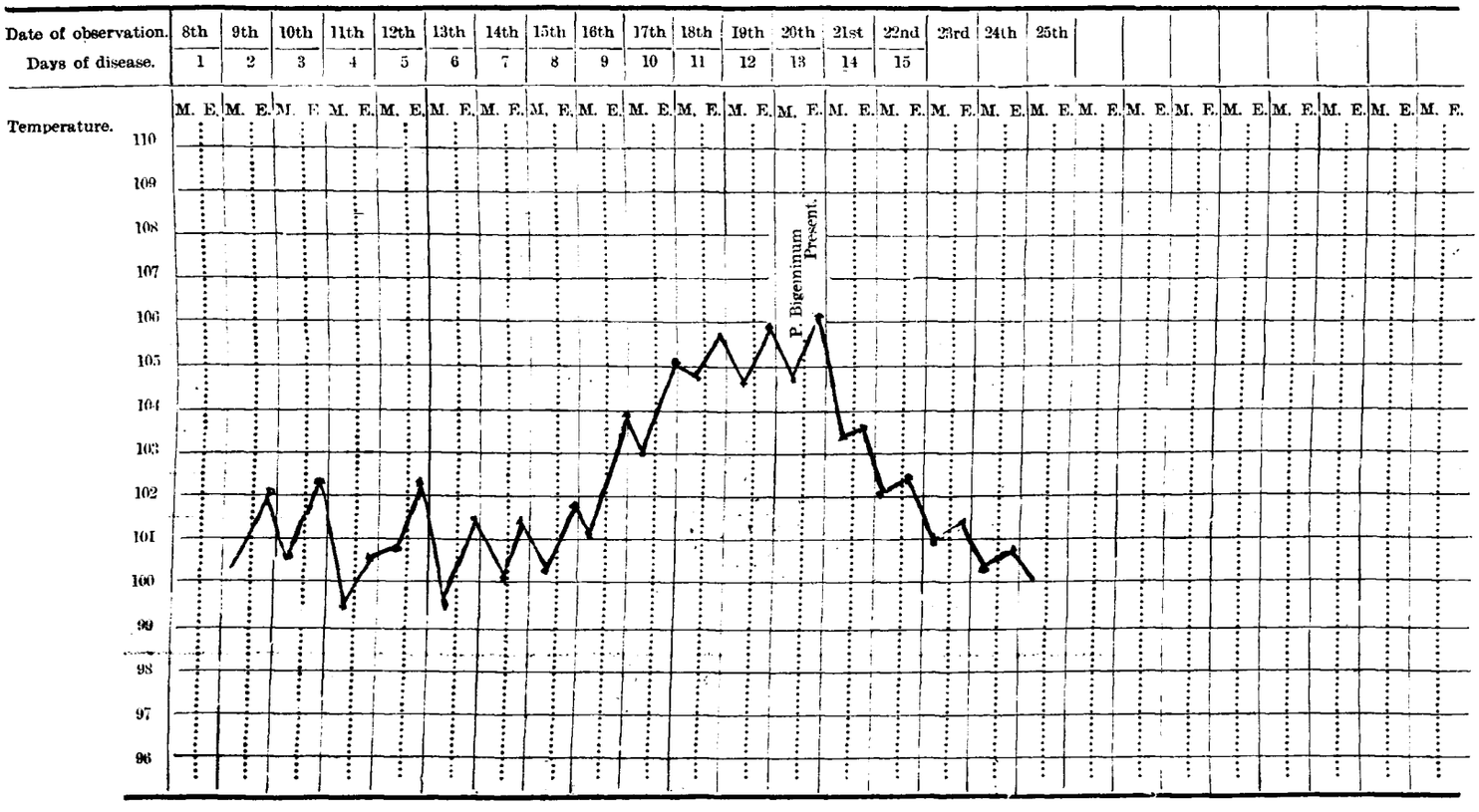


CLINICAL CHART OF TEMPERATURE. No. II.

S. S. Inoculation against R.

Case: *Age:* 8 years *Sex:* Male Black & white

Disease: *Date of Admission:* 8—4—1922 Half-bred

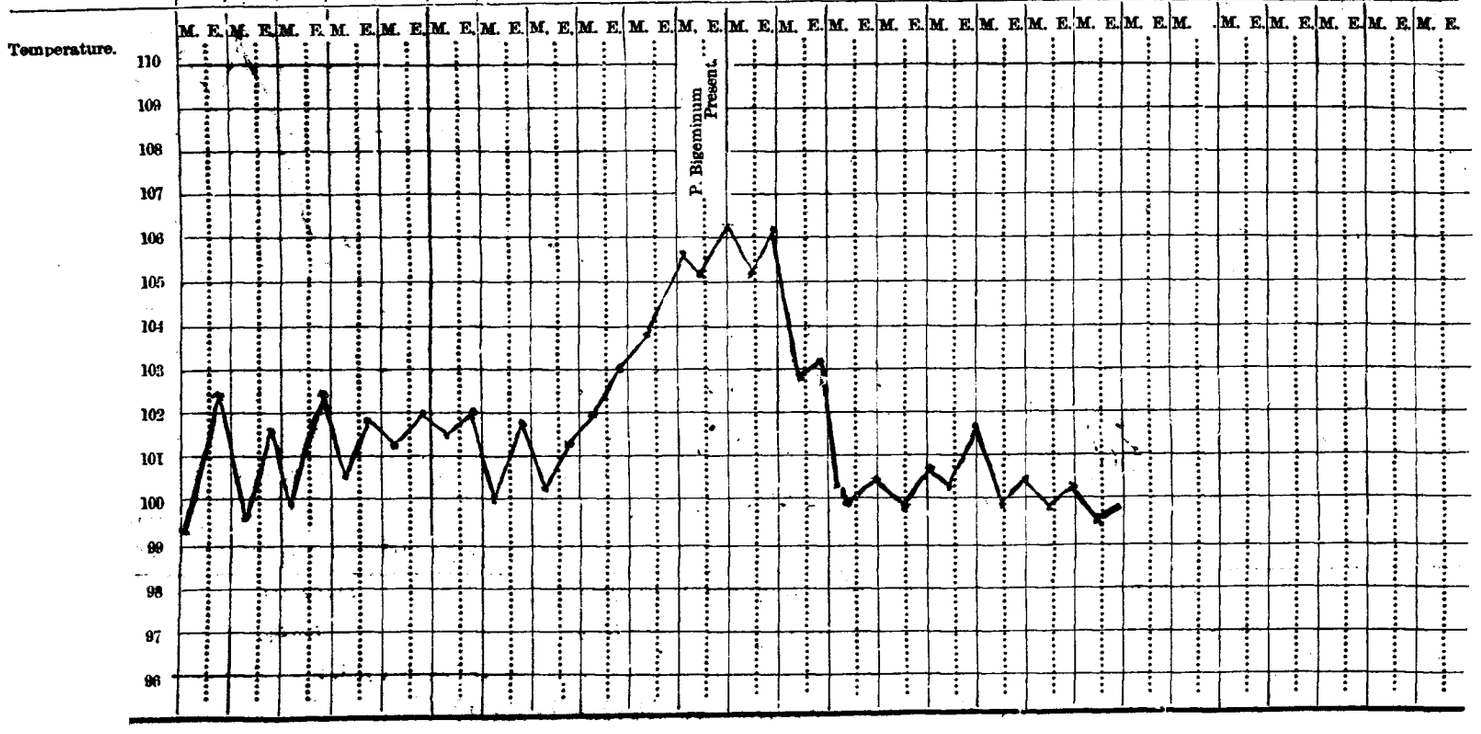


CLINICAL CHART OF TEMPERATURE. No. III.

Quarter Bred Heifer

Case: *Age:* *Sex:* *Colour:*

Disease: *Date of Admission:* 8—4—1922 *Result:*

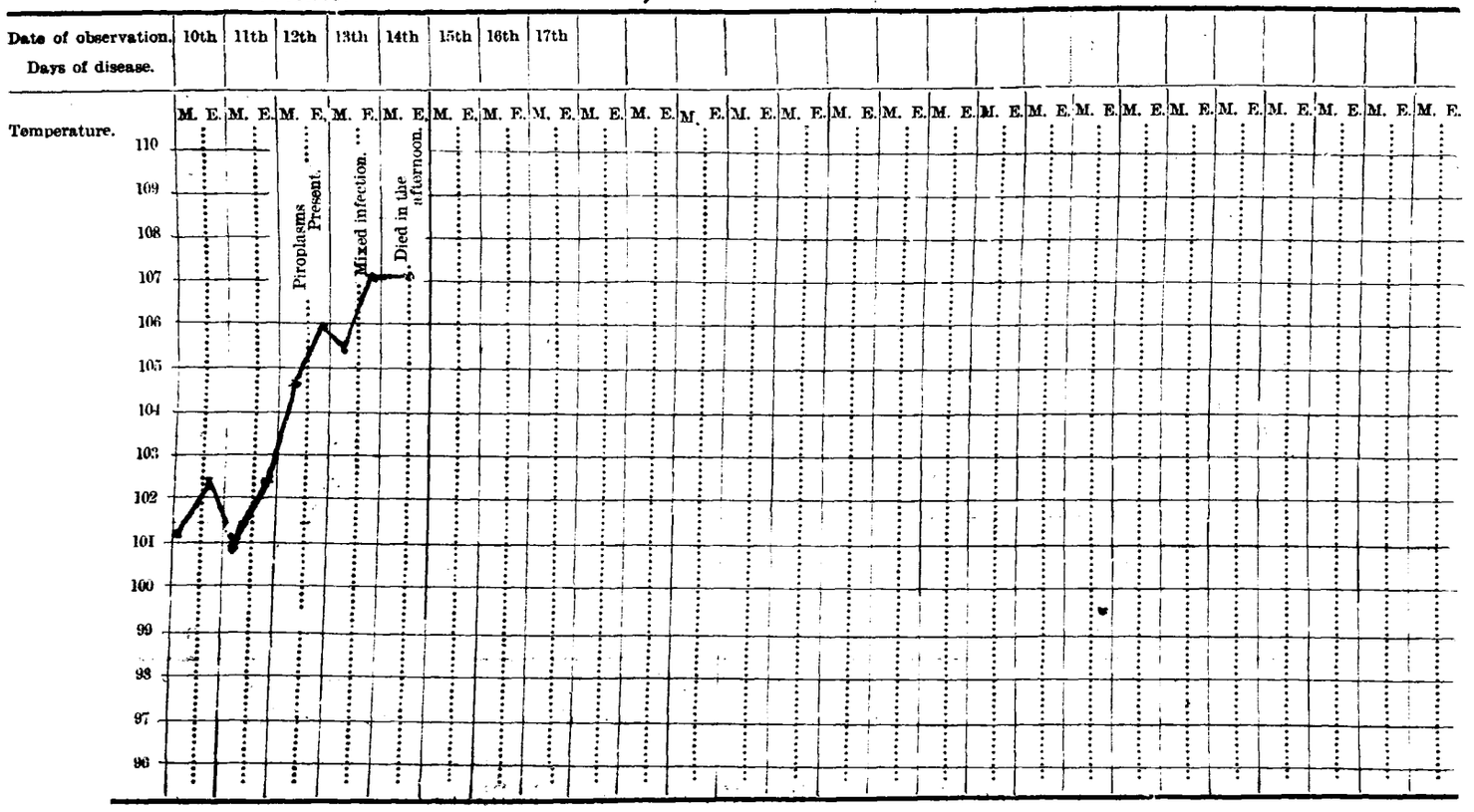


CLINICAL CHART OF TEMPERATURE. No. IV.

Half-bred bull

Case: *Age:* *Sex:* *Colour:*

Disease: *Date of Admission:* 7—3—1923 *Result:*



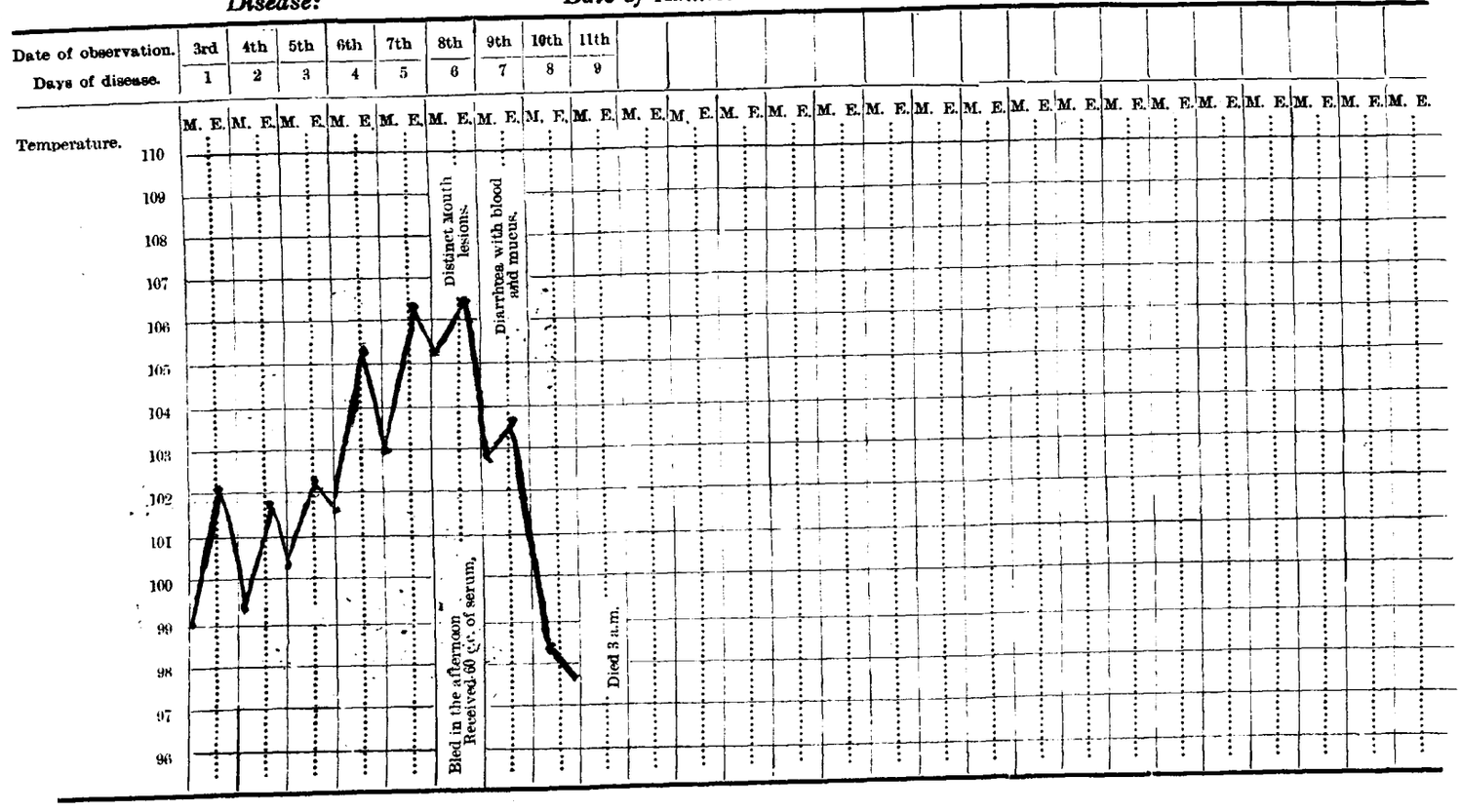
CLINICAL CHART OF TEMPERATURE. No. V.

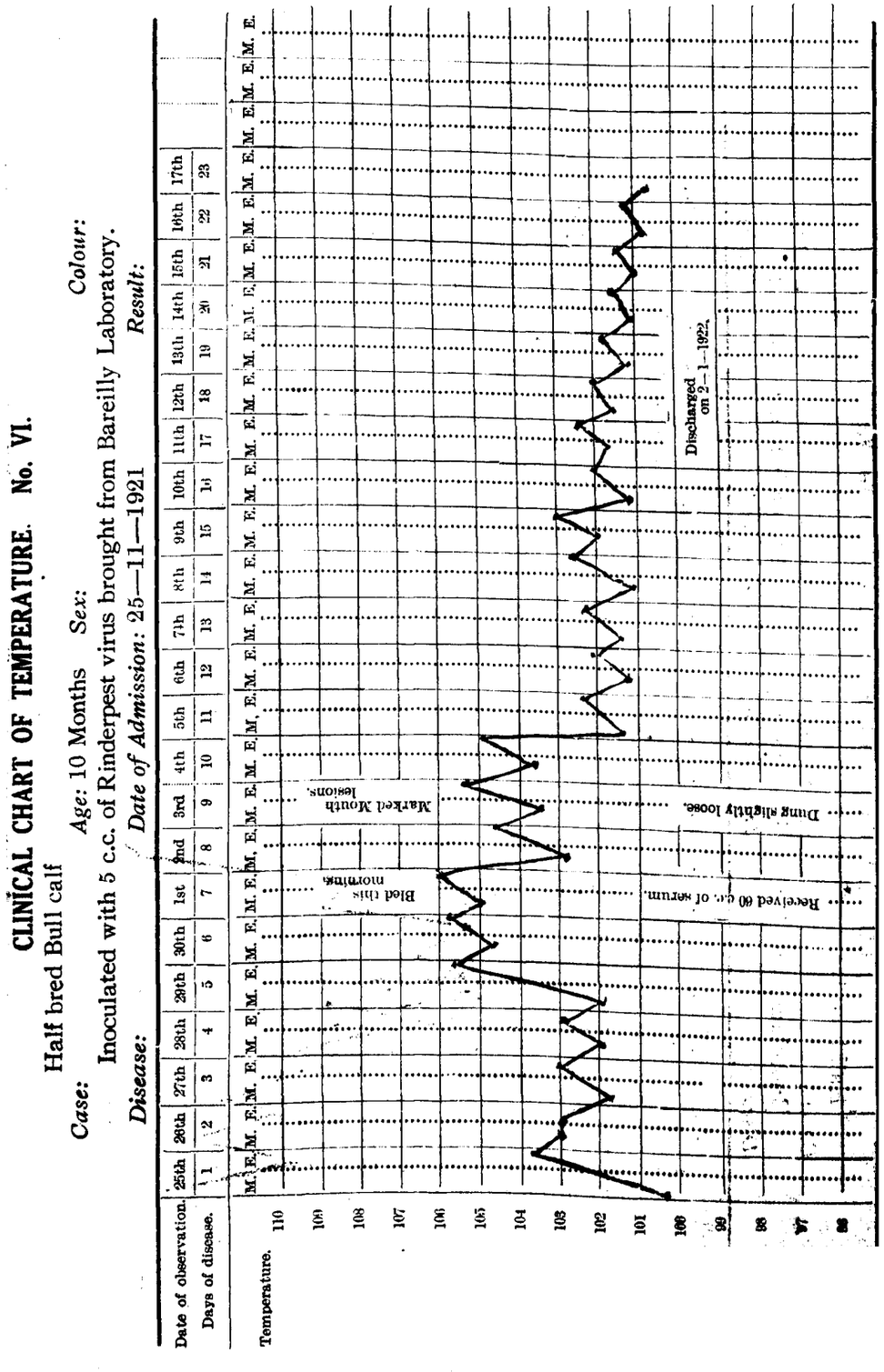
Half-bred Bull calf

Case: *Age:* 18 Months *Sex:* *Colour:*

Inoculated with 5 c.c. of Rinderpest virus obtained locally from an outbreak

Disease: *Date of Admission:* 3—4—1922 *Result:*





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TRYPANOSOMIASIS IN CATTLE.

BY

M. Anantanarayana Rao G.M.V.C., Senior Lecturer,
Madras Veterinary College.

After reading the splendid article on Trypanosomiasis in Cattle y Mr. C. Venkataratnam Chetti, I am prompted to write a few observations on an attempt at treating this disease. At the suggestion of Mr. G. T. D'Silva, an extract of *Neem* leaves (Melia Azadirachta Limi) was tried as a drug for treating this disease. The method adopted to obtain the extract was as follows :—50 grammes of mature leaves were taken in a litre of distilled water and heated till it reached boiling point and allowed to cool. The extract was then filtered and autoclaved.

Experiments were conducted in Vitro, to see if this extract had any effect in either hastening coagulation of blood or causing a precipitate. It was found that it did neither. In order to find what action it had on animals when injected, intravenously or subcutaneously, a condemned dog from the Lethal Chamber was obtained for the purpose. The dog weighed 19 lbs. and it was given 38 C C. of the extract intravenously, the jugular vein being selected for the operation. The dog stood the dose very well-no ill effects were observed. After a couple of days the same dog was given 30 C.C. of the extract subcutaneously in the thigh, but it produced an abscess almost similar to the one often obtained after a subcutaneous injection of Trypanblue, but the area of reaction was bigger and the reaction more severe. A guinea pig was also tested with the same result. So it was proof enough that the best mode of administration was intravenously and a moderately large dose could be tolerated by an animal without ill effects. In order to test what action the extract had on Trypanosomes, blood containing numerous Trypanosomes was freshly drawn from a bullock from its jugular vein. The blood was citrated to prevent coagulation and it was mixed with the extract in various proportions-viz-one drop of the extract to 1 C.C. of blood, 2 drops to 1 C.C. 3 drops to 1 C.C. 4 drops to 1 C.C, and 5 drops to 1 C.C. Two sets of hanging drops of these as well as the citrated blood were made as controls. One set was kept in the incubator at 30°C, and the other set was kept at room temperature in the Laboratory (average about 100°F). The experiments were conducted at the beginning of April, 1922. In both the sets of the mixture of blood and extract it was observed that after the lapse of 5 minutes

the movements of the parasites grew sluggish and at the end of half an hour they were all apparently dead, whereas in the hanging drops made from citrated blood they were as active as they were at the beginning. It is also interesting to note that rosette formation of the Trypanosomes was observed in blood containing the extract after the lapse of 10 minutes. Opportunity was taken to inject the extract intravenously in experimentally infected dogs and also bullocks infected naturally. Two dogs were obtained and after observing for 3 days to see if their blood was free from Trypanosomes, they were infected with the organisms from a guinea pig which had been inoculated with the disease. One dog developed the disease in 10 days after inoculation and the other developed it in 7 days. The 1st dog weighed 16 lbs. and the 2nd one weighed 20 lbs. Both these were given intravenous injection of the extract, the first one was given 32 C.C. and the 2nd one got 40 C.C. Within 10 hours after injections, the Trypanosomes were not seen in the peripheral blood. Next morning also they were free from parasites in their peripheral blood. On the 3rd, the second dog which was in an emaciated condition, developed convulsions and died. On Postmortem examination, a large number of Ankylostomes were found, the blood smears from all the internal organs and bone marrow were negative for Trypanosomes. Daily examination of the blood of the remaining dog was conducted after the 1st injection and on the 6th day two Trypanosomes were seen in a hanging drop in a series of 3 taken for the purpose. Immediately another injection of 50 C.C. was given intravenously. The Trypanosomes disappeared by the next day and the daily examination for three weeks afterwards proved negative. A fortnight after the 1st injection a guinea pig was inoculated with a small quantity of blood from the experimental dog with negative results. Simultaneously experiments on bullocks were conducted. Mr. Venkataratnam Chetti was pleased to permit me to do it on some of the animals condemned because they were suffering from Trypanosomiasis and were in a very debilitated condition.

Bullock No. B. 180.—This was obtained on 4th April, 1922 from one of the depots and admitted as an inpatient. It was in a very poor condition and on the very day it was admitted its blood was found to contain fairly numerous Trypanosomes. It was given an intravenous injection of 250 C.C. of the extract. The Trypanosomes were not seen on the 3rd day it was given another injection of 350 C.C. and on the 10th day it got 500 C.C. of the extract. All along no Trypanosomes were seen in its blood. The animal was kept in the hospital

for over 7 weeks and the blood was free from parasites. It was discharged on 24th May, 1923 and I am told that this bullock is still alive and is being worked regularly. It picked up condition during its stay in hospital. One month after the 1st injection, the blood of this bullock was injected into a guinea pig, but it failed to develop the disease.

Bullock I. P. No. 14 of 22.—This was obtained on 16th April, 1922 and was in an advanced state of debility and had sores on its body. The blood contained very numerous Trypanosomes. An initial dose of 350 C.C. was given to it. The Trypanosomes disappeared from the blood by the next day. On the 3rd day it was given 500 C.C. On 25th April, 1922 the animal died. No Trypanosomes were found in the blood till its death.

Bullock No. B. 167.—This was obtained on 13th May, 1922 The animal was in an advanced state of debility. Parasites were fairly numerous in its blood. On the 1st day 250 C.C. of the extract was given intravenously. On the 5th day and the 10th day it was given 350 C.C. and 500 C.C. respectively. The Trypanosomes disappeared on 7th June, 1922. I am told that this bullock was destroyed on 8th June, 1922, because it was in a very poor condition and would not pay for its upkeep till it was fit for work.

Because the number of cases treated are very few, it is premature to say if *neem* leaf extract has a curative property. Those that have facility to perform such experiments may continue them if they like to do so. Mr. Venkataratnam Chetti says that leaves of Vitex Nigundo given internally have a curative effect and it would be worthwhile trying intravenous injection of an Extract obtained from these leaves.

In connection with paras 2 and 3 of the Editorial of the Madras Veterinary Journal No. 17, November, 1922, I should like to mention that I was able to transmit the Trypanosomes found in cattle to a dog, a guinea pig and a pony. The pony was inoculated with the blood of the injected guinea pig, the pony developed the disease in 7 days after inoculation. The onset of the disease was marked by a rise in temperature to 105°F with plenty of Trypanosomes in the blood and within three days after the onset of the disease the pony had swelling in the legs quite typical of Surra. The pony had to be

destroyed, however, for want of a fly proof stable and no chance of treating it with *neem* leaf extract could be had.

Measurements and morphological characters of these Trypano somes tallied exactly with those given for T.evansi which is the cause of Surra in horses. Mr. D'Silva also tells me that he has conducted similar transmission experiments and is of opinion that the Trypanosomes existing in the blood of bullocks here are mostly Surra Parasites. He was successful, I am told, in infecting a bullock and a dog by feeding them with blood containing Trypanosomes. Trypanosomes affecting only cattle have not been definitely demonstrated so far and it seems therefore that all those met with here are of the same variety, viz :—T. evansi. One is, therefore, inclined to agree with Mr. Sampath Ayyangar who asks "x x x" whether we are justified in destroying horses suffering from Surra under the Glanders and Farcy Act while the same disease in cattle is allowed to run its course" (Vide Madras Veterinary Journal No. I Page 5).

I also decided to see if ponies or horses near the Corporation depot or Hackney Bullock cartstands did not suffer from Trypanosomiasis, so I requested my friends to let me know directly they observed a case of fever near these places so that I might have the chance of noting if the horses are affected in those regions. An opportunity, fortunately, did come to me at the end of May, 1922. I was on my way to the beach in the evening along the Walajah Road. A bullock was found dead in the Hackney Cart stand and a few men were standing round it. On enquiry it was found that the bullock was standing apparently healthy and it suddenly fell in a fit of convulsions and died. To satisfy my curiosity I took a few smears on slides obtained from Mr. Srinivasa Rao, the local Veterinary Surgeon, whose dispensary happened to be close by. The next day the slides were examined and found to contain plenty of Trypanosomes. This fact was intimated to Mr. Srinivasa Rao and he was also requested to kindly let me know if he could get smears from other bullocks in the vicinity and also to inform me if any cases of fever among horses are reported to him. He was kind enough to give me some smears from sick bullocks in the vicinity in which I found Trypanosomes. On 12th July, 1922 he sent me a pony with a letter. It belonged to a firm of Cabinet makers near the Hackney cart stand. The history was that the pony used to be kept in the Horse Bazaar near the shop and was ill for some time. Blood smears were taken immediately after admission in the hospital and it was found to be a

case of Surra and was destroyed. The Veterinary Inspector on Glanders duty was given the information and it is interesting to note that he detected the following further cases of Surra amongst horses in the same Bazaar on the dates mentioned :—

1. Two horses on 5- 9-1922.
2. One horse on 17- 9-1922.
3. „ „ „ 20- 9-1922.
4. „ „ „ 23- 9-1922.
5. „ .....30-10-1922.

Total six amimals.

A European Gentleman, sent a pony to the hospital on 15th September, 1922 and the history was that the horse was losing condition. There was a small oedematus swelling under the abdomen, and the blood smears contained Trypanosomes and the pony was destroyed. This animal was also traced to the horse stable where the outbreak was found.

In conclusion it must be said that ponies near a place where Tryponosomiasis was found in cattle also suffered from it. This fact makes us ask two questions—(1) Do bullocks get Tryponosomiasis from horses ? (2) Did the horses in the stables mentioned contract the disease from the bullocks ? I leave these questions to those that wish to work them out and perhaps it may not be out of place to suggest that it may still be possible to find cases of Surra near places where Trypanosomiasis breaks out in bullocks.

NASAL GRANULOMA IN CATTLE.

BY

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Veterinary Hospital, Visagapatam.

In response to an article by Mr. P. A. Parthasarathi calling on me to give my experience of the treatment of Nasal Granuloma with Antimony Tartaratum, I wish to record the complete cure which attended the three cases I treated, while in charge of Cocanada Veterinary Hospital.

CASE NO. 1.

A fairly big sized bullock—Mysore Breed—was brought to the Veterinary Hospital Cocanada, from Samalkote. It was said to be suffering for the last 4 years. The owner tried in vain all that he could and as a last resource, unable to put up with the sufferings of the animal—his snoring could be clearly heard a hundred yards away—entreated me either to end or mend his agony. I gave him faint hopes of recovery, but promised him to try my best. This invaluable specific had not then made its appearance and so I adopted the customary treatment of scraping and cauterising. The very evening, a copy of our Journal was received by me and I was delighted at finding a solution for my difficulty. The next morning, the first thing I did was to carry out the trial very carefully as described therein. In my anxiety for an early cure I started unfortunately with a maximum dose of 20 grains. Reaction set in within about 6 hours and continued the whole of the day. Next day the breathing was normal almost, but the bullock was completely off feed, highly constipated and all those symptoms, that usually attend such an injection, followed; but the animal was fairly lively. Nothing was done in the morning and by the evening his gait was staggering and his condition diappointing. I gave him a stimulant drench.

3rd day. Complete prostration, subnormal temperature. Fearing a collapse, I gave him a grain of strychnine, and an enema (Parenthetically, I may here observe that as regards strychnine, the idiosyncrasy of cattle is very variable in my experience). In less than 20 minutes he got up and looked a bit hopeful. He was completely off feed for 3 days. He was given Conjee with Amonium Carbonate and Pulv. Nux Vomica. This was repeated for 4 more days and then he started to nibble a few blades of grass. Gradually he gained appetite and was discharged cured in about a fortnight. This was in September, 1921. I met the owner in December, 1922 and was pleased to hear that the amimal was completly all right.

CASE NO. 2.

The 2nd case was a bullock of an average size (local breed) from a village named Koringa and with a moderate affection of the disease. Grown wiser by the experience of the last case, and also in consideration of the size of the bullock, I gave him 10 grs. of the same drug, observing of course, the usual precautions. There was no reaction and 3 days after, I gave him 15 grs. No reaction worth the name

was observed this time, but his breathing improved a bit. I now gave him a dose of 20 grs. This time he had full reaction and after a few days, was discharged cured.

CASE NO. 3.

Another big sized bullock came in for a similar complaint. He was started with a dose of 15 grs, but to no effect. A second dose of 20 grs injected 3 days after the first dose, gave him absolute relief after the usual train of reactions.

In fine, I am convinced that Antimony Potassium Tartrate is an unfailing specific for that fell and agonising disease—Nasal Granuloma.

A CASE OF TRAUMATIC PERICARDITIS.

BY

K. Samirasimha Rao, G.M.V.C., Veterinary Assistant,
Veterinary Hospital, Vizagapatam.

Subject.—A white bull-calf, local breed, aged 1 year, was brought to the Vizagapatam Hospital on the evening of 10th May, 1923.

History.—The calf was off feed for 3 days previous to his coming to the Hospital, highly constipated, abdomen hard and painful. On examination I found his rumen impacted, rectum empty, and he had laboured breathing with Temp, 100·0° F. Impaction was diagnosed and the following treatment was adopted;—

1st Day:—

Re—

Ol Lini.—8 oz.
Ol Arachis.—4 oz.
Ammon. Carb.—2 dr.
Pulv. Nux Vom.—1 dr.

M. Ft. Haust. Sig. Immediately followed by copious enema.

2nd Day:—No motions. Nor were the symptoms relieved even a little.

In the morning :—

Re–

Soda Bicarb.—4 dr.
Pulv. Nux Vom.—1 dr.
Tr. Zingiberis.—4 dr.
Pulv. Gentian.—2 dr.
Sodium Chloride.—3 oz.
Jaggery.—5 oz.
Aqua ad.—1 pint.
M. Ft. Haust. Sig ; now.

He had 4 enemas during the day ; but no dung was passed. He had another eight ounces of Linseed oil with two drachms each, of Ammonium Carb. and Pulv. Nux Vomica.

3rd and 4th Days :—No action. Temp 101.4°F. Gave stimulants both morning and evening. Fomented the abdomen and continued the enemas.

5th Day :—Temp. 103.4. Pulse irregular, animal was dull. As constipation persisted, he had a dose of 12 ozs. of Mag. Sulph and this gave him two motions-absolutely watery.

6th Day :—The animal was found lying in a helpless condition Temp. subnormal ; with its attendant symptoms of Coma, Cold extremities etc., He had a dose of Strychnine and this brought him round to normal temperature and he was able to stand.

7th Day :—No response of the bowels for 2 days. All the other symptoms continued unabated. In addition there was discharge from the nose and eyes and foetid breath, catchy breathing, and for the first time, a swelling of the size of a mango was seen on the chest. Symptomatic treatment was adopted, but in vain. By the evening, the swelling had increased.

8th Day :—Oedema was severe and painful ; It extended from the chest to the Jowl. Head and ears were drooping with distressed breathing. The swelling was incised in several places to avert the threatening dyspnoea. The calf was kept on stimulants only. In the evening, there was Torticollis, due to Oedema.

Last Day :—As was expected the calf was found dead in the morning.

Post-Mortem :—Rumen was impacted, bowels were empty. On opening the Thorax, a large quantity of dark foetid Pleuratic-fluid flowed out. The left side of the Pleura and the Pericardium were completely gangrenous. The Heart also was slightly gangrenous. A needle without the eye, of about 3 inches, was found embedded in a lascerated wound on the wall of the heart on its left side. All other organs were normal.

Another case of Traumatic Pericarditis came under my notice while in charge of the Cocanada Veterinary Hospital. The subject-a short-horned cow-aged about 6 years, came in for diarrhoea. She was given a dose of purgative to clear the bowels and then put on stomachics for a couple of days. Diarrhoea persisted and so she was treated with astringents, with no better results. Four or five days afterwards, she came to the Hospital very lame on the left Hind. The hock was found to be hot and highly painful. The next day there appeared a swelling which disappeared with local treatment, for a few days. The owner stopped bringing her to the Hospital for a fortnight and then she was again brought in this time with an acute painful swelling just behind the point of the left elbow. The owner informed me that the Diarrhoea stopped only a few days before the appearance of the swelling. Symptomatic treatment was adopted and when it came to a head, was incised and a search was made in vain for any foreign body, in consideration of the position of the abscess and the foetid discharge. In less than a week she left the Hospital, the abscess wound having healed up.

A fortnight after, she was brought in again, this time with a hot swelling on the left fore-arm and on incising, a small quantity of black foetid discharge flowed out. Nothing was to be found on examination.

Next day, while probing, some hard substance was found hitting the probe and a minute search revealed a foreign body lying deep in the muscle. It was removed and found to be a needle-about 3 inches long-and the foetid discharge stopped after the removal of the big piece of slough after which, the wound healed up uninterrupted.

Although cases of Traumatic pericarditis are not uncommon, I record these to show that while in the first instance there was the characteristic oedema and constipation, the second case differed in having diarrhoea. Moreover, swellings appeared on different parts of the body.

I wish to know whether diahrroea and the swelling of the hock can have had any connection with the Traumatic Pericarditis.

(In the absence of any more characteristic symptoms it seems doubtful if this second case was one of Pericarditis—Ed. M.V.J.)

ULCERATIVE KERATITIS IN CATTLE.

BY

R. Swaminatha Ayyar B.A., G.M.V.C., Veterinary Assistant, Ootacamund.

A few articles on the above subject have now and then appeared in the pages of the Madras Veterinary Journal, but, as none of them agree with an affection which I have met with in my practice, I give the following few lines descriptive of the disease.

The etiology of the disease is unknown-at least to me-and the onset of the disease is quite sudden. As a general rule, the history shows that the animal was left in good condition overnight and that it was noticed to be ill next morning. In only one case, I noticed both eyes affected simultaneously ; otherwise, the disease is confined to only one eye.

Symptoms.—Excessive lachrymation with a muco-purulent discharge, intense photophobia, conjunctivitis and oedema of the lids, complete opacity with central ulceration and perforation of the Cornea, protrusion of a thick lymphatic (?) exudate through the perforated cornea. Constitutional symptoms are very slight but, in the case in which both eyes were affected, they were severe. The animal had a temperature, it was completely off feed and rumination for 3 or 4 days.

Treatment.—By way of treatment, variour remedies were tried but they were all useless. In spite of all treatment and care the disease ran its course and completely destroyed the sight of the animal. And therefore I now treat these cases by the application of a smart blister for an area of a half anna piece 2 inches beyond the outer canthus of the affected eye. Practically very little attention is given to the eye itself, but to satisfy the owner, it is irrigated with Boric lotion, and then shaded. The inflammation quickly subsides

and the corneal opacity clears in the course of a fortnight leaving a central white or reddish white speck. This is very often persistent but with alternate application of Silver Nitrate and Pot. Iodide solutions, that also disappears.

In conclusion, I cannot say that the affection is contagious because I have never noticed more than one case in a byre. Nor can I say that it is of traumatic origin, because the history and the symptoms do not point to any external violence.

A CASE OF GANGRENE OF THE TESTICLES IN A HORSE.

BY

P. K. Devanayagam, G.M.V.C., Veterinary Assistant, Veterinary Hospital, Cuddalore.

A horse, country bred, aged and emaciated, came for treatment with a big ulcer in the scrotum exposing the testicles. On examination it was found that both the testicles were gangrenous and the Septum between had also sloughed and could not be seen.

History of the case was not clear. For some months as the owner said the scrotal sac was gradually becoming big and some country-medicine was applied by the owner. The scrotum suddenly gave way and a large quantity of fluid escaped from the sac. It is not known whether the enlargement was due to Hydrocele or abscess in the scrotum.

The animal was cast and the part well washed with Carbolic lotion. The fingers were passed inside the opening in the scrotum and an attempt was made to remove the gangrenous parts. Both the testicles were gangrenous and came off with a slight pull by the hand. After the slough was removed there was bleeding, the spermatic cords and surrounding structures were very much thickened. The thickened structures were removed and the cords were secured with Castration clams and were fired as in castration. After firing the bleeding stopped and the scrotal opening was enlarged to give proper drainage. The cavity was washed with Carbolic lotion and packed with Hydrargyri perchloride gauze. The wound is now being

dressed with an oil containing one part of Acid Carbolic, 2 parts of Camphor and 8 of Cocoanut oil.

The wound is now healthy, temperature normal and the animal is feeding all right and in a fair way to recovery.

OCCURRENCE OF KUMRI AND OCULAR FILARIASIS IN THE SAME HORSE.

BY

P. Margabhandu, G.M.V.C., Veterinary Assistant
Veterinary Hospital, Vellore.

Subject:—An aged country bred entire, in poor condition.

History.—The horse was brought to the hospital on 1st September, 1923 with the history that the animal had been treated at Tiruvannamalai for nearly six weeks for weak loins. The above animal, the property of a Circle Inspector of Police was allowed to drink water from stangant pools. I was informed by the syce that a worm was seen moving in the anterior chamber of the left eye on the morning of the 31st May, 1923 i.e., about a week after he left Tiruvannamalai tor Vellore and that the horse travelled the distance by road in 3 days.

Symptoms.—Knuckling over at the fetlocks, difficulty in moving legs forward, peculiar plaiting of the legs observable in kumri and the rolling and uncertain gait, evincing pain on pressure over the loins, the animal coming down heavily on its haunches, when slightly backed and while trying to rise the animal falling down a number of times before he could successfully get up.

A small worm was seen moving in the anterior chamber of the left eye and there was photophobia and conjunctivitis.

Treatment.—After the necessary preparation the animal was cast on 3rd June, 1933 and a worm about 1½ inches in length was removed and a wet boric bandage was applied to the eye. Internally one drachm each of Potassium Iodide and Pulvis Nucis Vomica was administered.

On 4th June, 1923 morning continued the above treatment and applied a blister to the loins. On the same evening a fresh worm of a larger size (appeared to be two worms even on a closer inspection) appeared in the same eye, which was operated on the previous day.

On 5th June, 1923 tried to remove the worm but it disappeared into the posterior chamber. Continued the above powder and boric bandage.

From 6th June, 1923 to 14th June, 1923 continued the powder and bandage. Afterwards the animal was treated with Tonic Powder. At this stage the horse had picked up condition considerably and was trotting and backing satisfactorily.

On 19th July, 1923 another worm of a still bigger size appeared in the same eye and this was removed on 24th July, 1923 after obtaining the owner's consent.

Remarks.—Though many people previously held there was some connection between Kumri and worm in the eye very few authentic cases of the double occurrence appear to be on record.

It is also, I belive, uncommon for 2 or more worms to appear in the same eye at such short intervals.

(Both the above worms were immature male Setaria equina. Ed. M.V.J.)

A CASE OF ACUTE GASTRITIS IN A HORSE.

BY

P. S. Kuppuswami Ayyar, G.M.V.C., Veterinary Assistant,
in charge of the Veterinary Hospital, Trichinopoly.

One morning a chest. Arab gelding was brought to the Hospital with the complaint that the animal was entirely off feed from the previous evening. On examination, I found the temperature was 104°F. But the case did not show any other symptoms for a correct diagnosis. I provisionally diagnosed the case as simple fever and the following recipe was administered the horse.—

Re–

Mag sulphas—8 ounces.
Ammon chloride.
Potassi nitras āā—2 drachms.
Spts. Aetheris Nitrosi.—1 ounce.
Liqr Ammonia acetatis.—2 ounces.
Aquæ ad.—1 pint.
Mft. Haust. sig. now.

Warm bran mash was prescribed as diet. The animal was taken back home as it was very near the Hospital.

Next day the animal was again brought to the Hospital for treatment. To my great surprise the animal was suffering from acute colicky pains. The animal was very uneasy and ate grass now and then in a listless manner. But it had an anxious expression. It had partial sweating. The temperature was 103°F. On rectal exploration a small quantity of dung covered with mucus and slime was removed. There was no flatulence, nor impaction of the colon. The attendant could not give me any other information. At this stage, the following mixture was prescribed.—

Re.

Sodii bicarb.—half an ounce.
Ext Belladonæ Liq.—Ms xx.
Tr. Nux Vomica.—1 ounce.
Ol lini ad.—1 pound.
Mft. Haust. sig. now.

Warm enema was given and hot fomentation was applied to the abdomen. The symptoms did not abate but grew worse. The pulse was going down, weak and imperceptible. The animal became unconscious and died at about 1 p.m. after a few convulsions.

P.M. was conducted. The true mucous coat of the stomach (that of the pyloric half) was acutely inflamed. A fairly large quantity of small stones was found in the intestines. All the other organs were normal.

In this particular case I was wondering how the animal did not show any trace of abdominal complaint on the first day and how the abdominal trouble broke out on the second day. At last the information was ferretted out that the attendant administered a fair quantity of chillies, on the evening of the first day without anybody's knowledge, presuming that chillies are household remedy for all

internal ailments. Thus the supreme carelessness and sheer ignorance on the part of the attendant resulted in the loss of a very valuable animal.

Remarks.—It is evidently clear from this case that post-mortem examinations should be conducted in all cases, especially in those where the etiology is unknown to us.

A CASE OF BLACK QUARTER.

BY

R. Prasanna Rao, G.M.V.C., Veterinary Assistant, Aska.

One morning I was called in by a friend of mine to attend on a calf aged a year and a half said to be suffering severely from Colic. Fortunately the call had been early. I found the animal exhibiting colicky symptoms. The temperature was 103°F, pulse accelerated and breathing laboured. There was a swelling on the left hind quarter, which, on manipulation produced the characteristic Black Quarter sound.

Diagnosed the disease as Black Quarter.

Treatment.—The animal was back raked and a warm saline enema was given. The enema acted well and the patient showed signs of relief. Internally, I administered ½ drachm of acid Carbolic in a pint of Conjee with four ounces of Common salt and four ounces of Castor oil added to it. 20 c.c. of one per cent Potassium Permanganate solution was also injected into the swelling. On request, I willingly stayed with my friend to watch the progress of the case. Two hours after the injection, the swelling was seen to subside little by little. The animal breathed more freely and colicky symptoms had subsided. At dusk, there was no appreciable swelling, no crepitant sound therefrom, and the calf was brighter and voluntarily drank some gruel and picked up straw. I felt no doubt about its recovery and returned home elated for having done a successful piece of work.

SUNSTROKE IN CALVES.

BY

R. Prasanna Rao, G.M.V.C., Veterinary Assistant, Aska.

May and June were intolerably hot at Aska. No wonder I had two cases of sunstroke in calves this year.

Case No. 1.

Subject.—A young calf, aged a month and a half.

History.—The calf was left in the open due to carelessness. It was seen to be quite all right in the morning; but, at noon, the calf reeled suddenly and fell down.

Symptoms.—The calf was seen, on my arrival at the spot, to be cycling with its legs. It was groaning and dashing its head now and then on the floor. The eyes were staring and deeply injected; there was froth at the mouth and the jaw was locked with the tongue protruded. The temperature was 103·6°F.

Treatment.—In the absence of an ice bag, I had to soak a four-folded towel in cold water and apply it to the head. This towel was kept constantly wet and in position. A warm saline enema was also given by means of a 4 ounce metal syringe. Owing to the locked jaw, no medicine could be administered internally. A blister was therefore applied behind the poll to relieve the congestion of the brain. The enema and the blister had good effects. The cycling of the limbs stopped, the tongue was gradually drawn in, the jaw moved, the eyes looked brighter, breathing was easier, the temperature came down to 102°F and the pulse was reassuring. The calf could not yet stand up owing to extreme weakness.

The next day the calf had regained some strength and was livelier. A dose of purgative and a course of tonic powder was all the subsequent treatment given to the calf which made a splendid recovery in less than a fortnight.

Case No. 2.

Subject.—A calf aged 3 months.

Symptoms.—This case showed much milder symptoms than case No. 1. It had lost its power of co-ordinate movement and had its head held up, sky gazing. The temperature was normal and the pulse good.

Treatment.—A dose of purgative followed by Soda bicarb, and Nux Vomica powders. The calf made a rapid uneventful recovery.

EXTRACT.

NOTE ON HELMINTHS COMMON TO MAN AND DOMESTICATED ANIMALS.

BY

R. Daubney, M.Sc., M.R.C.V.S., Ministry of Agriculture and Fisheries

(Continued from the Previous issue).

* * * *

HETEROPHYIDÆ, Odhner, 1914.

Heterophyes heterophyes (Siebold, 1852), Stiles and Hassall (1900).

Synonyms :—*Distoma heterophyes* (Siebold, 1852; *D. heterophyes hominis* Diesing, 1855: *Dicrocœlium heterophyes* Weinland, 1858; *Fasciola heteraphyes* Moquin-Tandon, 1860; *Heterophyes ægyptiaca* Cobbold, 1866; *Mesogonimus heterophyes* Railliet, 1890; *Coenogonimus heterophyes* Looss, 1899; *Cotylogonimus heterophyes* Luhe, 1899.

According to Looss (1902) this fluke is common in man and the dog in Egypt. It is rarely found in the cat. Two cases in British troops were recorded by O'Connor (1916). Leiper (1913) has recorded cases in man from Japanese and Chinese crews entering the Port of London. It has also been recorded by Janson and Tokishige (1892) from the dog in Japan. *Heterophyes nocens*, according to Cort (1921) a few species, has been described by Onji and Nishio (1915) from man in Japan. Leiper (1922), however, states that a re-examination of material from Chinese and Japanese cases has revealed no constant specific differences. These workers found that infestation could be produced experimentally by the feeding of raw fish, in particular, *Mugil cephalus*.

Hosts :—Man, dog, cat, fox (?).

Intermediate Hosts :—First: unknown. Second: *Mugil cephalus*. *Loxotrema ovatum* Kobayashi, 1908 (*vide* Leiper, 1922).

Synonyms :—*Heterophyes yokogawai* Katsurada, 1913; *Metagonimus yokogawai* Katsurada, 1913; *Yokogawa yokogawai*

Leiper, 1913 ; *Metagonimus ovatus,* Yokogawa, 1913 ; *Loossia romanica* Ciurea, 1915 ; *Loossia parva* Ciurea. 1916 ; *Loossia dobrogiensis* Ciurea, 1915.

This parasite, discovered by Yokogawa in the small intestine of man in Formosa, was named *Heterphyes yokogawai* by Katsurada, According to Leiper (1922) *Loxotrema ovatum*, Kobayashi, 1908, is identical with *Metagonimus yokogawai* Katsurada, 1913, so that the genus *Metagonimus* and its type *M. yokogawai*, give place to *Loxotrema ovatum*. Ransom (1920) considers *Loossia romanica, L. Parva* and *L. dobrogiensis* to be identical with each other and with *Loxotrema ovatum*. According to Ransom, Yokogawa has recorded the occurrence of this species in man, dog, and cat in Formosa, and has reared the worms to maturity in dogs and mice by feeding with fish containing metacerceriæ. The usual host of the metacerceriæ in Formosa is trout, *Plecoglossus altivelis*. In Japan, Katsurada (1913) has found the metacerceriæ in *P. altivelis*, and less commonly in *Carassius auratus*, and *Cyprinus*. The flukes mature in the final host in from one to ten days.

Ciurea (1915) lists a number of fishes as intermediate hosts of the forms he has described from Roumania, The findings are supported by feeding experiments in dogs, cats and pigs.

Muto (1917) described a cercaria found in up to 50 per cent. of *Melania libertina* as the cercaria of *Loxotrema ovatum* and succeeded in infecting cats from fish (*Cyprinus, Carassius*) which he had previously infected with cercariae from *Melania libertina*.

It had previously been suggested by Koboyashi (1915) that *M. libertina* most probably served as first intermediate host to *Clonorchis sinensis*, but the experiments of Muto proved that while cercariae from *Bythinia striatula* gave rise ultimately to *Clonorchis sinensis* in experimental animals, those from *Melania libertina* were productive of *Loxotrema* only.

Distribution,—Japan, Korea, Formosa, Roumania.

Hosts.—Definitive. Man, dog, cat, pig, pelican (*Pelecanus onocrotalus*), mouse (experimentally).

Intermediary Host.—First : *Melania libertina* in Japan, Korea. Second : Fishes, *Plecoglossus altivelis,, Carassus auratus, Leusiscus*

hacuensis Cyprinus sp. in the Far East ; *Scardinius erythrophthalmus, Abramis brama* Esox *lucius, Carassius carassius, Aspius aspius, Idus idus, Blicca bjorkna.*

DICROCOELIIDÆ, Odhner. 1910.

Dicrocoeliun dendriticum (Rud., 1819).

Synonyms : *Fasciola lanceolata* Rud, 1803 *(nec.* Schrank, 1790);

Dicrocoeliun lanceolatum Mehlis, 1825 ; *D. lauceolatum* Duj; 1845

D. lanceatum Stiles and Hassall, 1896.

The small lanceolate fluke of sheep is widely distributed throughout Europe and North and South America. It occurs also in the liver and bile-ducts of herbivorous and omnivorous animals in Siberia, Asia Minor, Turkestan, Algeria, Egypt, and North and South America, It has recently by Noel Pillers (1920-22) been recorded twice from sheep, in Great Britain. In man *Dirocoelium dendritieum* occurs perhaps even more rarely than does *Fasciola hepatica*. According to Cobbold (1864), cases have been recorded by Bucholz, Chabert (1852), Kichner. Aschoff (1892) records a case, while Zschokke (1892) states that Schiers has collected this parasite post-mortem from an Arabian in Alexandria. Galli-Valerio (1905) several times found the eggs of *Dicrocoelium dendriticum* during a systematic examination of human faeces in Villeneuve. More recently Mesnil (1916) stated that he had observed the eggs in the faeces of a Belgian officer returned from German East Africa.

Hosts.—Sheep, cattle, goats, deer, hare, rabbit, dog, pig, man.

Life History.—Leuckart considered that species of *Planorbis* probably *P. marginatus*) served as intermediary hosts to *Dicrocoeliun dendriticum*. His opinion was supported by some feeding experiments, of which confirmation is needed.

SCHISTOSOMIDÆ, Looss, 1899.

Schistosoma japonicum Katsurada, 190

Synonym : *S. cattoi* Blanchard, 1905.

This worm, the most recently discovered of the [illegible] occuring in man, was the first in which the life cycle was complete[illegible] demonstrated.

Described by Katsurada (1904) from man and the domestic cat, it was the subject of numerous experiments by Japanese workers who demonstrated the possibility of skin infection in man, cattle, horses, cats. dogs, mice, rabbits, and rats (Katsurada and Hashegawa (1910), Fujinama and Nakajinura (1912), and others). Comparison of the miracidia with the youngest forms obtained in the skin of experimentally infected animals showed Looss's hypothesis of direct infection with the miracidia to be untenable (Miyagawa (1912 and 1913), Matsuura and Yamamoto (1912), Fujinama and Nakamura (1912 ?) and others). Katsurada (1913) reported that he had been informed that Miyairi (Miyairi and Suzuku [1913])had discovered the intermediate stages in a species of *Limnaea*. The snail was subsequently found to be a new species of *Blandfordia*, *B. nosophora* (Robson). Snails were infected with the miracidia of *Schistosoma japonicum* and mice in turn infected through the skin by immersion in water containing cercariae from the infected snails. These results were confirmed by Leiper and Atkinson (1915).

The cercariae penetrate the skin usually through the hair follicles. Since they are quickly destroyed by gastric juice (Tsuchuga (1910) and others), infection by ingestion is not possible, but the cercariae may, however, peneterate the mucous membrane of the mouth. The young flukes apparently reach the portal system by way of the blood vessels, right heart and lungs, the majority according to Narabayasih (1916) (see Cort, 1921), probably escaping from the lung capillaries into the pleural cavity and making their own way to the liver.

Hosts.—Man, cattle, horse, dog, cat.

Intermediate Host.—*Blanfordia B. nosophora* (Robson).

Schistosoma spindalis Montgomery, 1906.

This parasite, described by Montgomery (1906) from the zebu in India, is included here on account of the record of *Schistosoma* eggs in man at Madras by Stephens and Christopher (*vide* Fantham Stephens and Theobald, 1917).

These authors reported the finding of long spindle-shaped eggs unlike the eggs of *S. hæmatobium*.

It is not improbable that the eggs in question were those of *S. spindalis*, since in the case of *S. bovis* the eggs are of about the same length as those of *S. hæmatobium*, while those of *S. bomfordi* are

a little shorter. The eggs of *S. spindalis*, however, measure about 0·25 mm. in length, or more than one-third as long again as those of *S. hæmatobium*.

Hosts.—Zebu (*Bos indicus*), man (?).

Life History.—The life history of this species has been worked out by Liston and Soparkar (1918), who recognised the cercaria in *Indoplanarbis exustus*, and were successful in transmitting the parasites to a goat by means of skin infection.

(From the Veterinary Journal for March 1923).

SEASONAL OR NON-CONTAGIOUS DIARRHOEA OF CATTLE IN THE CENTRAL PROVINCES, INDIA.

BY

Major R. F. Stirling, F.R.C.V.S., Indian Civil Veterinary Department, Nagpur, India.

Introduction.—During the rains of 1920 the attention of the author was drawn to the loss occasioned to stock-owners by the prevalence of diarrhoea amongst their cattle. This diarrhoea was seen, almost invariably, during the months of June and July, that is to say at the beginning of the rains.

The loss to the stock-owners spoken of above was of a two-fold nature :—

(*a*) Rapid loss of condition and decreased powers amongst working bullocks.

(*b*) Decreased supply, and in many cases complete cessation of milk, amongst milch animals.

Rao Sahib G. D. Khandker, Deputy Superintendent, Civil Veterinary Department, who was then in veterinary charge of the Berar Division, a man with thirty years' experience in that Division, gave the author some very useful information on the above points. He stated that so far as he had seen, an attack of diarrhoea meant, under the then mode of treatment, in the case of working bullocks, an

average loss of five and a half working days, or nearly six rupees (eight shillings) at current rates.

With regard to milch animals his opinion was, that at least half the milk supply was lost, not only during the course of the disease but for some time afterwards. He said that in some cases the cessation of milk became permanent.

Symptoms of the Condition.—In the beginning the temperature is normal, but rapidly falls to subnormal in severe cases.

Hindquarters and tail are stained by liquid faeces of a bright green colour.

Tympanitis is noticed in the majority of cases.

Faeces are passed at intervals of about twenty minutes without straining or signs of colic, faeces thus passed became gradually more liquid, until at the height of the condition over 80 per cent of water is found in each motion.

Flati are passed in conjunction with the faeces, and have a characteristic odour, which can perhaps be described as that of stale cabbage water. Rumination is suspended. Great thirst is evinced.

There is a diminution or even cessation of milk in milch animals.

In severe cases the respirations become hurried, with dilation of the nostrils and discharge of tears from the eyes.

Cause of the Condition.—It may be accepted that the cause of most diarrhoeic conditions is the ingestion of some injurious materials. Whether the resultant symptoms are due to natural efforts of the bowels to rid themselves of such material or whether they are due to bacterial action and the consequent formation of toxins is a question upon which veterinarians seem to differ. Experience, however, seems to prove that almost all diarrhoeas, and certainly that form of the disease with which this paper is concerned, arise from the formation of bacterial poisons.

The next point to be considered then is whether this condition is set up by the ingestion of poisonous plants and the formation of toxins, or by the toxins of fermentative bacteria, which result from over-indulgence in green food.

Inquiries were instituted and veterinary assistants were asked to supply specimens of tne grasses or shrubs which were the first to make their appearance at the beginning of the rains.

There is lack of anything approaching unanimity as the result of this investigation.

Replies and specimens came from eight districts in the Nagpur and Berar Divisions, and with one exception no two districts agreed as to the plants which in their earlier stages were considered to have a poisonous effect on cattle. This exception, which was returned by four districts, was *Cassia Tora* (natural order. Leguminosae ; vernacular name, *Tarota*).

All stock-owners from whom inquiries were made stated that animals will not eat *Tarota* in its mature state, but that they will consume it when it is the only green plant available. Investigations have failed to bring to light any poisonous quality in this plant.

From such insufficient data it is impossible to come to any definite conclusion, but so far as one can see at the moment it is probable that the diarrhoeic condition arises from the toxins of fermentative bacteria which result from over indulgence in green food after months of abstention therefrom.

Diagnosis.—Is simple. If the condition occurs at the beginning of the rains the temperature alone will distinguish it from all contagious diarrhoeas.

Prognosis—Is favourable.

Treatment.—Inquiries were made as to the mode of treatment adopted in such cases.

The most common treatments were:—

(a) The orthodox method of administering a quantity of oil followed by powders of catechu and chalk.

(b) Powder of catechu, opium, chalk, and carminatives without previous administration of oil.

(c) The physiologically wrong method of administering sedatives such as chlorodyne or Tinc. Opii.

It was decided to try to find a mode of treatment that would be at once more efficacious and less expensive than the only physiologically sound one of the above three, i.e., (a)

A treatment along the lines of that adopted by the Medical Profession in cases of cholera and choleric diarrhœa suggested itself.

During the rains of 1921 experiments were made at the Headquarter Hospital, in Nagpur, and as a result of these, the dose, frequency and method of administration which are detailed below were decided upon.

Working on the theory, for it is nothing more, that the condition resulted from the toxins of fermentative bacteria, the following treatment, based on Sir Leonard Roger's treatment of cholera, was adopted by the author.

Re–

Postass. permang.—grs. xx.

Aquae.—ad. oii.

M. Ft. haustus.

Sig.:—Give one such dose every half-hour until 2 drachms of the potassium salt has been administered. If necessary repeat.

The above was the prescription given in the case of a mature bullock, and was varied with the age and class of animal in accordance with established practice.

No other medicine of any kind was administered in any of the cases.

Result of the Treatment.—285 animals have been treated in this manner, and of these 283 were cured and two died. Of these latter one succumbed within an hour of admission to hospital. With regard to the other the Veterinary Inspector in charge was of opinion that death was due to the after effects of rinderpest.

Of the 283, 65 were cured before or just after the administration of the sixth dose—that is within three hours of the commencement of the treatment. These 65 were indoor patients. Regarding the

remainder (218) no exact information could be acquired, as they were "outdoor patients" and were supplied with medicine, which was given to the animal by its owner.

It is probable that in many such instances the intervals between the doses and the amount of dilution were not adhered to.

However, in all these 218 cases each veterinary assistant in the districts concerned did follow them up and found them cured.

To return to the 65 cases of which we have got accurate knowledge, the following is of interest :—

11	cases	stopped	purging	after	1 dose.
7	,,	,,	,,	,,	2 doses.
17	,,	,,	,,	,,	3 doses.
2	,,	,,	,,	,,	4 doses.
2	,,	,,	,,	,,	5 doses.
26	,,	,,	,,	,,	6 doses.

Conclusions.—The author is diffident about drawing any conclusions from the insufficient data which he has detailed. His idea in submitting these facts to the veterinary profession is simply to open up a new avenue of thought regarding diarrhœa.

If the author is right in his supposition regarding the causation of this diarrhoea, then the treatment by internal antiseptics is justified.

From a material point of view, and it is one which must always occur in any veterinary paper, the treatment suggested is manifestly much cheaper than those usually adopted.

The author regrets that owing to inadequate accommodation for the conduct of experimental work and to the pressure of routine duties, the results obtained may appear inconclusive. He hopes, however, that he may yet be able to place some further facts concerning this condition before the profession, from whose members he would be glad to receive criticisms and suggestions.

Thanks are due to all the subordinates who supplied material and also to Mr. Nair, who collated the facts presented by the veterinary assistants.

(From The Veterinary Journal for July, 1923.)

DEPARTMENTAL NOTES AND NEWS.

Government have sanctioned the opening of 7 new dispensaries during the current official year at Chittoor, Ramnad, Dindigul, Draksharam, Yellamanchilli, Dharapuram and Tuticorin.

The previlege of rent-free quarters or house rent allowance in lieu thereof hitherto enjoyed by the Veterinary Assistants in charge of Veterinary institutions in this Presidency has been withdrawn by Goverenment with effect from 1st August, 1923.

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