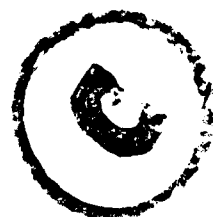


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THE Indian Veterinary Journal

Vol. VI]

APRIL, 1930

[No. 4

Editorials.

THE NEED FOR A REVISION OF CURRICULUM IN VETERINARY COLLEGES.

"A doctor is a doctor even though he is a 'Cow doctor' as a fly is a fly even though it is a house fly" is a good old, old proverb which is as true to day as it is at all ages. What the human doctor is to the suffering humanity, the Veterinary doctor is to the dumb suffering animals. But there is this difference. While the human doctor restricts himself to only one species of animal, the Veterinary doctor has to cater to the afflictions of a variety of animals ranging from a trained elephant to a tame squirrel. Still, for a long time past, the Veterinarian has been limiting his sphere of activities to only one or two animals viz. Horses and Cattle. The chief reason for this was that, from a utility point of view, these were the only animals of importance; the other animals were not much cared for by the people. Consequently the Veterinarian equipped himself for attending on these one or two species of animals only: some practitioners even carried it to such an extent that they thought it *infra dig* to attend to a dog or a fowl. But, now, times are changed. With the advent of motor, horse traffic is being steadily replaced: and the "machinisation" of transport is going on at such a rapid rate that, in the course of a few years, it would be hard to find a horse-drawn vehicle in big cities and towns. This practical replacement of Horse by machinery has led to a greater interest being given to other animals of the farm, such as sheep and goats, dogs and poultry. Preventive medicine, especially, with regard to the communicable nature of diseases of animals and man has, of late, been making



rapid strides, with the result that the people at large have begun to take a more or less abiding interest in all these animals. Dog fanciers and Dog lovers have increased in numbers and, in consequence, the diseases of these animals which, previously remained undiagnosed and untreated, are now claiming the attentions of the practising Veterinarians. The same is the case with poultry. During the last few years, the traffic in eggs has increased enormously and the advocacy of nutritional experts to consume more and more eggs to correct any dietetic deficiencies has only tended to increase the demand. Poultry farms with a large capital and run on ideal sanitary conditions have cropped up all over the country, (although not to the extent we would like) and any ailment of these birds is promptly attended to. The old fashioned treatments of contagious diseases of poultry by "killing all the birds and closing the run," cannot possibly be adopted in these days and the attentions of the Veterinary authorities in Europe and America are now mainly directed in conducting research work on poultry diseases.

The same is the case with sheep and goats. The flesh of these animals is used for human consumption in the country to a far greater extent than what obtains in other countries; while the fur industry, although not run on very up-to-date lines, is a really important one. Economically, therefore, these animals are of great value and, if only we could study the different ailments to which these animals are subject, their economic value would be greater still.

Again, there are animals peculiar to a country like ours. We refer to Elephants and Camels. Whether it be for the utilisation of the forest produce or whether it be to cover with ease extensive areas of sandy desert, these animals are extraordinarily useful to man. The diseases peculiar to these animals are many and varied and our knowledge of them is still comparatively meagre.

But, unfortunately, the Veterinary authorities here do not appear to be concerning themselves with this changing aspect of our profession and things are being run in the same old, old groove. However, as a result of the recommendations of the R.A.C., we are being told that the curriculum in the Veterinary Colleges in India is to be shortly revised; but

we are not told in what manner this is going to be done. We would, therefore, urge on the authorities the necessity of revising the course of studies to suit this country and its requirements. In a country like ours, horses do not come in for the same share of work and utility as cattle: but, in our Veterinary Colleges, we are taught more about horses than cattle, presumably on the analogy of the conditions prevailing in Great Britain. The converse must really be the case: greater prominence must be given to the diseases of cattle. And to suit the present day requirements, students and Post Graduates must be given a fairly good grounding in diseases of poultry, dogs and other animals. This must include a good knowledge of the anatomy and physiology of the different species as well as their specific ailments. Equipped in this way, the Veterinarian can not only face his *Clientele* with greater confidence in himself, but also become a more and more useful member of Society.

Any revision of the curriculum of Studies in the Veterinary Colleges in this country will fail of its purpose if adequate provision is not made to meet the changing condition of things which we have endeavoured to briefly outline.

THE VETERINARY SERUM INSTITUTE FOR MADRAS PRESIDENCY.

Of all the various diseases afflicting the live-stock of this Presidency, Rinderpest or Cattle Plague has been a veritable scourge; and it has been levying a very heavy toll year after year. The disease is absolutely preventable, and, what is more, cattle can be given a lasting immunity by a preventive inoculation with what has come to be known as S. S. method of inoculation. Still, the ravages of this disease have been going on as if the Vety. Dept., has been non-existent. The one main cause for this has been the inadequate and insufficient supply of potent serum. The one and only source of supply of this serum is the I.L.V.R., Muktesar, which supplies the whole of India and Burma except the State of Mysore. During the days, when preventive inoculation of cattle was practically unknown amongst the ryots, this only source was enough, but now the ryots have come to realise the advantages of this inoculation and appreciate it. The demand for

the supply of this serum not only from this Province but, also from other parts of India has therefore, greatly increased, but, unfortunately, Muktesar Institute is not able to cope with it. During the past 2 or 3 years, the supply of serum has been more or less spasmodic and intermittent. To remedy this, the necessity for a Veterinary Serum Institute in this Presidency was urged on the Government, and Mr. Ware, who was then the Director of Veterinary Services in this Presidency gave a fillip to the scheme and pushed it ahead. The estimates and plans had all been prepared, and we were even told that an allotment had been made in the budget for this work.

But, now, in his Budget speech, the Hon'ble the Minister for Development tells us that the question of starting the Institute is still undecided pending the result of some correspondence with the Government of India. It appears from his speech that the Madras Government, being a good customer of the Muktesar Institute, do not want to embarrass the Government of India, by starting the Serum Institute here all at once; we are also told that the opinion of the Government of India on the recommendations of R.A.C. to divide the profits of the Muktesar Institute with the Provinces is being discussed. We regret very much the turn that has been given to this important question. It is neither the cost of Serum nor the fear of embarrassing the Government of India that should decide the opening of a Serum Institute here. It is simply a question of *continued and easy supply*. People would not ordinarily believe that *this Province could not get even one single dose of first class Serum from Muktesar for the past nearly one year*; and, yet, that is only a statement of fact. Is the Government of Madras aware of this fact? Even with regard to the other classes of Serum, we were not quite happy. Why there should be more than one kind of anti-rinderpest Serum, is a question which we do not propose to go into now. We reserve this for a future issue. The following extracts from the Annual Report of the C.V.D., Madras for 1928-29 give us an idea of the state of affairs in the different parts of the Province:—

The Officer i/c Ist circle writes, "More inoculations by this method (S.S. method) could have been done, had it not

been for the fact that the stock of special serum required for these inoculations was out of stock for some time."

The Officer i/c IIIrd circle says, "The remaining (outbreaks of Rinderpest) were not attended to for want of Serum or owing to subsidence of disease."

The Officer i/c IVth circle reports, "More inoculations by this method could have been performed if the supplies of Serum and Virus were regular and continuous."

The Officer i/c Vth circle writes, "But for the failure of supply of Serum on more than one occasion, the number of inoculations would have been larger still."

The Officer i/c VIth circle reports. "The department was not able to cope with the demand (for S.S. inoculation) owing to shortage of Serum." And,

The Officer i/c VIIth circle says, "More number of inoculations could have been done, but for the breakdown in the supply of Serum now and then and the Virus, for some time."

These extracts from official reports speak for themselves. Owing to the want of an adequate supply of Serum, the mortality of cattle from a purely preventable disease is steadily going up and it is a great pity that the Govt. is still playing with this vital question of a Veterinary Serum Institute for this Province. "Rome was burning and Nero was fiddling" that is exactly what the Madras Govt. is doing by their side tracking of the question. In the adjacent State of Mysore, which recently started manufacturing its own Serum, we are told that not only have they ensured a steady and ready supply but also they have reduced the cost of Serum by more than half of what it was when the Serum was obtained from Muktesar.

We would, therefore, strongly urge on the Govt, and especially, on the Hon'ble the Minister for Development, the extreme urgency and importance of starting the Serum Institute here without any further delay.

"GOVERNMENT SERVANTS AND VETERINARY JOURNALISM"

We gladly publish the following G. O. received by us from the Government of Madras.

ABSTRACT

Government Servants' Conduct Rules.

Rule 17—Local Ruling (1)—Officers of the Civil Veterinary Department—Contribution of articles to non-Government publications—Amended.

PUBLIC (GENERAL) DEPARTMENT

G. O. No. MS. 278. *Dated 20th February, 1930.*

ORDER

Under local ruling (1) under rule 17 of the Government Servants, Conduct Rules, Government servants serving in certain departments must obtain the previous approval of the Heads of their Departments before they can contribute articles of a scientific or technical character to a non-official publication. The Government now direct that officers serving in the Veterinary Department need not hereafter obtain the previous approval of the head of their Department to contribute to non-Government publications articles based on results obtained from independent research and observation or from private study. The previous approval of the head of the Department will, however, be necessary if the results are obtained from an investigation undertaken in the usual course of an officer's duties or in an institution maintained and with facilities provided by the Government.

2. The following amendments to local ruling (1) under Rule 17 are issued:—

AMENDMENTS

(1) *Add* the following at the end of the existing local ruling.

"Officers of the Veterinary Department need not, however, submit such contributions to the head of their Department for approval provided they are based on results obtained from independent research and observation or from private study."

(2) *For* the words "Chief Superintendent of the Civil Veterinary Department" appearing in the local ruling, *substitute* "Director of Veterinary Services."

(By Order of the Governor in Council)

C.W.E. COTTON,

Chief Secretary to Government.

This G. O. virtually cancels the order prohibiting the members of the Civil Veterinary Department, Madras, from contributing *direct* articles of a scientific nature to non-Government publications. As commented in some of our previous issues, this "prohibition order" was a direct violation of the elementary rights and liberties of a citizen—a Veterinarian too is a citizen—and the profession took it seriously to heart, because it was passed *ex parte* and forced on an unprovoking set of "service men". The Government Servants' Conduct Rules are elastic and wide enough to "catch" any unwary divulging departmental secrets and there was absolutely no justification for passing this "prohibition" order. What is more, it stopped independent thinking, arrested the progress and stunted the growth of an infant profession. On these grounds, we have been pleading for the cancellation of the order and we are very glad that after all, the Madras Government have seen the justice of our cause and pleadings and cancelled the order.

Notes

Now that the Madras Government have cancelled the "prohibition order", may we request our brethren in the Civil Veterinary Department, Madras, to flood this Journal of theirs with professional articles and clinical notes—which alone, enhance the value of professional Journals.

* * * * *

We invite the attention of our readers to a report on the incidence of *Lepto Spiral* infection amongst the Madras Hounds extracted in this issue.

* * * * *

The outbreak was a severe one and it practically wiped off the whole pack. The disease also is a very rare one and naturally one would expect the incidence of such an outbreak recorded at some length in some professional Journal—not necessarily in ours, although we have a right to expect it, being the only one of its kind in this country. But, no, it is disposed off in a short note and kept buried in the pages of Annual Report amidst other “News”, wherefrom we had to dig it out.

Why is this? The apathy and indifference of the practitioners in this country to record cases of interest is becoming a serious one and is a growing menace to the advancement of the profession. Have these gentlemen pondered over the results of their inaction, for a second we wonder? Where would we be if the pioneers of the profession had practised such a policy?

We understand, that, recently there was an outbreak of Surra, amongst the Madras Hounds, and it was very effectively controlled by injection of Beyer's 205. It was both curative and prophylactic.

We are extremely sorry that the Government of Madras has once again refused to receive a deputation of the subordinates of the Civil Veterinary Department, on the plea that the question of the pay and prospects of the Government servants is engaging their attention.

This expression “engaging the attention of the Government” has become too hackneyed to be taken with any seriousness. How long is the question going to engage the attention of the Government, we wonder? Here is a lot of Government servants, underpaid and overworked, praying for a “living wage” for the past decade and more; that this demand is a “real” one is admitted by the Hon'ble the Minister himself in the open Council. And, yet, even after all these years, the question is said to be engaging the attention of the Government. Really, the wheels of the Government move very fast indeed;

The Government say that the question is engaging their attention. That is exactly the time when, we should think, a deputation of the members of the concerned service would be helpful and necessary; that is exactly the time when the views and opinions of the service could be advantageously placed before the Government. Otherwise, how could their decisions be correct and fair?

If the Government cannot receive the deputation at this stage, when are they going to receive it? Are they receiving them when once the decisions are arrived at? If that is so, it would be something like a Judge hearing the arguments of the counsel after the judgement is delivered. Verily, strange are the ways of Government.

Owing to the recent reorganisation of the higher services in this Department, there has been a large saving. If the Government really have a mind, could they not utilise this saving for paying the subordinates at least a “living wage”?

“Here is an underfed beast of burden in human form and is daily sinking”; that is a typical description of the Veterinary Assistant Surgeons in this country. Would Government raise him up before it is too late?

Punjab is one of the few Provinces in India that is very forward in matters, Veterinary. If we are not mistaken, that was the very first Province, which started a “Veterinary Demonstration Railway Van.” This van more than amply justified the experiment, as many of the villages which were till then ignorant about this Department, began to appreciate its activities.

Unfortunately, after running for 2 or 3 years, this Van has been stopped and put in the lumber room, due it is said, to financial stringency. Could there be anything more pitiable than this? Is not the education of the agricultural masses, in a mainly agricultural country like ours, a primary duty of the Government? Veterinary and Agriculture are interdependent and any amount of money spent on them would

not be superfluous. This action of the Punjab Government is, therefore, a very suicidal one.

The necessity for propaganda work in an infant department like the Civil Veterinary Department, cannot be too strongly stressed and the stopping of this Demonstration Van after an admittedly successful start is a thing which is to be regretted by one and all. We will revert to this subject in a subsequent issue.

Original Articles.

THE METHODICAL EXAMINATION OF THE FOWL.

BY

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

From the Department of Pathology and Bacteriology, Royal (Dick) Veterinary College, Edinburgh, Scotland.

If the fowl be sufficiently quiet notice the respirations. According to Loer they vary from a minimum of 12 to a maximum of 28 per minute in different birds.

The frequency of the heart beat as determined by Loer, under special conditions was from 128 to 140 per minute (Ward and Gallagher 1). Eyre (2) gives the pulse rate as 140 per minute.

Before the bird is picked up notice if she be bright, alert and active or if dull and inclined to squat, notice if the comb is the usual bright colour, or if pale and yellowish-pink or injured. Notice if there be any lameness indicative of leg weakness, poly-neuritis, gout etc., notice if the wings droop indicative of debility and also of some forms of acute disease.

When disease is actually suspected the temperature should be taken, the thermometer being carefully inserted into the rectum through the vent. The normal temperature of the fowl varies 40.5c to 42.0c (Loer); the temperature is raised in febrile conditions and it may be subnormal in cases of marked debility, nutritional disease, botulism and impending dissolution. The thermometer should be disinfected before being used again.

The bird is lifted by placing the left hand underneath the wings from behind in the usual way and grasping the base of the wings. The bird when first lifted if stood on its feet for a moment while still grasped gently will often pass its droppings and the character of this should be noted. They may be relatively fluid and yellowish, white and contain flocculi indicative of fowl cholera; greenish indicative of fowl typhoid; or whitish indicative of one stage of fowl cholera, nutritional disease; some forms of botulism etc., or the droppings may be firm indicative of constipation.

In the case of young birds the droppings may be blood-stained or brownish-yellow in colour and if so coccidiosis or tapeworm infestation may be suspected and a microscopical examination is then necessary.

Worms or fragments of worms may be present, but a hand lens may be needed to detect them.

The bird is now to be lifted and turned slightly so that the back is supported by the inner aspect of the forearm of the examiner.

The comb and wattles are looked at but are not touched except by the little finger of the right hand when it is necessary to turn them in order to examine the other side, as in the case of heavy drooping combs and large wattles. These parts should not be pinched between the finger and thumb. The comb and wattles are examined for signs of injury, blood extravasations; tumours (hæmangiomata) and the wart-like nodules of contagious epithelioma; for the white powdery scurf or dry exudate of White comb or Favus, and in cold weather for evidence of a frozen condition. The comb may be yellowish if the liver is out of order, pale in Leukæmia and from hæmorrhage.

Next examine the beak which is sometimes broken, the nostrils which may show an abnormal discharge or be glued up by dried exudate; notice the angles of the mouth—a site of the nodules of contagious epithelioma then notice if there be any bulging of the infra-orbital sinuses—an indication of one form of roup, examine the eye for brightness, dullness, opacity, or whitish discharge—indicative of several conditions such as cold, coccidiosis, nutritional disease etc; and for the presence of yellow exudate indicative of advanced ocular roup.

Next open the mouth by gently pressing the lower mandible with the first finger of the right hand and look for signs of injury, pip, necrotic patches, deposits, exfoliations and ulcerations, and the lesions of fowl diphtheria or roup. If the mouth be opened gently the bird usually offers no resistance the black leghorns are an exception in this respect!

The tip of the lower beak is next grasped lightly but firmly between the thumb held uppermost and the first finger, and the larynx is raised by means of the little finger of the right hand applied from without, this will reveal lesions which cannot otherwise be seen, the larynx is then released and the left hand holding the bird lowered a little the beak is still held as described by the right hand. By this means the mouth and throat are kept open and a good view obtained far back and down-lesions of roup, nutritional disease etc. being sought. The examination can be done quickly and easily and affords the bird no inconvenience when the manipulations are expert and gentle.

In the case of roup an offensive smell may be discernible and sometimes a wheezy or rattling respiratory sound. In handling birds so affected care should be taken not to dislodge portions of the false membranes inadvertently otherwise they may fall back into the larynx and asphyxia result.

The right hand is next passed over the breast, noticing if well fleshed or if poorly covered indicating inanition or emaciation, often significant of tuberculosis. Any deformity of the breast bone is also noticed at this stage. The feathers commencing at the head and proceeding downwards, may next be examined for a general dry or unthrifty appearance indicative of debility, the feathers in the neighbourhood of any bare patches should be examined for any evidence of scabies, lice eggs, feather eating, etc. and the base of the feathers surrounding patches should be examined for the presence of the dry scaly mass indicative of ringworm or favus, transmissible incidentally to man. Search is next to be made particularly under the wings which must be raised for the purpose, and around the vent for external parasites particularly lice which are often very active and disappear quickly when exposed by the turning back of the feathers. During this part of the examination the bird is laid on its back on the forearm of the examiner the left hand still

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grasping the wings and the feathers around the vent are turned back with the right hand. At this time also the vent is examined for signs of vent gleet, inflammation and prolapse of the cloaca an egg bound condition etc. While the bird is in the position just described the legs are examined for signs of rickets, scaly leg etc and feet are examined for signs of bumble foot, claw rot etc. The middle toe of each foot in succession is then grasped between the first finger and thumb of the right hand and the foot carefully extended to ascertain if the joints are supple and to detect arthritis, rheumatism or gout.

The essential thing is to look for abnormalities anywhere and to ask oneself what those abnormalities mean. In every case it is necessary to take a note of the identification marks, leg bands, breed, sex, age, colour and number etc. for further reference and identification.

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A NOTE ON THE TOXICITY OF AN AQUEOUS EXTRACT OF BAMBOO SHOOTS (N. O. GRAMINEAE BAMBOSA, ARUNDINACA).

BY

M. K. GARUDACHAR, G. B. V. C.,

Member of the Bombay C. V. D., now undergoing Post Graduate Course, Royal (Dick) Veterinary College, Edinburgh.

Introduction

In India one hears from time to time of cases of animals having died after feeding on Gramineae plants, such as "Jawari" (*Sorghum Vulgari*) either when the plant is very young or has a stunted growth. In the present article the writer wishes to record the results of his research regarding the poisonous character of an aqueous extract of Bamboo shoots—one of the species of Gramineae.

History.

Somewhat parallel to the West Coast of Peninsular India there extends a range of mountains by name "Sahyadri" from the neighbourhood of Khandala to Coorg. The valleys of these mountains are the "High" forest areas. That portion of this tract which belongs to the Bomay Presidency is called "Kokan" consisting of four districts, Thana, Ratnageri, Kolaba and Kanara. Bamboo grows, very luxuriantly in the forest of these districts. Some time ago when the writer was in one of these districts, Kanara, he conducted a general survey of the conditions of cattle husbandry in his area, and of the diseases of cattle.

Casually he was told that cattle in his area sometimes die, after consuming "Kalale Neeru". The farmers of this area freely use Bamboo shoots for their own consumption and know how to prepare them for food purposes. They get the young and tender shoots, cut into very fine pieces—as fine as a grain—macerate them for 4 days, decant all water, wash the stuff well several times and then cook. The decanted fluid extract they call "Kalale Neeru". They said that if such water by chance be drunk by cattle or any animals they would surely die. Further they affirmed that if cattle ate fresh shoots in the jungle, they would not die (Evans has recorded that Elephants in Burma eat Bamboo shoots). Moreover they have a classical treatment for it, too, written out by a "Jain" physician who was said to have lived in the latter part of the 18th Century in the Kingdom of "Swadi" (Kanara),

Being much interested in what the farmers said, the writer instituted further inquiries and now desires to record the results of his observations.

Experiments.

Some bamboo shoots were collected and sent to Dr H. H. Mann, the then Chemical Analyser to the Government of Bombay (1916). Dr. Mann however could not conduct any analysis that year as materials sent were insufficient for the purpose, and so the question was postponed, as such shoots appear only once in a year, i.e. during the rainy season (June to November).

Next year (1917) shoots were sent again to Dr. Mann. He conducted the analysis:—

To quote his own reply.—

"We examined the liquid obtained for any minerals or "vegetable poison, we could find, anything including "alkaloids, but we failed to discover any of these. Hydrocyanic acid which I thought possible, is absent. No alkaloid "can be detected. I then proceeded to try the material on "rabbits which I keep for experimental purposes, and on "goats. In neither case could I get any reaction whatever "on the part of the animal. In the case of the goat no less "than 150 cc. of the extract equivalent to 125 grams of the "pulp was given as a drench but no bad effects could be "detected."

Subsequent inquiries and experiments showed why the administration of the material failed to induce symptoms of poisoning in his early experiments. The shoots were neither finely cut nor allowed to stand for some time; but were made only into a pulp and immediately administered.

Fresh Bamboo shoots were obtained again by the writer, cut into small grains by expert cooks, soaked in water for 3 days and on the 4th day the supernatant liquid was drawn off and administered to a sheep, age three years. A dose of 300 cc, of this water was given at 8.30 a.m.

Symptoms noticed were as follows:—

- 8.40. Dulness, Temperature normal.
- 8.48. Roached back; quick pulse. Temperature normal.
- 9.0 Loss of equilibrium. Resting muzzle on the floor; pulse quick, laboured breathing. Nostrils dilated. Temp. Fall by two degrees F.
- 9.20. Prostration. Neck turned to one side. Limbs stretched. Clonic spasms of the muscles of the neck and limbs, Grinding of the teeth audible from a distance of 12 feet. Pulse wiry. Breathing imperceptible. Temp, Fall by 2° F.
- 10.0. The animal was on the point of death.

Since the owner of the sheep was not willing to submit the animal for post-mortem the writer had to wait for some other opportunity to record his observations.

These observations were communicated to Dr. Mann. He was also supplied again with bamboo shoots, together with some of the watery extract of the bamboo shoots used by the writer for his experiment. Clear instructions were also given how to prepare an extract out of it. Dr. Mann then had an experiment carried out in the Agricultural College Hospital by Mr. B. B. Joshi, G. B. V. C., Veterinary Surgeon in Charge of the Hospital, and Lecturer in Veterinary Science. In this case 300 cc. of the extract was given to a goat, 4 months old. The animal showed all the symptoms noticed by the writer but death occurred earlier, in 15 minutes only.

Post-Mortem

Congestion of the central nervous system and the lungs was marked. Heart contained bubbles of gas, Rumenslightly inflamed; other organs normal. (B B Joshi).

This solution was chemically analysed and it gave a distinct reaction to the test for Hydrocyanic acid (Dr Mann).

When the cause of this "Kalale Neeru" poisoning was now definitely known the writer attempted to treat cases quite rationally. Unfortunately or fortunately he did not get more than three chances during his 10 years practice. One was a buffalo calf, the other was a heifer and the third a bull.

On the 1st neither ferrous hydrate nor atropine sulphate had any effect. In the 2nd and 3rd cases it was too late to drench; so atropine sulphate was tried but with no effect.

Post-mortems were held on these animals. All showed the typical changes of Hydrocyanic acid poisoning.

Classical treatment

It may not be out of place here if the writer notes the classical treatment which has been in use for many years, (In India almost every village has some quack to treat patients—Human or Veterinary). An artificial deep ring is made out of cow-dung between the base of the horns and then this cavity is filled to the top with boiling oil and allowed to remain till the animal shakes his head. (He may even die without shaking the head!)

Internally, if the case is immediately noticed, a large quantity of butter milk is given.

Summary

- (1) Bamboo shoots contain 0.023 per cent of Hydrocyanic acid. (See appended report).
- (2) All parts of shoots are not equally harmful and probably the brownish tips are the most dangerous (Dr Mann).
- (3) To get the effect the shoots must be finely cut in the extract.
- (4) The Hydrocyanic acid does not appear in quantity till after the third day of soaking in water ("Kalale Neeru").
- (5) Treatment is practically impossible as it would be too late by the time the Veterinarian could arrive. If at all any credit is to be given to native treatment, it might be due to sub-lethal dose, i. e. small dose of poison.

The writer is much indebted to Dr. H. H. Mann and Prof. Sahasrabudhe for their kind cooperation in conducting this investigation, and to Colonel G. K. Walker, the then Superintendent, Civil Veterinary Department for affording ample facilities for this purpose.

Finally he wishes to express his thanks to Professor D. C. Matheson of the Department of Pathology and Bacteriology, Royal (Dick) Veterinary College, Edinburgh, for his kind assistance in preparing this note for the Press.

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No. 734 of 1921-22.

Office of the Agricultural Chemist to the Government of Bombay,
Poona the 22nd of Aug. 1921.

Report on the Composition of one sample of Bamboo
Shoots sent by the Veterinary Assistant Sirsi with his letter
No. 26, dated 8th Aug. 1921.

Bamboo Shoots

per cent.

Hydrocyanic 0.023.

(Sd.) D. L. SAHASRABUDHE,

Ag. Chemist to the Government of Bombay.

General Articles.**POISONING OF CATTLE BY GREEN STUNTED JAWARI.
(KARBI)**

BY

ABDUL MAJID VETERINARY ASST. SURGEON

1/c R.C. Veterinary Hospital, Karachi

On 29th October 1929, I was informed that 6 cows
had suddenly taken ill by eating Karbi (green jawari) in
Ranchhore Lines, Karachi. I hastened to the place which
was a five minutes walk distance from the R.C. Veterinary
Hospital, Karachi. On my arrival, I found one good young
cow dead; another was down showing the following
symptoms:—

Hurried but difficult breathing, frothy fluid running from
the mouth and nose profusely, imperceptible pulse, tympany,
eyes blood shot, and loss of consciousness.

This cow died soon after my arrival. Four other young
heifers were showing symptoms as under:—

Shivering, hurried breathing, imperceptible pulse, froth-
ing from the mouth temperature sub-normal.

All these cattle were treated with a mixture of Ammonium
carb. dr. IV, Treacle and aqua Q. S. given internally every
hour. Three such doses were given in all. Half a grain of
strychnine per head was injected subcutaneously and a
bottleful sweet oil with 2 ounces of turpentine was also given.
With this treatment all the heifers were saved.

On enquiry as to the cause of this poisoning, I learnt that
some grass-seller brought a camel-load of green stunted
jawar and sold it at cheap rates to woman folk of that loca-
lity and that one unfortunate woman not knowing anything
about the poisonous nature of the stuff threw it before her six
cows. Hardly half an hour had passed when the cows were
found in distressed condition.

A post mortem examination of the two dead cows was
held. A considerable quantity of green jawar was found in
the rumen which was full of frothy fluid and bad smelling
gas; all other internal organs were normal.

"Hydrocyanic acid was detected in item No. 1. (ingesta
taken from the rumen of the cows). Item No. 2 (specimen of
green stunted jawari) contains approximately 0.114 of Hydro-
cyanic Acid or 0.798 grain per pound of grass".

An extract from "Fodder Crops of Western India" by
Dr. Harold H. Mann, Acting Director of Agriculture, Bombay
Presidency, Poona, Bulletin No. 100 of 1920 (pages 45 to 49)
will be read with interest.

Extract from "Fodder of Western India."

BY

HAROLD H. MANN D. SC., AG. DIRECTOR OF AGRICULTURE

Bombay Presidency, Poona, Bulletin No. 100 of 1920.

(Pages 45 to 49).

Poisonous character of young Jawar plants.

The use of jawar is affected by one great difficulty. The
plant cannot be cut and used as fodder until the flowering
stage owing to its being very poisonous to stock in its earlier
stages. Whenever grown, therefore, it must be kept till it
flowers before using it, as even when dried there seems a good
deal of doubt as to whether it does not still contain some of
the poisonous principles.

These facts have been long known in India where the
the following points are usually stated by experienced
cultivators:—

(1) The Jawar fodder is usually dangerous till the
flowering stage.

- (2) The dried fodder is much less dangerous than the green fodder even if it is dangerous at all.
- (3) The rabi varieties are much more dangerous than the rains varieties.
- (4) Shalu jawars generally are the worst.
- (5) The most dangerous of all is a crop which has grown vigorously and luxuriantly and then been checked and stunted by drought or disease.

The poisonous effect of the fodder is very striking, and has been attributed to many causes. The following is a description of its effect from experience at Allahabad.

"There is some danger of poisoning the animals fed on any species of sorghum (i.e. Jawar) which has been cut when only a few feet high after a long break in the monsoon. Animals which have been fed on the poisonous plants die very soon with symptoms resembling tympanitis, in some cases animals have died within 20 minutes of eating the fodder. An instance occurred on the Allahabad farm when sheep which were hired for the purpose of stock manuring, were at the request of the owner turned out to graze an after-math crop of sorghum vulgari. Eight of the sheep died within a few minutes, and many more were saved merely by the rapid administration of purgatives. During lengthy breaks in the monsoon, when the sorghum thus becomes poisonous... there is danger of grass cutters bringing in some of the small plants of the sorghum when chilling grass from among the crops. At Allahabad in the summer of 1896, a number of horses belonging to private individuals died from the same. The season was an exceptionally dry one, in fact, the monsoon failed, and the crops being stunted and partially withered the grass cutters were allowed by the ryots to take grass from the jawar fields.

Similar results have been described in other countries, Peters in 1901 in Nebraska. U. S. A. describes how fifteen cattle broke into a field and remained twenty minutes and three became sick and died in a few hours. The same workers then put two young cattle in the field, one at the jawar and was so badly affected that it fell ten minutes after entering the field, and lay with twitching muscles in various parts of

the body, paralysis of the tongue and increased salivation. It had eaten one and a half pounds of sorghum leaves.

The cause of this was for long unknown. It was attributed to various causes, including the presence of nitrate of potash in the plant. It was, however, shown by Dunstan and Henry in 1902 that the young plant when crushed in water gave Hydrocyanic (prussic acid, and evidently contained a substance (cyanogenetic glucoside) which was capable of producing the poison when in the digestive system of an animal. These observations have been confirmed in almost all the jawar (sorghum) growing part of the world since that time. Some of the determinations of the hydrocyanic acid which the fodder is capable of giving are as follows:

(1) Leather (India) found that one pound of green fodder grown under irrigation and in the flowering stage, gave 1.28 grains of hydrocyanic acid. The quantity in the various parts was very variable. In a sample giving 0.17 grains hydrocyanic acid per pound in the dry sample the leaves gave 2.5 grains, the stalks 1.1 grains, and the flowers only 0.25 grains. He states that drying in the sun had no effect on the quantity of hydrocyanic acid.

(2) Brunnich (Queensland) found that the poison decreased as the crop matured and it was safe when the seed developed. Drying does not remove it, and high manuring with nitrogenous manures causes it to increase. He considered that it was specially dangerous to feed the jawar fodder to fasting animals. The highest quantity he found was 0.81 grains per pound of green fodder. Maxwell also in Queensland gave similar results but considered that the quantity of poison varied much with the soil.

(3) Trumull (Nebraska, U. S. A.) found the following quantities of hydrocyanic acid produced by plants in different degrees of vigour. Dark green healthy plants 50 cm. long .01215 per cent, yellowish green plants 35 cm. long .00499 per cent, yellow plants only 22 cm. long .00405 per cent. His figures confirm the conclusion that vigorous plants contain more than poorly grown plants.

(4) Balfour working in the Soudan, where plant has caused much poisoning, gives a case which yielded, when 16 inches

high, 0.035 per cent. of hydrocyanic acid. The opinion there is the same in India, as given by Neville and by Borton (quoted by Balfour) the jawar is the most dangerous when (1) it has been stunted for want of water and has then grown vigorously when water is obtainable (Neville), (2) it is stunted by rainfall suddenly ceasing after a good start in growth has been made. In the Soudan the people consider that ruminants (cows etc) are much more easily affected than donkeys or horses.

(5) Willaman and West (Minnesota, U. S. A.) are recent workers on the subject. They conclude as follows:—

(a) When sorghum, i. e. jowar is grown on poor infertile soil, added nitrogen i. e., nitrogenous manure) may slightly increase the amount of Hydrocyanic acid in the plant. With a fertile soil and abundant nitrogen this effect may not be produced.

(b) During the first three or four weeks of the plants' life the prussic acid is concentrated in the stalks. Then it rapidly decreases and disappears there, but apparently persists in the leaves in decreasing percentages until maturity.

(c) Climate and variety may be more important factors than soil nitrogen in determining the amount of acid (i.e.,) prussic acid in the plant.

They found that weak and stunted plants contained little poison, but this does not of course touch the point held by the cultivators here, and in the Soudan also that vigorous plants become stunted, are particularly dangerous.

The general result of all this discussion is then

(1) that the cause of the poisoning action is hydrocyanic acid produced when the fodder is eaten.

(2) That jawar fodder should not be used till after flowering either in the first or the second crop.

(3) That regular growth should be aimed at, sudden growth after it has been stunted, or stunting after good growth tending to increase the poisonous properties.

(4) That it remains very doubtful whether drying of poisonous fodder gets rid of the poison.

(5) That the ratoon crop is much relished by cattle, but when young is more poisonous than the original crop.

POISONING BY PASPALUM SCROBICULATUM (LINN).

BY

N. CHAKRAVARTHY, G.B.V.C.,

Veterinary Asst. Surgeon, Sibsagar, Assam.

One will simply wonder to hear me saying 'Cattle dance' and will go so far as to ask how it is possible! Though it is an absolutely occult problem for the animal psychologist and erudite zoologist to solve, yet on my humble part, I may say that it is not my mere verbal pyrotechnics but is a fact that occurred at Majuti, a place well known for the abode of the religious princes of Assam in Autumn only.

It is nothing but nature's big fun with dumb creatures with some plants which are locally termed as "Moraona"; this plant is identified as "*Paspalum Scrobiculatum* Linn" by the Superintendent, Royal Botanic Garden, Calcutta. The leaves of the plants are generally used as cattle fodder but if cattle happen to take grains (ripe) with the leaves in a considerable quantity during grazing in the field where plants are abundantly grown in Autumn, they show reeling and staggering gait and trembling symptoms, to be passed over, between 12 to 24 hours, just as Indian hemp gives rise to, when consumed in a big dose.

Individual susceptibility amply characterises the activity of the grain constituents in not subjecting one and all cattle to this peculiar condition.

The awns of the grassy plants are exactly like those of the paddy in a very diminutive form. When husk is removed a white granular substance may be found inside. For personal experiment, these ripe grains were tried on a human being at my own risk and to my utter surprise, intoxicating symptoms were marked.

The Assistant Director, Bose Institute claims to say, "it seems that there is some irritant in the plant." I offer my heartfelt thanks to him for his kind correspondence with me.

SOME HINTS ON THE JUDGING OF SOUNDNESS AND AGE OF CAMELS.

BY

ABDULLA KHAN, G.P.V.C., VETERINARY INSPECTOR,

Office of the Camel specialist, Sohawa Dt., Jhelum,

In several parts of India, and on the battle fields, the camel has undoubtedly been one of the most useful animals; as a baggage animal on field service, no worthy substitute has yet been found in the animal kingdom. The importance of this animal as a transport medium, in tropical countries is very immense; and a large number of camels are therefore recruited for the purpose in different parts of India,

While a sound knowledge of the condition of the animal is imperative to a Veterinarian, when purchasing camels for recruitment, it is regrettable, that very few attempts have been made to present us with a work, which has satisfactorily dealt with the soundness, and aging of camels. The obvious result has been, that, full pledged Veterinarians, when called upon to certify the fitness of camels, are unfortunately wholly at sea, either to judge the fitness or to diagnose the defect if any. This predicament, unavoidable as it is, has rendered the poor Veterinarian, a victim to much dislike and disregard of his superiors—military officers, who, by their long and continued experience of camels were able to judge better than the ill-equipped Veterinarians. Much difficulty was also felt, during the Great War, when Veterinary Assistants were deputed by the C.V.D., to take charge of the camel corps. These Veterinarians with the little knowledge they possessed about camels, were in a fix, when called upon to certify to the fitness of camels, and, had naturally to depend, upon the opinions of their experienced military, but Non-Veterinary Officers.

The ultimate object of the present article is to remove as far as possible, the humiliation and the difficulty, the Veterinarians are subjected to, when required to deal with camels. The information I have endeavoured to give here, within the space at my command, has been gathered, chiefly from my long continued experience in the Camel Corps, although the response to its long felt need, and importance,

has been very modest. It will be highly gratifying however, if the present article proves to be of some use, to those Veterinarians, who when required to deal with camels, find themselves helpless for lack of information from any other source.

Sound knowledge and cautious judgement of soundness are the two essential requisites in selecting and purchasing camels, for recruitment. These factors can best be considered under the following headings.

1. Type of camel required.
2. Recruitment of camel in large numbers for Government work.
3. Size and stature.
4. Time and season of recruitment.
5. Age.
6. Valuation of the animals.
7. Freedom from disease and malformation.
8. Other general considerations.

(1) *Type of camel required* :—The class of camels to be selected, should depend entirely on the nature of the place it is to be recruited for. Nature's foremost contribution to the animal world, has been to adopt the latter, to the life, food, and environments, of the place or country, they live in. In hilly districts, for instance, the animals are developed so as to be able to trod upon uneven surface and live upon such foods as are available in that place; consequently, we find those animals relatively smaller in size, shorter in stature, but stronger in build, so that, the movements of these animals while climbing, do not displace their centre of gravity, to an extent, which might be detrimental to their stability and security, during the act. These animals are also able to relish, and feed well upon the roots, bushes and leaves, that are available in the hilly tracts.

In the plains, on the other hand, where the ground is even and soft, the animals develop themselves to a bigger size and huger stature. Their food consists essentially of leaves, fodder-grains, etc, that are available in the plains. If hilly animals are to live upon the food found in the plains, they are quite incapable of doing well on it and vice versa,

What is applicable to animals in general, does not in any way, stand an exception with regard to camels; still while purchasing camels this consideration should be fully borne in mind and given the utmost attention.

The camels of the plains cannot work in the mountains. The hilly climate and food, are by no means compatible with their living in the plains. If such animals are forced to live in hilly countries, they lose their health in a short time, and become worthless for any work. Their feet which are habituated to trample upon the soft and even soil of the plains, soon get injured and deformed, on the hard, stony and uneven surface, of the hilly tracts, and the very huge size of their bodies render them poor victims to constant slips and falls while forced to trudge along the unaccustomed paths. Similarly, the conditions in the plains, do not suit the camels of the hilly countries. They are neither used to walking long distances on the burning sands in the scorching heat nor are they capable of sustaining themselves in the absence of hilly food.

It is therefore essential, that judicious inquiries should be made, before purchasing camels for recruitment. The officer who is entrusted with such responsible work, should not lack sound judgement and careful observation while ascertaining the details about the food, climate and environment of the place, in which the camels in question, have lived so far and should compare these conditions with those existing in the place, to which they are to be recruited; and unless both agree, no purchase should be made. For this reason, camels if required for plains like Egypt, Iraq, Palestine, Somaliland etc. should be selected preferably, from similar places like Rajputana, Bikanir and the plains of the Punjab. If they are required for hilly expeditions as in the Tribal-Territory, Baluchistan, Persia etc., they should better be selected from places like Peshawar, Kohat, Bannu, Jhelum, Rawalpindi, Quetta, Derajat etc.

(2) *Recruitment in large number for Government work.* When camels are to be recruited for Government work, which is mostly limited to military expeditions, they may be selected with best advantage from hilly countries, as such expeditions are confined mainly to mountainous regions, where such animals fare best. But considerable difficulty

arises when the demand is far greater than the supply. To make good such drawbacks, young camels of average size, should be purchased from the plains, and sent to hilly countries like Salt-range, Kala-chita-pahar etc, for being trained to the requirements of hilly life. After a short period of hard life, to start with, these animals get remarkably used to the new circumstances. At this stage they may be recruited along with hill-born camels for expedition work etc.

(3) *Size and Stature.* A question is often asked as to the size of the animal that is to be selected with best advantage. The Government allowance of maximum load on camels in the transport, is five maunds per head; and this weight, can easily be carried by a camel of ordinary size. The ration that is fixed in the transport is also the same for all camels, irrespective of their size and weight. It is obvious, that a small animal of average size will acquire greater amount of energy than a large one of a bigger size, as the ration given to both is the same, and the work expected of them is also the same; the result is, that smaller animals grow best and remain healthier than the bigger animals, as the former have an increased resultant energy for their maintenance. Hence, for recruitment it is best to select small or average sized camels.

(4) *Time and Season for Recruitment.* The most suitable time for recruiting camels is between January and March, because, by this time the surra infected camels—infection generally taking place between July and September either succumb or become so emaciated that they can easily be isolated and rejected.

The season must also be taken into account and debility should not be the only criterion in rejecting the camels, as during winter months, owing to scarcity of fodder, and greens, even an otherwise perfectly healthy camel, looks poorer in condition. If purchase is to be made during the winter season, in times of need, the condition of the animal should be estimated by some other means, instead of judging it either by external appearance, or by the development of the hump. For this purpose, the muscles of the thighs and fore limbs, should be examined, which should be hard and massive in case the animal is healthy.

(5) *Age of the Camel.* A Camel below the age of five, cannot be safely recruited, as its power of endurance is not sufficiently developed to bear the hardships in transport. According to the requirements and demand, camels between the ages of five and ten can be selected. The most suitable and convenient age has been found by experience to be between six and seven years.

In times of great demand, as during war, camels up to the age of twelve years can be purchased, because such camels when properly fed and looked after, can be expected to put in a reasonable amount of work, till they are sixteen years of age.

(6) *Valuation of Camels.*—Camels should be valued according to their age but not in accordance with their size. A camel five or six years old, should be priced higher than comparatively older animals, as the former can be expected to serve for a longer time. We are often required to furnish an easy method of finding out the age of a camel. The following method which is often used is found to be quite satisfactory and may be easily followed.

Camels are generally born in the month of February, and so, all calculation may safely be made approximately from this month. The Camel has the following permanent teeth.

	Incisors. (front or cutting teeth)	Tushes. (Canine teeth)	Molars. (Jaw or grinding teeth.)	Total.
Upper Jaw	nil	6	10	16
Lower Jaw	6	4	8	18
				34

At birth, the young one of a camel has two or occasionally four temporary or milk incisors, in the lower jaw. It is then termed "Botta". The remaining temporary incisors come out gradually up to the age of nine months, so that the total number of milk incisors are six in about a year. The following terms are generally applied to camels at different ages.

1. Kotila at the age of 1 year.
2. Mazat " " 2 years.
3. Tirhan " " 3 years.
4. Chatter " " 4 years.

When all the milk incisors have come out, they gradually wear out till the camel is 4 years old, when the milk incisors are nothing but stumps. The estimation of the age from 1 year when the milk incisors have completely come out, up to four when they are almost worn out, depends upon the degree to which these teeth are worn and is based essentially on experience. At the age of five years the two central permanent incisor teeth come out, and the camel of this age is termed "Donda or Doak".

At the age of six years the two lateral permanent incisors come out, making the total number of permanent incisors to four, the animal being then termed "Changa".

At seven, the two corner permanent incisors come out, making the total number of permanent teeth six, the animal being then termed "Chigga".

At 8 years, the tushes come out completely, and the animal is termed "Neshwala" or "Jawan". At the age of nine the tushes are generally an inch or so in length, and begin to wear.

After nine years, the age of the camel is determined by the length, thickness and wear of the tushes and the shape of the incisors and is entirely based on experience. In judging the age by the wear, one should keep in mind the kind of food the animal generally lives upon, for, when a camel is fed on such stuffs as "Lana" the teeth wear out sooner and even though the animal is young, only stumps are seen, so that, the observer is likely to mistake the animal for an old one. In such cases, age should be estimated by considering the growth and wear of the tushes.

(7) *Freedom from Disease and Malformation* :—The main drawbacks and defects which render the camel unsound are :—

I. The defects of the eyes.

- (a) Amaurosis or blindness.
- (b) Corneal opacity.
- (c) Shabkori or Moon blindness.

II. Kachh.

III. Badar.

IV. Arki.

V. Rafa.

VI. Raggi.

VII. Kumri.

VIII. Girki or Gitku.

IX. Gutak.

X. Purane Lang (Chronic Lameness.)

XI. Diseases and ailments.

I. *Blindness or Amaurosis*:—This is a very common defect encountered in the camels although the eyes may at times look normal externally. The defect can be diagnosed by moving a finger in front of the eye and noticing whether the animal perceives it or not by trying to evade it. The animal may also be made to run a short distance and noting if it tries to avoid any obstacles in the way.

(b) *Corneal opacity*:—This defect can easily be found out externally.

(c) *Shabkori (moon blindness)*:—This is a defect which renders the camel blind during night times. Since the animal keeps quite normal during day time, such defects involve careful and methodical examination. This defect is commonly met with in camels cured of Surra.

II. *Kachh*:—This defect which is a cause of great nuisance to the animal while walking, arises as a result of rubbing the chest pad against the innerside of the fore-arm.

III. *Badar*:—The inner skin of the arm-pit gradually thickens and develops a tumour like growth, by constant friction against each other, which defect is of great trouble to the animal in walking.

IV. *Arki*:—When the elbow-pad is rubbed against the chest, and renders the movements of the animal difficult, the defect is termed "*Arki*".

V. *Rafa*:—It is a condition resulting as a sequel to some wound infection on the chest pad. By constant irritation and infection, the healing is very much retarded, the chest pad gets enlarged, and results in a tumour like formation with pus and foul discharge within.

VI. *Raggi*:—This defect arises as a result of the back tendon slipping to outer side instead of standing fixed on the point of the back while sitting. Such an animal, called a "*Raggi*" animal, finds it very difficult to get up when it has

sat down especially with a load, and is the refore worthless as a transport animal.

VII. *Kumri*:—Camels suffering from this defect, when made to get up or sit down shiver in their hind limbs, and when with a load encounter great difficulty to perform these acts.

VIII. *Girki or Girku*:—This defect consists in the fetlocks bending inwards and striking against each other while walking and giving rise to a peculiar sound. This defect is a sequel to putting young camels for transport work with very heavy loads.

IX. *Gutak*:—Due to heavy loads and defective palan, the ends of the lumbar vertebrae break. The irritation caused by the broken ends render the skin around them thick, rough and painful. Such wounds are incurable and hinder considerably the work of loading, making the camel unsound for transport purposes.

X. *Purane Lang (Chronic Lameness)*:—Due to a pricked up garinda thorn, the foot pad of a camel gets swollen, and inflamed and makes the foot lame. This lameness becomes chronic due to continuous working and is almost incurable.

XI. *Diseases and ailments*:—The camel suffering from any of the following diseases should be considered un-sound.

(a) Surra

(b) Mange

(c) Jhooling

(d) Rheumatism

(e) Camel pox

(f) Kumri

(g) Kapauli

(a) *Surra*:—The disease can be diagnosed with the help of a microscope.

(b) *Mange and Camel pox*:—These diseases can be recognised and identified by external examination. Camels suffering from mange should not be purchased, because in winter, mange generally spreads and causes trouble.

(c) *Jhooling*:—It is a peculiar wound disease, frequently found on the neck, under-surface of the abdomen, tail, buttocks and on the thighs. When wounds have healed up, white marks are left, on which the wounds of jhooling will reappear

during winter. This is a very troublesome disease, and camels with such marks on them, should not be considered sound.

(d) *Rheumatism*:—Camels suffering from this disease get swelling of the joints and lameness of limbs. As the disease runs a chronic course the animals get worthless for any work.

(e) *Camel pox*:—This is an infectious disease generally encountered in young animals. The vesicles of camel pox are found on the lips. The mouth parts of the animal swell up in this disease and this constitutes the diagnostic symptom.

(f) *Kumri*:—This disease has already been dealt with under the heading defects and malformations. Animals with such a defect should not be certified as sound.

(g) *Kapauli*:—This disease is characterised by the camel keeping his head upwards, and is caused by the pus forming in the frontal sinuses. When the head is held in the normal position, the pressure exerted by the pus on the walls of the sinuses causes intense pain, and discomfort, so that the animal feels some relief by holding its head high.

When purchasing camels, all those animals holding their head high, should be rejected as unsound, under suspicion of Kapauli, since such an ailment is seldom curable.

General consideration:—The following features should also be considered along with the defects and diseases while certifying the soundness of a camel.

1. The animal should not be very thin as such animals are likely to have been victims to such wasting diseases as Surra, Tuberculosis etc.

2. The hump should neither be absent nor soft and when present should be devoid of any wounds or injuries on it. The softness or smallness of the hump is generally indicative of some internal ailment as a result of which the hump has begun to atrophy, wounds of any sort on the hump are seldom curable and hinder considerably the working of a camel. Such animals should therefore be rejected.

3. The nostrils of the camel should be examined for continuity of their walls, as ruptured nostrils indicate tardiness and laziness of the animal. Such an animal when led in a string with other camels cause great nuisance and inconvenience by failing to keep pace with them, and requiring constant attention.

4. There should not be any wounds or injuries on the withers or back where the *palan* is generally placed. Such wounds do not tend to heal, but get worse due to continuous pressure and friction, interfering thereby with the work the animal is expected to do. Wither gall is a very serious trouble as the pus that is formed within, failing to find a passage outside, gradually makes its way into the tissues and makes the animal worthless.

5. While certifying the soundness of a camel before being purchased, the back of the animal should be examined. The seat of *palan* should be pressed, so that any loose sticking hair or sand are dislodged and the undersurface laid clear, because it is a common practice with the Sarbans (camel men.) to conceal the defects of the back by means of hair or sand.

6. All the pads of the camel chest pad, elbow pad, knee pad, stifle pad, and the sole pad, should be examined for any wounds or abscesses—some wounds on such places seldom heal.

7. Camels showing enlarged thoracic and inguinal lymphatic glands should not be passed as sound, as such animals generally suffer from abscesses of their lungs and liver.

It is therefore essential that a camel should possess the following features for being passed as sound.

1. The condition and environments of the place should suit the animal.

2. Bodily conformation and health should be good.

3. It should be of an average size with a large head and massive neck, eyes bright and clear, nostrils wide and prominent, hump healthy large and hard, withers and back free from wounds or injuries, abdomen large, animal well ribbed up, chest pad round, hard, and small, quarters hard and muscular, legs thick and strong, and the feet round.

4. It should be free from all defects and diseases described above.

Method of Examination.

Irrespective of the number of camels to be examined and the urgency of work at hand, each camel should be examined separately. A keen methodical examination should be made, so that no defect or disease remains hidden.

The camel should be well secured before proceeding with the examinations, so as to prevent any danger of being bitten by the animal. In the case of a very vicious animal being examined, a net should be tied round its muzzle.

The camels which are to be examined before being purchased for recruitment, should be made to sit in a line, and the examiner should slowly pass round them once, making a general survey of each animal as he passes by, and such animals which appear beautiful and healthy at first sight should be isolated. During such a survey camels suffering from such disease as Kapauli can be easily recognised and rejected.

After this, the camels that are at first isolated, should be examined individually. The animal is made to stand in a place, and every visible part of his body should be closely scrutinised in this position. The camel should then be made to sit down. During this act, the soles and chest pad may be observed for any wounds on them. The shivering if any, of the hind limbs, must also be noticed and the animals rejected as they are likely to be suffering from Kamri.

The camel should then be made to sit down and a thorough examination of the eyes, ears, nose, and mouth are made, while examining the mouth the age of the animal should be estimated. Any defect of the eyes, rupture of the nostrils and presence of pus in the ears, should be noticed. Wounds of jhooling, in the absence of which, white marks, should be searched for. Every part of the body, especially the back, hump and loin, should be firmly pressed, to know if any wound or abscess is being hidden in these places.

The tendon on the back joint should be pressed to a side to see if the animal is suffering from Raggi. Then 4 men should be made to sit on the back of the camel under examination, and the animal be made to get up. If the camel is unable to get up, it is clear indication of the fact, that, that he is suffering from Raggi or Kvmri. The speed of the animal should be easy and swift.

The temperature of the animal should be taken after allowing him to sit in the shade for some time. Blood examination should then be made so as to clear any suspicion of Surra and other infectious diseases.

When the animal has successfully withstood all these searching tests, negotiations with regard to its price should be made with the owner or party.

In the end I submit my earnest thanks to Ch, Kahan Singh, officer in-charge of Sohawa Laboratory, who devoted his precious time to review the article.

MY EARLY EXPERIENCE.

BY

W. V. SOMAN, G.B.V.C., (BOM). VETERINARY
OFFICER, JAORA, C.I.

It has been a great problem before the Fox-hound Clubs in India to keep the hounds going at least for four months of the season, the chief causes being climatic changes and the out-breaks of different diseases, such as Anthrax, Piroplasmosis, Canine Typhus and Surra. The usual months of hunting are from November to March in most of the Clubs in India except Jaora, where the hunt season runs from August to April. During these months of hunting the climate is cooler throughout India and the question of diseases alone remains to be combated.

Taking into consideration the efficiency of the timely Veterinary Aid in India and the cost of the treatment, it is usually thought advisable to destroy the infected lot, which is a common practice in most of the Clubs. This practice, no doubt saves the spread of infection to a considerable extent, but on the other hand minimises the chances of Veterinary Research.

During my short career of three years as a Vety. Surgeon, I have been required to look after nearly 150 dogs and I could only conclude that prevention is the only measure which could keep our reputation. I have undertaken fox-hound breeding and naturally had many cases of distemper amongst the puppies. I addressed the Director, Imperial Institute of Veterinary Research, Muktesar, if he could supply me with the vaccine for Canine Distemper recently worked out by the Field Distemper Fund in England. But the Director replied as follows:—"We have received only

very limited requests for a supply of products against the disease, so that we have not considered the project of carrying out work upon the subject to be of an urgent nature in this country."

In my humble opinion it is not a question of demand and supply, but is purely a professional one to begin with and is worth to be tried in India where climate and circumstances differ so much from those obtaining in England. However, as it was not possible for me to carry on with this, I had to seek to some preventive measures. I had up till now about twelve and a half couples of Fox-hounds bred here within the last two years and in addition to those, some Spaniels, Fox-terriers, Grey-hounds etc. It is well known that Distemper is such a disease that the puppies could hardly be protected against it but just to avoid heavy casualties, I usually put them on the following prescription.

R

Tr. Iodine Rect. m 4.
Aqua oz. 1/2.
Mft Mist.

This mixture is begun when the puppies are a month old and start moving about. The kennels here are built on most sanitary principles and I can easily avoid puppies moving on the open ground or other infected places.

In spite of all these precautions, I had up till now 15 cases of intestinal form of Distemper and 4 cases of Ophthalmic form. The eye cases could easily be got over as they developed only Keratitis Parenchy-matous with blue white opacity of the cornea in both the eyes. They all were treated with the following prescriptions:—

(1) R

Atropine Sulph gr. 2.
Aqua Distillata oz. 1.
Mft, Collyr.

(2) R

Cocaine Hydrochloride gr. 15.
Aqua Distillata oz. 1.
Mft. Collyr.

R

Dionine gr. 4.
Hydr. Oxidum Flavum gr. 4,
Vaseline alba dr. 4.
Mft. Unguentum.

Prescription Nos. 1 & 2 were used alternatively twice daily after boric and poppy seed fomentation. This treatment was continued for a few days till the inflammation was in acute form and it was followed by prescription No. 3 ointment with a small crystal of Argyrol once in three days for the opacity. Besides this, the general health of the animal was attended to and it was kept on a laxative diet. All the pups recovered within three weeks.

Intestinal form of Distemper of course, troubled me a lot. Most of the cases showed similar symptoms with a high rise of temperature, pain on pressure in the abdomen, occasional vomiting, constipation with excessive straining followed by Diarrhoea and Dysentery.

All the puppies were put on Lactol as diet and they were kept in a warm room. Abdomen was fomented and warm bandages put on. Brandy was being administered twice daily in Lactol and in addition to that the following medicine was given.

R

Syrup of Dimol M 15.
Aqua Dr. 6.
Mft. Mist.

Sig 1/3 to be given every 4th hour.

In many cases small eruptions were found inside the thighs developing towards the abdomen. These were all dressed with Tr. Iodine and an intravenous injection of Tr. Iodine Rect. m 2 in 1 c. c. of Bidistilled water was given.

The second trouble I had was of canine Typhus which is another curse as far as diagnosis is concerned. The only symptoms which distinguish it from other disorders before it gets incurable, are the foul smell from the mouth and dark brown colour of buccal mucous membranes. Generally the dog gets slight rise of temperature, foul smell from the mouth, great depression, loss of appetite, dark brown buccal membrane and vomiting on the 2nd or 3rd day. The temperature

then starts going down to subnormal (In a case I observed the temperature going down to 95° F.) tucked up abdomen excessive pain on pressure especially in the region of the stomach, scanty urine etc. The only remedy for the disease is the free use of non-irritating intestinal antiseptics, good nursing, stimulants and nutritious laxative diet. Intravenous injections of Normal Saline Solution are much beneficial to bring the temperature to normal. Mouth wash with Hydrogen peroxide lotion (1 : 10) and Saline enemas also helped a lot in preventing the further development of the disease. The following prescription has given good results.

R_x

Iodine Perchloride m 15.

Aqua oz. 3.

Mft. Mist.

Out of 8 cases that were affected at a time in February 1928, all except one got over the disease and hunted during the season 1928-29. All the recoveries were given complete rest for six months and then gradually put to exercise and the one that died showed the following Post-mortem lesions:— Severe inflammation along the digestive tract, dark brown mucous membranes, ulceration of the mouth, hæmorrhagic patches along the intestines, and slight congestion of the kidneys. The disease was spread among hounds of all ages but more prevalent in young ones newly imported.

The infection seems to be still present in the kennels and occasional cases of the disease occur but with no casualties.

In October 1928, six months after my graduation I was deputed to a state in Mewad to treat a three year old Arab racer of His Highness the Nawab Sahib Bahadur of Jaora, which was kept there with a friend of his. After travelling overnight and trodding over the sandy deserts of Mewad till 12 noon, I reached the place. On examination of the pony, I found he had high fever (105° F.), was completely off feed, had bad thirst but could not drink, owing to the inflammation of the Submaxillary Lymphatic glands. There was discharge from the nostrils and the animal showed some difficulty in respiration also. I suspected it to be a case of Strangles but not being confident of my diagnosis for want of practical experience and having had to inform the owner who was a

ruling Prince, I was between the horns of a dilemma and had to decide one way or the other. I pulled up myself and keeping full confidence in my diagnosis, I wired to His Highness my decision. Further, what about the treatment? I enquired if there was any chemist's shop in the town and the reply was in the negative. I knew that the Veterinary doses of medicines would not be available in a small human dispensary, but had no other go than to seek its shelter. The only medicines I could get there, were Tr. Iodine, Permanganate of Potassium and Blistering ointment. I syringed the mouth of the animal with warm lotion of Permang. of Pot. and the animal felt much relieved. I gave him 21 lbs. of lukewarm milk, which he slowly drank. I then blistered the Submaxillary glands, gave him cold water enema and he was allowed to rest. The animal was fed thrice on 10 lbs. of milk a day, after syringing the mouth with hot lotion every time before and after the drink. On the 4th day the temperature came down to 103° F. when it was given an intravenous injection of Tr. Iodine Rect. 3 cc. in 10 cc. of Distilled water in addition to the usual treatment. Now the inflammation of the Submaxillary glands started sub-siding and the animal showed signs of recovery. The blistered part was washed with hot water and soap on the 3rd day and Zinc-Oxide ointment was applied. Another injection of Tr. Iodine was repeated on the 8th day, and on the 10th day the pony could open the mouth. It was given a little green fodder. The pony got over completely after three weeks.

TREATMENT OF RANIKHET DISEASE.

BY

ABDUL QAYUM KHAN, L. V. P.

Veterinary Assistant Surgeon 1/c Veterinary Hospital, Lyallpur.

In this note I like to give a short account on the treatment of Rani-Khet disease, recently discovered at Rani-Khet in U. P. amongst the poultry.

The subject has so far been studied under two heads viz :

1. Etiology.
2. Treatment,

The former has yielded very satisfactory results, and has been proved that an ultra visible virus is the causal organism of the disease.

The writer had an opportunity to work in the Pathological section of the Punjab Veterinary College, where experiments were done by Major E. Nicholl, Prof. J. F. Shirlaw, Prof Karm Ellahi and S. Riaz-ul Hassan.

The latest conclusions arrived at by the above mentioned workers, were that the disease is due to an ultra microscopic virus, and that the virus is present in saliva, blood and in faecal material.

It was arrived at by Prof J. F. Shirlaw, and Prof Karm Ellahi that crop is the main seat of infection, and they accordingly proceeded with a number of experiments, to treat the condition as follows:—

They incised the crop and flushed its content out with:—

1. Pot Permang Solution :.....1—1,000
2. Lysol " :.....1— 500
3. Lugol's Solution (Iodine :.....1 Part)
(Pot Iodide :.....3 "
(Aqua Dist :.....300 "

They also used the same fluid for rectal injections and for oral administration in drinking water. This mode of treatment failed to produce any satisfactory result.

Syed Riaz-ul Hassan assistant to the Prof of Pathology also tried a combination of various drugs administered per orum, but apparently without any marked success.

The common drugs tried by him were:—

1. R
Quinine Sulph : gr 5
Acid Sulph Dil : m 3
Aqua : Dr 4

This mixture was given in four doses, one dose every two hours.

2. R
Bismuth Sub Nitras : gr 5
Ol Terebenthinae : m 4
Ol Eualyptus : m 2

Tr Card Co :	m 10
Tr Asafoetida :	m 8
Spts Ammon Aromat :	m 16
Aqua :	Dr 4

This was also tried in four doses, given after every two hours.

Bearing in mind that ultra microscopic viruses in general are of low vitality, and intravenous injections of Lugol's solution have proved of some avail in the treatment of Foot and Mouth disease (Col. G. K. Walker, and W. Taylor) it occurred to me to give a trial to this drug in the treatment of the disease in question.

Accordingly a flock of ten patients were subjected to treatment as follows:—

1. Four of these were given Lugol's Solution (Iodine:— 1 Part, Pot Iodide:—3 Parts, Distilled water:—300) 2-4c. c. intravenously at the height of temprature.

2. Two others were given the same Lugol's Solution subcutaneously in the same doses according to the size and age of the animal.

3. Two were subjected to treatment previously carried out by S. Riaz-ul-Hassan.

4. Remaining two were left untreated.

The results obtained were as follows:—

1. Of the first lot three (3) recovered after 5 days treatment, and the fourth developed paraplegia, and subsequently died after one month.

2. Of the second lot both succumbed, one on the sixth and the other on the 8th day after the beginning of the treatment.

3. Of the third lot one died on the same day, and the other three days after.

4. Those left to the mercy of God died on the second day,

Postmortem examination were made of all these birds that succumbed, the characteristic lesions were:—

Apthic lesion at the region of the throat, muco enteritis, and inflammatory patches on the lungs.

The results being so encouraging of the intravenous treatment, the writer undertook to treat, as many as eighty (80) cases of the disease at Lyall-Pur.

Out of these 65 recovered, and 15 died inspite of treatment.

With these data I wish a cooperation of my professional superiors, and friends in throwing more light on the subject (Treatment of Rani-Khet Disease by intravenous injection of Lugol's Solution) and I shall feel much obliged, were the conclusions arrived at by these gentlemen to be communicated to me directly or through the medium of this valuable Journal.

Before closing this article. I wish to express my hearty thanks to Major E. Nicholl, Prof. J. F. Shirlaw, Prof Karm Ellahi, and S. Riaz-ul-Hassan, for having inspired me with the spirit of research, and to Sh. Jan, Mohd, P. V. S. Deputy Supertendent, C. V. D. Lyall-Pur for encouragement and help in conducting the above experiments.

N. B.—Second dose of Lugols solution may be tried, if the condition is not relieved, four days after the 1st injection.

THE LAW COURTS AND OUR PROFESSION.*

BY

P. S. NAIR, OFFG. DEPUTY SUPDT. C. V. D., C. P.

I have chosen a subject which many of you may consider out of place in a gathering like this, but I believe this is a subject which deserves careful attention at our hands. This will become more and more apparent as the profession and the education of the masses, amongst whom we move, advance.

India being predominantly an agricultural country with a large majority of small holders, she has, for a long time to come to depend entirely on cattle power for her advancement in Agriculture and other allied industries. So, we as veterinarians working for the welfare of cattle are destined to play an important part. We have heard from the President of our Association the very valuable recommendations made by the Royal Commission on Agriculture in India which undoubtedly gives us some idea of the responsibilities we would be called upon to shoulder. I am speaking of these facts to show that

* Paper read at the fifth annual conference of C. P. & Berar Veterinary Association, 1928.

we have to interest ourselves in all the branches of the profession much more than we do at present.

We, in India, hold a different position from the members of our fraternity in Great Britain and Ireland in the sense that 99% of Veterinary Surgeons in this country are employed either by Government or local bodies while the reverse may be said of Great Britain and Ireland. The reason why I mention this fact is to point out that to a great extent we have no clients in the legal sense since medicine and advice are given free in most cases and we too are protected to a great extent (1) by the Government rules which define our responsibilities, (2) by the ignorance and illiteracy of the persons with whom we deal.

Yet, inspite of all these advantages, I am sure many of us who were in the profession for some time might have had opportunities to give evidence before a Court of Law in our professional capacity. Well, gentlemen, when we are summoned in the above capacity we are expected to give our opinion based on our knowledge of Veterinary Science to help the Courts to dispense justice. In the interests of public good and justice the state can compel any of us to give evidence before its Courts on matters relating to Veterinary Science, of course subject to our special privileged position, knowledge and experience. Being placed in such a privileged position we are liable to be summoned at any time before a Court of Law to give evidence as a Veterinary Jurist.

So both from a point of public interest and our own, it is of utmost importance that members of this profession should know something at least of the legal nature of evidence and procedure pertaining to them in the Law Courts.

A Veterinary Surgeon may be summoned by the Court for two purposes:

- (1) As a witness to state the facts which he has actually observed on examining an animal.
- (2) To give his opinion as an expert on any matter over which there is a controversy.

The first does not involve any serious difficulty if only the Veterinary Surgeon states accurately what he has observed.

But he should be careful not to imagine or exaggerate facts or draw unwarranted conclusions from the facts observed.

The section in the Indian Evidence Act dealing with the expert opinion is as follows;—

Section 45. "When the Court has to form an opinion upon a point of foreign law or of science or of Art or as to identifying the handwriting or finger impressions the opinion upon that point of persons skilled in such foreign law or *science or art* (or in questions of identity of handwriting or finger impressions) are relevant facts, such persons are called experts."

"An expert is a person specially skilled in one who from his circumstances and employment possesses exceptional means of knowledge and has given a particular subject his particular attention and is more than ordinarily conversant with its details. Opinions of such persons are admissible in evidence provided they relate to matters within their scope and the value to be attached to their opinion depends upon the competency and skill displayed by the expert."

Now let us take as an illustration:—One Rajpalsingh had a quarrel with his neighbour, one Gopallal, and the former was waiting for an opportunity to inflict some harm to his enemy, Gopallal. A bullock of Gopallal unfortunately strayed into Rajpalsingh's compound, who seizing the opportunity caught hold of the bullock, tied a piece of wire tightly round the tongue of the bullock and then let the animal go.

After two or three days Gopallal noticed that his bullock was not eating. There was profuse salivation, streaks of pus falling out of the mouth, tip of the tongue was found hanging out and there was a very offensive smell. He, Gopallal, opened the mouth of the bullock and found to his astonishment that the tongue was swollen and in the middle it was cut all round. On seeing these he immediately sends for a Veterinary Surgeon.

Now the procedure of the Veterinary Surgeon on his arrival on the spot should be some what as follows:—

(1) He will get as far as possible, a detailed history of the case from the owner.

(2) Then he will examine the animal carefully.

(3) He will make up his mind as to the probable cause of the wound.

(4) Having made up his mind he will take careful notes as to his time of arrival, the age, colour and other particulars of the animal, site, dimensions and nature of the wound, the presence of any foreign body near the wound and such other particulars.

(5) Then he removes the wire from the tongue and gives necessary advice and treatment.

Having done all these he will return and then issue a certificate stating that in his opinion the wound on the tongue was caused by the tying of a wire round the tongue as found on the wound.

Gopallal's suspicion falls on his enemy, Rajpalsingh, and on the strength of the certificate got from the Veterinary Surgeon, Gopallal files a complaint against Rajpalsingh accusing him of the crime. The police send up the case before a Magistrate and the Veterinary Surgeon is summoned as a witness. After examination in chief the Counsel for the defendant, in this case the Counsel for Rajpalsingh, puts the following questions:—

(1) Was it not possible that the wound on the tongue was caused by the animal trying to take by the mouth some sharp instrument such as a harvesting knife or by eating some thorny plant?

(2) How can it be said positively that the wound was caused by a wire?

(3) Was it not possible that the wound was caused by tying a rope?

(4) Suggests that the piece of wire found on the tongue was tied by Gopallal himself on the same day to fabricate evidence against his enemy.

(5) Produces a piece of wire and questions whether it is the same he found on the tongue.

The Veterinary Surgeon on his part should answer only after he had thoroughly understood the questions. Let us see what would be the probable correct answers to the above questions.

(1) No, it was not possible, for the reason that if the wound was caused by a sharp instrument, such as a harvesting knife, then there would have been a wound on a side of the

tongue only. If it was caused by thorny plants, there would have been a number of wounds scattered all over the mouth according to the number and thickness of the thorns.

(2) Do not say positively, but it is only his opinion as he found the wire tied close to the tongue, but in any case the wound was caused by a piece of wire, or a piece of twine or say other things which have such thickness and sufficient strength as the wire, found on the tongue.

(3) It all depends upon the thickness and strength of the rope.

(4) Do not give any opinion as to who tied the wire but one can deny to a certain extent that it was not tied the same day on which he examined the wound. For the pus and other discharges of the wound found between the twist of the wire was at least 3 or 4 days old and also if it was tied the same day so tightly as he found, there would have been a fresh cut in the wound all round and the surface of the wound would have also been more clean.

(5) He takes and examines and then says after measuring and noting all identification marks, etc., which he had noted, "yes" if they all agree with his notes; otherwise says "no" since they do not tally.

We should not forget for a moment that our evidence as a Veterinary Jurist goes a great way to help the Judge in his findings. From this, we can imagine what a great responsibility we have in this matter. But you know, as I do, that we are far behind the times in this Country. For this whom are we to blame? In the first place we must blame our Colleges for neglecting this most important subject from the curriculum of studies and secondly we have to blame ourselves for neglecting opportunities when they are presented before us. I have heard of many disconcerting experiences of Veterinary Surgeons in the Law Courts owing to their ignorance of the subject. However this may be, it is no use bewailing the past, instead, let us try and mend.

Now let us see the procedures that are observed in our Courts. In India, I believe in other countries too, the police on receiving a complaint from a person, or by themselves acting on behalf of the Crown lodge a complaint before a Magistrate against the person suspected of the crime. The Court then issue summons to all concerned to appear before

the Court on an appointed day. Though we are summoned as witnesses, it is generally in the capacity of Veterinary Surgeons that we are asked to testify as to the number of wounds, their exact size and position, and also any other pathological or other abnormal things together with the external conditions one has noticed on the animal or the carcass of the animal one has examined. A Veterinary man can also be summoned as an expert witness when the man so summoned is a specialist in that branch of science over which there is a dispute.

Next, in obedience to the summons when we appear in the Court we are subjected to examination which can be classified under three headings:—

(1) *Examination in chief.* Here a number of questions are put to you for the side on which you appear to state clearly to the Court all the important facts you know about the case.

(2) *Cross Examination,* which means the searching questions put by the opposite party for the purpose of discrediting the statements made during the course of the examination in chief. If one is not careful and the opposite party succeeds in eliciting from him any statement contradictory to what is made during the examination in chief then his testimony will be discredited.

(3) And the last is the *re-examination.* This is done by the counsel of the party for whom one is appearing with a view to help him in explaining any apparent contradictions that have been made by him in the Cross Examination. One should take full advantage of this opportunity to explain his position very clearly. Now, gentlemen, I will give you practical hints in this paper.

(1) Always before giving evidence refresh your memory by studying the report you submitted.

(2) Speak slowly, loudly and distinctly.

(3) All opinions must be expressed only after very careful consideration, but when once given must be strictly adhered to.

(4) Always be just and impartial, in expressing your opinions.

(5) Avoid all technical words, as far as possible, which are unintelligible to a layman.

(6) Try to be precise and never exaggerate things.

(7) Only give facts and not your opinion unless asked for and never volunteer yourself with more information than is necessary.

(8) Do not let your emotions over power you.

(9) If you are subjected to harsh treatment by the Counsel invoke the help of the Court.

I take this opportunity to express my deep gratitude to Major R. F. Stirling, for his useful suggestions in the preparation of this paper.

A CASE OF TRYPANOSOMIASIS IN A HOLSTEIN BULL AND ITS TREATMENT BY MEANS OF TARTAR EMETIC AND BAYER 205.

BY

BALWANT SINGH, G.P.V.C., VETERINARY INSPECTOR,

Imperial Institute of Veterinary Research, Muktesar.

From a perusal of available literature it would appear that the study of trypanosomiasis in cattle has not received the same attention as that of trypanosomiasis in equines, although the disease is widely prevalent amongst cattle including buffaloes, in all parts of India and many cases have also been reported in other countries, such as Malay States, North and South America. References to the text books and periodicals fail to bring to light much evidence of existence of a complete description of trypanosome disease in cattle in so far as such description relates to the history of the infected animals, the course of the disease from the onset to either recovery or fatal termination and their treatment. This lack of attention is no doubt due to the low percentage of mortality by this disease among cattle as compared with the high percentage of deaths among horses, dogs and camels.

The Indian cattle are frequently affected with Surra, though they are on the whole very resistant and usually do not manifest symptoms of systemic disturbances, even when the smears from the peripheral circulation reveal the presence

of trypanosomes, yet a few fatal cases have been recorded, which have been due to heavy trypanosome infection as will be seen from the references given below.

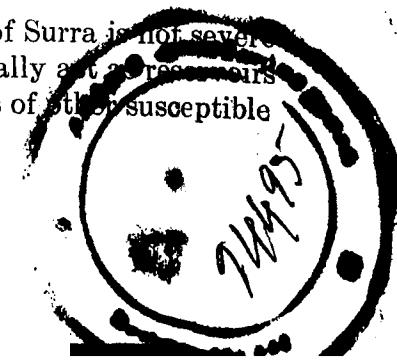
As regards imported cattle, such as Ayrshire, Holstein, Jersey and other pure foreign breeds, their number in India is very small and they are mostly distributed amongst the different cattle breeding farms and dairies under Government management but so far no case of the occurrence of the disease in these animals appears to have been reported, so that the present case of trypanosomiasis in a Holstein bull is probably the first of its kind in India.

As Surra in cattle usually runs a benign course and severe attacks are few, the symptoms observed by different workers vary according to the mildness and severity of the disease of the cases that have come under their observations. Most of the observers record incidence of the disease in a mild form, with manifestation of symptoms which are not diagnostic of trypanosomiasis and may occur in any debilitating disease, while few describe the disease in its severe form even when it has terminated fatally.

BALDREY (1911) records the occurrence of Surra in a plains bull in which the Trypanosomes appeared in the blood after 15 days and they were never numerous. The disease was of mild and chronic type. The bull did not show any clinical symptoms and was to all appearance quite healthy, though its blood proved infective to a guinea pig.

FRASER and SYMONDS (1908) state that the symptom met with in the cattle in the Malay States, was general anæmia which was almost diagnostic of the disease even though the smears were negative. They also state that the course of the affection in cattle is apparently dependant on the condition of the animal at the time of infection. Animals in good condition may show no systemic disturbance apart from an occasional rise of temperature, while those in poor condition may suffer from an acute attack.

CROSS (1920) says that the course of Surra is not severe amongst cattle and that buffaloes especially are reservoirs and are sources of infection to animals of other susceptible species.



PEASE (1913) states that the Indian cattle harbour the parasite of Surra in their blood without evincing symptoms of the disease. The mortality amongst them is very low. He notes that animals of good condition in particular have acted as carriers of trypanosomes even after they were exported to Mauritius and developed severe symptoms.

LINGARD (1896) writes that in Karnal Depot out of 26 bullocks twenty died of Surra. The chief symptoms were loss of power, staggering and falling down; inability to rise from the ground; incontinence of urine when standing. Some of the bullocks even died on the way while being taken out from the bullock shed.

VALLADARES (1910) gives the following symptoms of trypanosomiasis (*T. theileri* infection) in a bull in Madras; temperature 105° F; extremities swollen and painful to touch; urticarial eruption on each side of the chest and abdomen; off feed; spines arched; animal unable to defecate; constantly smacking its lips; occasionally uttered a sort of low moaning.

JANAKIRAM AYYAR (1919) records his experience of an outbreak of Surra amongst cattle in Madras. The symptoms were dullness; disinclination to work; drooping of ears and head with slight frothy discharge from the mouth and slight blowing; when removed to shed the bullock showed a temperature of 105° F and signs of restlessness which gradually developed into delirium and the animal would dash against the ground with head. The blood smears revealed trypanosomes. The author does not definitely conclude that when death occurred they were due to trypanosomiasis but regards it probable that the presence of these parasites aggravated the symptoms of some other intercurrent disease.

SAMPATH AYYENGAR (1919) describes as follows the symptoms of trypanosomiasis in cattle during an outbreak:—Rise of temperature upto 105° F; slight watery discharge from eyes and nostrils; staring coat for a day or two; congestion of conjunctiva. In the advanced stage of the disease there were symptoms of great emaciation, oedematous swelling of the sub-maxillary space and inability to get up. At a later period tympanitis appeared and this was followed by death.

STOCKMAN (1910) found trypanosomes in the blood of British cattle when they were infected with piroplasmiasis so that they might thereby be rendered immune against this disease, before being sent to South Africa. He states that it is unlikely that they cause any harm to the British cattle.

COLES (1912-13) records that he found trypanosomes in the blood of British cattle but he does not mention anything in connection with the course of the disease.

LEGER & VIENNE (1919) in describing the course of trypanosomiasis in South American cattle refer to the following symptoms:—Progressive loss of condition up to the time of death; very pronounced oedematous swelling on the dewlap and inter-maxillary space which appeared intermittently without, however, any apparent relationship between its presence and that of trypanosomes in the peripheral blood. The appetite remained unimpaired upto the time of death. In milch cows the yield of milk diminished to two-third to three-fourth of the quantity. There was frequent intermittent diarrhoea, but no mucous or blood was present in the faeces. Towards the end of the disease the animal appeared emaciated, the coat was rough, the hairs fell in patches and there was discharge from eyes and nostrils. The joints became stiff and the animal performed circling movements and finally showed paralysis of the hind quarters and died. The trypanosomes were found in extremely variable numbers in the peripheral blood. They were present in large numbers in animals presenting an appearance of good health, while in animals that were in emaciated condition and manifested symptoms of the disease, the organisms were rare or even not discoverable. It appears that intensive multiplication of trypanosomes took place at the commencement of the disease and diminished appreciably and again increased in number just before the death of the animal.

ROUSSEAU (1918) records that some animals in North America were attacked with trypanosomiasis during the course of a journey and succumbed in from 5 or 6 to 48 hours after the first symptom. Shortly before death they showed considerable wasting, dullness, rough coat, swelling of the extremities, slight diarrhoea and marked anæmia. The

trypanosomes showed active wriggling movements although they were somewhat difficult to find in the blood.

The bull which forms the subject of this paper was a pure bred Holstein of about 8 years of age and in very good condition being used in this Institute for breeding purposes. Unfortunately the animal has since died of pneumonia.

On the 1st July, 1926, at 1-45 p.m. the kraal attendant reported that the bull was seriously ill and that it had a sudden shivering and had fallen prostrate at about 12-30 noon. After consultation with the Veterinary Deputy Superintendent Mr. J. D'Costa I left for the kraal which was situated at a distance of about 2 miles from the main building of the Muktesar Institute. On reaching there I found the bull lying down and quite unconscious, with copious frothy saliva being discharged from the mouth. The animal had a wild look and occasionally lifted its head and dashed it against the ground. It also ground its teeth and at times rolled on its back and stretched out all the four limbs and remained stiff as if attacked with spasm of all the muscles. There was slight tympany; pulse was hardly perceptible and the temperature was 101.8°F. The wild look of the animal combined with other symptoms suggested an affection of the brain and in the absence of oedematous swelling and a rise of temperature it was thought that brain symptoms were probably due to heat apoplexy or to some acute stomach disorder. The animal was apparently well up to twelve noon, when, according to the statement of the cattle attendant, the animal became dull, gave up its feed of hay and had slightly laboured and hurried breathing. It developed rigors and after slightly unsteady movements it fell down and remained prostrate. The usual food given to the animal was hay and grain and it was not let out for grazing excepting for a walking exercise for an hour in the morning near the kraal. There was no report of the animal having fallen sick or lost its appetite during the month prior to the present attack, although about three months previously it had a severe attack of foot and mouth disease from which it recovered. It was immunised against rinderpest by serum simultaneous method in 1922 when it was first brought to the Institute.

The kraal where it was accommodated had a good number of other cattle and was surrounded on all sides by fields under cultivation. A fair number of plains plough buffaloes were kept in the sheds at a short distance from the kraal. These buffaloes were brought up from Bareilly and had been used for anti-rinderpest serum production.

At the time of my arrival the animal was in a very precarious condition and manifested all the symptoms described above. There was no abatement in the symptoms of brain complications except for the fact that when cold water was applied on its head and back, the animal would appear as if it had gained slight consciousness and would then make an attempt to take green fodder or hay lying by its side. The tympany was reduced by massaging the abdomen. Blood smears were made and sent to the Institute for examination when large number of trypanosomes were detected. Instructions were issued immediately to treat the animal by intravenous injection of Tartar emetic solution.

From 2 p.m. to 6 p.m. the animal showed no improvement in its condition and during the whole time it lay prostrate, salivated profusely, knocked its head against the floor and occasionally rolled on its back with legs stiff and outstretched, as if seized with convulsive fit. At about 6 p.m. the first dose of 50 c.c. of M/10 solution of Tartar emetic was injected intravenously and cold water applied to the head very frequently. At about 7-30 p.m. the animal appeared better but was still restless. At midnight it stood up and it was then taken out of the ward. It stood quiet but ground its teeth occasionally. A few more buckets of cold water were poured on its head and back and after a short time it appeared considerably relieved and took a small quantity of green grass. On the morning of 2nd July at 6-30 a.m. another dose of 50 c.c. of the same solution was injected intravenously and the animal was taken inside the ward. The animal improved gradually and in the afternoon it looked quite well except for slight dullness. *Magnesium sulphate* with *Ginger* and *Gentian* in lukewarm water was given in drench and water was allowed which it drank with ease. On the following day the animal was better, passed soft faeces twice, took bran mash, green grass and water readily. Blood

smears were made daily and examined and trypanosomes could not be found.

At this stage it was suggested that the bull be given a course of treatment with Bayer 205. As this drug had not been injected previously into cattle and its toxicity for these animals had not been ascertained, it was thought advisable to inject, as a preliminary experiment two healthy hill bulls with the drug. Accordingly one was injected intravenously at 5 grammes per 1000 lbs. body weight in 10 per cent. solution in distilled water and the other was injected in the same manner at 10 grammes per 1000 lbs. Both the bulls did not show any symptoms and fed well during the two days for which they were kept under observation.

On the 6th July, the Holstein bull was injected with Bayer 205 intravenously, the dose being 1 gramme dissolved in 20 c.c. of distilled water. On the following day it received a dose of 2 grammes in 20 c.c. of water and this was followed a day later by a dose of 3 grammes dissolved in 30 c.c. of distilled water. There were no untoward symptoms after these injections. The animal improved in health gradually and returned to fit condition.

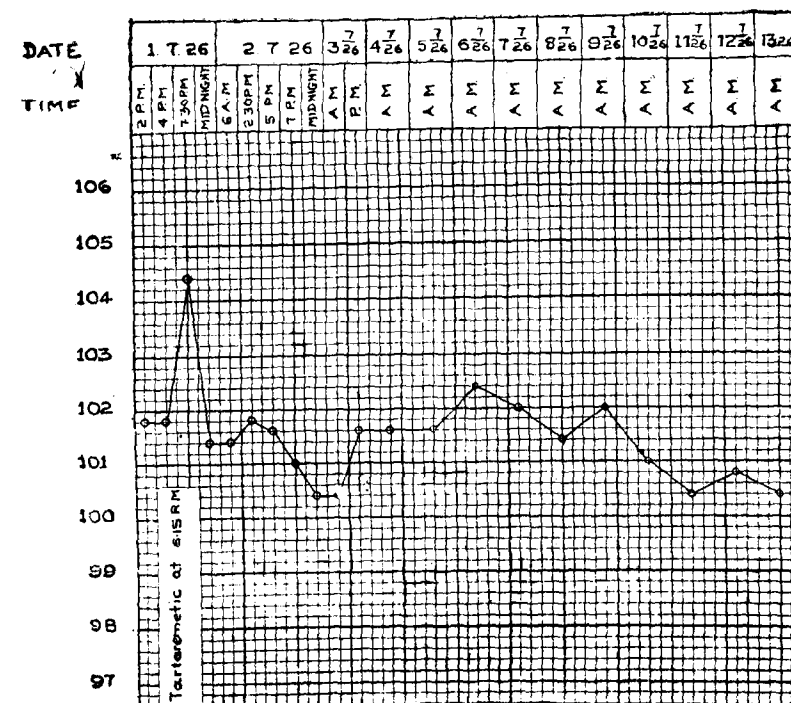
The blood smears were taken daily and examined for 10 days continuously and they gave negative results. The temperature was also normal throughout the period, as will be seen from the attached chart. The rise of temperature on the night of 1st July was very likely due to the injections of *Tartar emetic* solution as it has been frequently noticed that an intravenous injection of this solution causes an elevation of the temperature.

The occurrence of trypanosomiasis in the Holstein bull may be attributed to the presence of the buffaloes in the vicinity of the kraal where the bull was kept. As buffaloes usually harbour the parasites, it is possible that the disease was carried to the bull by some biting flies such as *Tabanus* which are prevalent in fairly large numbers during the warm months.

In conclusion the writer desires to express his gratitude to all his superior officers who helped him with their advice and to Messrs Torabaz Khan and P.C. Banerji, for their kind assistance in the treatment of the animal.

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Clinical Articles.**RABIES**

BY

G. OSMAN KHAN, G. M. V. C.,

Kuala Selangor, Malay States,

Many dogs in Selangor died of *Filaria Immitis* or of *Spiroptera Sanguinolenta*, or of both combined. Most of those dogs were positive for Rabies. They were the following cases:—

- 975/28. Heart contained 10 parasites. (*Filaria Immitis*),
Spiroptera Sanguinolenta tumours 6 in the thoracic portion of the *Œsophagus*.
 Stomach and intestines empty.
 Plenty of tape worms.
- 1062/28. Heart contained 50 parasites (*Filaria Immitis*).
Spiroptera Sanguinolenta tumours 2 in the thoracic portion of the *Œsophagus*.
 Stomach contained partly digested food.
 Enteritis with anchylostomes in the intestines.
- 1017/28. Heart contained more than 100 parasites, (*Filaria Immitis*).
Spiroptera Sanguinolenta tumours 3 in the thoracic portion of the *Œsophagus*.
- 10/29. Heart contained 4 parasites. (*Filaria Immitis*).
Spiroptera Sanguinolenta tumour 1 in the thoracic portion of the *Œsophagus*.
 Stomach and intestines empty.
 Enteritis and plenty of *Ascaris* in the intestines.

Post-mortem findings of the above cases were interesting and gave the apparent causes of death. Only the brain examination of all the above dogs was positive for rabies.

A few cases ate food and drank water till death. They had a slight rise in temperature and then they suddenly howled, fell down, worked in fits and died with foaming saliva. In some cases there was paralysis of the hind quarters. The curious symptom they exhibited was that they ate rice during intervals of fits and died after a few days. In another case it was purely shivering, without any excitement as though it had cold.

The veterinarian should reserve his opinion in cases such as sore-throat, foreign materials in the pharynx, canine distemper, epilepsy, cerebral meningitis, *filaria immitis*, *spiroptera*, and of ordinary fits. The cause of death should be pronounced only after the examination of the brain when rabies is prevalent in the district. Most symptoms are similar and Post-mortem findings differ and these confuse the practitioner.

Some prefer to divide the single dose of vaccine into two and inoculate both sides of the point of the elbow where the skin is loose and has scanty hair; they say that absorption and pain are equally divided on two sides. Originally Umeno and Doi, two Japanese scientists termed this "Single Injection" method. Many do it on single side about 2 to 3 inches away from the point of the elbow and the spinal column without dividing the vaccine, for it saves time when one has to inoculate hundreds of dogs.

Institute for Medical Research, Kuala Lumpur, prepares vaccine for Pastuer treatment for dogs, (bitten by mad ones) to be used for 14 days, and canine anti-rabic vaccine for protective inoculation as a preventive measure. The latter is largely used at 1 c. c. for every 5 lbs, body weight of the dog. Some dogs were inoculated thus: but due to anaphylaxis they died within few hours. Some of them appeared healthy after inoculation, but within 10 days they showed symptoms of rabies, and died. Strangely enough some sickly skeletons among them recovered. The remaining dogs are healthy and strong.

**MILK THERAPY
IN SKIN DISEASES OF DOMESTIC ANIMALS.
(BOTH PARASITIC AND NON-PARASITIC).**

BY

S. CHINNIAH

Veterinary Assistant Surgeon, Pudukota.

Origin of the Idea of Milk Injection.

I was just getting information on the medicinal value of milk and so I happened to try it in skin troubles. As the result seems encouraging, it is reported below:—

No. 1.

The patient belonging to one local rice mill owner, was attending the hospital for tumour-neck. Some skin lesions with eruptions and effusions attracting flies were noticed. A few isolated itchy patches denuded of hair, on the chest, back and withers were also observed. (I cannot confidently classify different kinds of Mange with the naked eye and so I call them skin diseases in general.) Injected 10 c. c. of milk behind the elbow and instructed the owner to bring the patient back after a week. He did not turn up but reported the treatment to be effective.

No. 11.

Case No. 896/29 dated 9-5-29.

A white bullock with mange patches over the back, tail chest and withers. 3 Injections of 10. c. c. of milk at an interval of 7 days were given. The lesions have completely disappeared and it is now worked. The animal also looks better.

No. 111.

Case No. 52/29 dated 14-7-29.

A calf with Herpes. One injection of 5 c. c. of milk is reported to have the desired effect but I have not seen the case myself.

No. IV.

Case No. 286/29 dated 8-9-29.

A white bullock with mange patches on both flaps. One injection of 10 c. c. of milk reported to be effective.

No. V.

Cases Nos. 475 & 476/29 dated 13-11-29.

Two spaniel dogs specially admitted for the experiment. One of them had eruptions all over the body characterised by the absence of hair, in crustations, rubbing and biting. Condition poor. 5 c. c. of milk at an interval of 7 days was injected. Had decided and desired effect. Condition healthier.

No. VI.

Case No. 450/29 dated 1-11-29.

A hound with worst type of mange. Injected 10 c. c. of milk thrice at an interval 7 days. Result not discouraging, though the patient is aged.

• Non-parasitic skin diseases seem to arise from initial digestive troubles and the constituents of milk seem to correct such errors.

The technique of the injection. Get one ounce of Cow's milk, gently warm it in a test tube, allow it to cool, draw the required quantity of milk into the sterilized syringe and inject deep into the muscle. The inside thigh was preferred in dogs. They may go lame after the injection which can be set right by hot fomentations. Later on, I came to know that milk ready for injection is sold by chemists. In case No. 450/29, I made a mistake by boiling the milk till it bubbled. The cream formed on the surface was brought to one side by the sterilized needle before drawing the fluid into the syringe and so I think the result did not give me complete satisfaction. The treatment being a cheap and easy one, may lend itself to further trials. The same may be tried in equines too.

**YOKE GALL TREATMENT BY THE INJECTION OF
STERILIZED COW'S MILK**

BY

S. A. RAZZAQUE,

Veterinary Assistant Surgeon, Bhadrak.

A case of long standing yoke-gall cured in a month's time by the subcutaneous injection of sterilized cow's milk.

*History:—*On 16-9-28, a cross bred Mysore bullock having a big yoke-gall of the size of a man's head was brought by a

Marwari gentleman, named Ram Chandra of Chandan Bazzar, Bhadrak. The case was said to be more than a year old and had been treated previously by village quacks with no effect. As a last resort, it was brought to the Veterinary Dispensary for treatment.

Treatment :—On the first day the gall was opened when it bled profusely as it contained fibrous tissues inside. It was washed antiseptically and 120 c.c. of sterilized cow's milk was injected adjacent to the gall. On the 2nd day i.e., 17-9-28, the site of injection was swollen, and on examination a deep seated sinus was found. This was opened and in it were found 10 sticks of tobacco and Bichhuati (a kind of irritant plant). These were taken out and a counter opening was made and the wound was fomented and washed antiseptically (a plain dressing with phenyle lotion).

On 19-9-28, a second injection of 140 c.c. of milk (sterilized and filtered) was given by the side of the gall and the case was dressed as before.

Between the intervals of the injections the wound was dressed with phenyle lotion and fomented.

On 25-9-28, I returned from tour and found the gall discharging a very foul smelling pus. But the gall which was tense before had got softened and reduced in size.

On 3-10-28, the gall diminished in size. 40 c.c. of milk was injected and the wound dressed as before.

The gall gradually healed up and the case was discharged as cured, on 20-10-28.

Case No. 2 :—On 11-11-28, another case of yoke-gall smaller than the previous one was taken up and the same procedure was adopted. After two injections of 120 c.c. of sterilized milk on 11-11-28, the case was discharged as cured on 22-11-28.

MULTIPLE WARTS TREATMENT WITH FORMALINE.

BY

S. A. RAZZAQUE,

Veterinary Assistant Surgeon, Bhadrak.

A case of multiple warts was treated successfully by me with a course of formaline administration.

In the middle of April, 1928, I went to attend the Chaukidar parade at the Bhadrak P. S., in order to get information of fresh outbreaks of epidemic diseases if any.

While there, a head constable brought before me a country bred castrated calf, black in colour, and having on different parts of its body a good many warts and horny tumours varying from the size of a pea to that of a walnut.

From previous experience, I thought this case was incurable. However, I took up the case on the repeated request of the owner of the calf and put the patient on trial in April, with the following simple administration :—

R

Formaline	I dram
Aqua	1 pint.

This was given for 16 days in rice gruel. On the 18th July, 1928, I again went to visit the P. S. The said head constable produced before me the same calf now quite sleek with a shining coat and said that it had a sprain. I could not recognise the calf at first.

I was surprised and at once examined the calf minutely and found that all the warts and horny tumours had disappeared entirely, leaving simple black surfaces on the seats of those growths. The marks were not so prominent as the calf was black in colour.

NOTES ON A CASE OF "VOLVULUS ET TORSIO INTESTINI" IN AN ELEPHANT.

BY

S. C. SEN GUPTA,

Veterinary Officer, Forest Department, Andamans.

My plea for recording the following notes is that it is one of the rare cases met with amongst elephants, and may

be of interest to the profession. The only recorded one as far as I can gather, is that by Johnne. (q. v. pp. 287 Hutyra and Marek's Special Pathology and Therapeutics of the Diseases of Domestic Animals. 3rd, edition.)

The subject was a cow elephant aged about 53 years, who had worked in the Andamans Forest Department for a period of 28 years in timber extraction. She was one of the best and well acclimated animals, and was rarely known to be sick.

On the 29th. October, 1929, I received information to the effect that this elephant showed symptoms of colic. I went to the spot at about 5 P.M. the same day and had a look at her. She appeared to be standing at ease except for an occasional yawning and turning sideways to relax the abdominal muscles. I diagnosed it to be a case of colic and tried to induce her to take some carminatives. But she would not take any thing—not even the paddy which she was very fond of. She went furious and would not allow her mahout or any one else to approach her. She was, however secured and a manual examination per rectum was made, which revealed that it was completely empty. Nevertheless with some difficulty an enema of soap and warm water with turpentine was administered; but nothing came out beyond the injected fluid with traces of blood. The elephant did not show any signs of relief.

Urine was dribbling; the abdomen was later found to be distinctly distended with tympany. At this stage the animal was getting restless and was assuming different postures such as sitting restless at times; instantly getting up; lowering her head and throwing all her weight on to the trunk which was fixed to the ground.

About three hours later, while an attempt was made to secure the animal for a second enema, she broke loose and decamped into the forest. It was a pitch dark night and after a hunt with the help of a gas light we managed to spot her. Her condition then was that she would lie down every few yards she went. She was noticed attempting to evacuate her bowels but without success. She was now so furious that while bringing her back from the jungle she threw off her mahout and again bolted. It was impossible to find her any more that night,

On the following morning (30th. October 1929) she was brought in with her abdomen fully distended. It was evident from the condition then, that she must have been suffering terribly during the whole of the previous night. She would not sit or lie down now, as she was doing on the day previous.

She was secured with difficulty and at great personal risk another enema and internal antispasmodics were administered. In spite of her swallowing the medicines and taking the enema successfully, the result was disappointing; and a manual examination per rectum revealed that it was as empty as before. This led me to conclude that it must be a case of volvulus or intussusception of the intestines somewhere higher up.

After the above operations I freed the animal so that she might ease herself as much as she could. It must be remembered that the above processes turned this usually docile animal into a savage one, making it unapproachable. Also the time taken was about 3 to 4 hours.

When she was freed she inclined herself on her left on a slope resting her whole body on it. A few seconds after, she got up, walked a few paces and stopped for a while. She repeated this operation once or twice until finally she came to a dead stop resting her head on the ground and throwing the whole weight of the body on it. Thus she remained for a while, gave a grunt and expired, the body remaining in the same position, even after death.

An autopsy held immediately after revealed the following facts:—

That portion of the small intestines, viz. the terminal end of the jejunum and the proximal end of the ileum, was found to be the seat of the volvulus with partial torsion. On opening this up, the entire lumen of the intestines was found to be in a state of acute congestion. The rest of the intestines were more or less normal though highly distended with gas. The tinge of blood noticed in the outflow of the enema was found to be due to the congestion of that portion of the rectum lying anterior to the pelvic wall. This portion of the rectum was not only distended with gas but was also deflected by the accumulation of dung. The enemata administered were ineffective simply because the injected fluid could not pass beyond this point of deflection. The nonexpulsion

of the dung and gas which were in the portion of the intestines anterior to the pelvic bone is explained by the stasis and subsequent paresis of the intestines beyond the portion affected by the volvulus. The contents of the stomach and intestines were in a fluid state.

PERINEAL HERNIA IN A DOG.

BY

C. V. PADMANABHAN,
Veterinary Assistant Surgeon, Cannanore.

Subject:—A medium sized dog, aged about 8 years, the property of Mr. Brown of Anchrakandy Estate, some 10 miles from Cannanore. By nature, the dog was a spirited one and used for hunting small games like hares, jackals etc.

History:—A small swelling was noticed on the left side of the anus below the tail. This swelling increased in size



little by little. Bloody urine was passed for some time after the first symptom of swelling was noticed, but it passed off in a few days time. As the swelling began to increase in size, the dog felt difficulty in passing faeces, and strained very much on each occasion. In about 6 months time, the

swelling grew bigger and bigger and the animal also felt much inconvenience in passing faeces and to run fast. It was all along taking its feed normally, although toward the latter part it was not so. There was no difficulty at all in passing urine from the very beginning.

It was first sent to Veterinary Hospital, Calicut. As the dog was not in apparent danger and as it was not advisable to interfere surgically, the owner was advised to keep it on light diet and continue giving laxatives to avoid constipation. Two months later, seeing that it was getting worse it was brought to me to the Vety. Dispensary, Cannanore. On examination the following symptoms were noticed:—The dog had perineal hernia which was pendulous and resembled exactly like the photo of a Dachshund with perineal hernia illustrated in "Surgical Diseases of the Dog and Cat" by F. Hobday, 3rd edition (Page 276. Fig. 163.) On examination, the swelling was soft like a kidney-shaped glandlike substance in the centre. On examining through the rectum, a pouch could be felt leading to the swelling. This appeared to have been caused by the tension of the pendulous swelling upon the wall of the rectum, the hernial sack running very close to the rectum. The hernia could not be pushed in until an enema was given and let out the faecal matter. It came out again when the animal walked fast.

Agreeing with my colleague at Calicut, I too advised the owner to continue giving laxatives. I also informed him that if he could risk the life of the animal I would attempt an operation. The animal was so much attached to him that he did not like to risk its life and hence it was taken away. The animal by this time became worse, the swelling also became more pendulous; it felt much difficulty in passing stools, and the straining became more acute. This time, he sent it again to me with a request to give a purgative to relieve its suffering and not to attempt an operation. This time too I wrote to him saying that there was no use of any palliative treatment to relieve its suffering, but to risk the animal and allow me to perform an operation. With great reluctance, however, he permitted me to do as I liked.

During the interval of the correspondence for a week the animal was kept at Cannanore itself and was given enema

daily. Soon after he permitted me to operate, the patient was given a purgative. The next day, (8-9-29), an enema was given and the operation was done with the ordinary preliminary antiseptic precautions.

Operation:—Shaved the part well and cleaned, Put the animal under chloroform by fixing it to the operation table in the abdominal position. Raised one end of the table by keeping two stones under its legs so as to gravitate the intestines forwards and relieve pressure behind. Pushed in the protruded bowels which easily slipped inward.

Put an incision from the above pouch, on the left of the anus directing downwards and outwards. Kept a finger of an attendant inside the anus so that the rectum may not be cut open while dissecting out the hernial sac, which was done with great difficulty owing to its adhesion with the walls of the rectum. Held out the sac so dissected and tried ligaturing it at the root. The root was very thick and as a purse-string suture there would not be very tight, the superior margin was cut little by little and sutured with silk thread. The structures on the two sides of the ring were also included in the suture so that the cut end of the pouch may not slip inward. After putting three sutures, a purse-string suture was easily put, tightened and knotted. Before cutting away the sac and the loose end of the thread, it was fixed to the sides of the ring with another suture, so that it may not slip inwards. The loose sac and the thread were then removed. The structures on both sides of the ring brought in apposition by interrupted sutures with silk and this covered the stump of the sac. Over this again a running suture with catgut including all the loose structures was put. The loose skin was then cut away and sutured with silk-wormgut.

From the beginning to the end, one finger of the attendant was kept inside the rectum as a guide, so that the walls of the rectum may not be included in the operation.

Applied Collodion and Boric Acid over the sutures. A bandage over the loins and between the two legs, was then put on.

It took one hour and 15 minutes to finish the operation. Kept the animal on a stand bedding in the open verandah and gave Strychnine Hydrochlor injection. After 10 minutes, the dog raised its head and began to struggle, getting up and

lying down and moaning. By so doing there was slight bleeding, through the operated wound. To avoid struggling, the animal was given injection of Morphin Sulphus. It was afterwards lying half unconscious, till late in the evening without struggling.

Two hours after the operation it was given Boveril. Panopeptin was given in the night. Only Boveril, Panopeptin and raw eggs were given 4 days to avoid passing faeces. After 4 days, milk was also given, which it took itself. A week after, bread was included in the diet. Rice was given 3 weeks after.

The dog had no difficulty in passing urine even after operation. Four days after operation Glycerine enema was given daily for about five days. After a week it was noticed that the dog did not at all feel any trouble in passing stools. The animal was able to walk from the second day onwards.

Wound was dressed daily with Tr. Iodine after wiping the part well with wet cotton wool. Four days after operation pus was found oozing out from the wound, probably due to the bleeding soon after operation. The wound, was syringed with Hydrogen Peroxide using a 20 c.c. Hypodermic Syringe and a needle having its sharp point rasped round. Two days after this, the catgut ligature used on the uppermost was protruding through the opening that was kept for drainage below. The catgut was easily pulled out and the wound was syringed again with Hydrogen Peroxide. The next day morning the dog bit the part and removed some sutures keeping the wound, slightly opened. Dressed the wound again with Hydrogen Peroxide and put a temporary retention suture. In five days' time the ulcer became healthy and so too edges of the skin were brought in apposition by suturing. After a few days pus was oozing out again and so syringing with Hydrogen Peroxide was continued through an opening below. The silk thread used in suturing the structures came out one by one, during the daily dressings, and the dog had a very good recovery. The hernial ring closed very well by granulating.

The accompanying photo was taken at the end of three weeks. The dog put on more flesh after rice was given for diet. It was discharged cured, one month after operation, (10-10-29).

Remarks:—The hernia on manipulation contained a kidney shaped gland-like substance. While operating I did not open the sac to bring out the herniated organs and examine what they really were fearing that, by so doing, I may spoil my operation altogether.

The hard substance inside the hernia was suspected to be kidney. But the improbability of that organ to slip so far back along with the bowel, without causing any general inconvenience to the animal is very great. Hence, I suspected it to be the prostrate gland which slipped with the bowels while they were forcing outwards through the ring formed. Can it be so?

I request my professional brothers to enlighten me on the matter. I am sure it was not bladder as it cannot be hard as a gland. Moreover the animal also did not at all feel any difficulty in passing urine.

Extracts.

DIAGNOSIS OF PREGNANCY.

BY

J. F. DEVINE GOSHEN, NEW YORK,

Reprinted from "Veterinary Medicine" November '29.

I have repeatedly emphasized the importance of diagnosing and differentiating pregnancy, particularly early pregnancy, from pathological conditions of the uterus that might simulate pregnancy, in other words the differentiation of pregnancy, so as to avoid the killing of the delicate embryo by severe manipulation of the horn or horns; or the equally certain death and expulsion of the fetus by pressing out of the ovary, what is termed the true corpus luteum, or the corpus luteum of pregnancy.

I confess that I do not know how to sufficiently emphasize this danger as it seems to be one of the most common and constant errors of inexperienced operators, and I doubt if there is any other thing that so enrages an owner as to have a veterinarian abort an animal that the owner has been sufficiently anxious about to consult an expert to determine if possible why the cow has not bred more promptly or why she is not showing regular periods of estrum.

I have repeatedly cautioned against the unreliability of any breeding history that may be presented to us. It matters not how accurate the records are supposed to be kept, or how certain the attendant is as to his

information, we must not let this mislead us. The information we gain from examination must be our guidance and other information simply accessory.

It is not an easy matter to give instructions for the diagnosis of early pregnancy, still there are certain things that aid us materially, and when combined make a diagnosis about as accurate as most things we do,

The history will usually be of some value, particularly, where an animal has been a regular breeder and has passed one or more periods of estrum, but when it is desired by those in charge, as is so often the case at the present time, in large herds, that the animals be examined to determine definitely whether or not they are pregnant, so that there will be no delay in giving the necessary attention to have them breed at the desirable time.

It is common knowledge that ordinarily when an animal conceives she ceases to have periods of estrum, but this is not always the case; we not infrequently see cows take the service of the bull at regular or irregular intervals, during a part or the whole of the period of pregnancy, consequently this weakens the reliability of the cessation of estrum. Conversely, animals that are not pregnant, ordinarily have regular or irregular periods of estrum, but again very often a corpus luteum fails to be absorbed between the estrual periods, and such will cause a cessation of estrum for an indefinite period just as certainly as a corpus luteum of pregnancy; therefore from the minute we enter the vagina, until we have examined carefully, the cervix, horns and ovaries, it is well to proceed with the most delicate touch and careful manipulation.

How early can pregnancy be diagnosed?

The question is asked frequently how early can pregnancy be diagnosed? I can best answer that by stating that in herds where I make regular examinations to verify the records and to determine if the animals are breeding, unless there is some particular reason I prefer not to examine an animal for pregnancy, until at least five, and preferably six weeks after it has been bred. I will admit that where the organs are ideally normal, and if upon examination the cervix be found closed tightly and the vagina sticky, particularly near the cervix, and there is found a distinct asymmetry of the two horns, but not asymmetry enough to give any definite information by palpation of the horns alone, and if in addition a distinct corpus luteum be found standing out on the ovary, corresponding to the enlarged horn, and the history is that the animal was bred four weeks previous, one would doubtless be justified in stating that she was four weeks' pregnant, but this is an ideal co-ordination.

But, on the other hand, in examining an animal that has been bred four weeks, one may find a cervix that in no way indicates the formation of a seal, even though the animal be pregnant. One may also find in of middle-aged cow that has been bred several times, two horns similar as to size, particularly if she is this time pregnant in the left horn when her previous pregnancies have all been in the right horn; or if there is a slight

asymmetry of the horn, one may fail to outline a distinct corpus luteum in that ovary, even though she be pregnant with the result that one finds one face to face with the proposition that it is either a pregnant horn or a horn slightly catarrhal.

If the ovary is enlarged and one is in doubt whether it is a true corpus luteum or a cystic degenerated corpus luteum, there is no way to determine except by putting sufficient pressure on the ovary to remove the corpus luteum of pregnancy if there be one, or to crush the deep-seated cyst or cystic corpus luteum, if that be the case. The natural and safe thing to do is to leave the ovary and horn alone, for at least two weeks longer.

The result of such an examination is unsatisfactory both for the veterinarian and others, which is the reason why, as stated above that unless there is some particular reason I prefer not to attempt to diagnose pregnancy under six weeks.

On the other hand, it is my belief that six week's pregnancy is practically one hundred per cent diagnosable. When the rectum has been emptied, the cervix is grasped with one hand and drawn gently back, and with the other hand in the rectum on the floor of the pelvic cavity or just anterior to it, the uterine horns will be found. The bulk of the fetus and its liquids, and the thinness of the uterine horns at this early period are really quite astonishing. It already has assumed the feeling of an intestinal horn filled with liquid, and in those uteri in which the horn enlarges in circumference rather than in length, it is just about the size that man's hand can cover nicely.

Occasionally one finds a uterus in which the enlargement seems to affect the entire horn rather than the middle part. In these cases the fluctuation and pronounced thinness of the horn, is not so noticeable, and it is well to follow the enlarged horn to its end and gently locate the corpus luteum.

After one has palpated a few horns of the type, they are usually as readily diagnosable as one in which the fetus and fluids are more circumscribed.

Changes Easily Noted.

From six weeks on there is such a daily increase in the size of the pregnant horn that it is almost perceptible from day to day so much so, that after one has had considerable experience in examining pregnant uteri, one can often be of service in straightening out the breeding records of a herd, it being possible, usually from six to twelve weeks, to determine the age of a fetus to within at least three or four days. After twelve weeks the uterus, from weight begins to draw ahead gradually and while one can plainly palpate the top and sides of it, still ordinarily one cannot raise it in the hand and get the full outline so as to estimate the size, as can be done earlier. It is well always to locate the non pregnant horn, in very early pregnancy if at all in doubt, and it will be found somewhat like a small appendage growing out from the pregnant horn; and if still

in doubt as to the diagnosis, the cervix may be drawn back and examined more closely to determine if a seal is forming. If a seal is plainly visible, it is of course a very good indication of pregnancy which is also true in cases where the seal is not visible, if particles of the seal adhere to a small catheter passed part way into the cervix; but again a substance closely resembling a seal is occasionally found in the cervical canal of a non-pregnant animal, or unfortunately any evidence whatsoever of a seal may be quite wanting in a pregnant animal. However, all of this confusing examination is unnecessary to the experienced and fluctuating operator, if the animal is six weeks pregnant. In twin pregnancy, naturally, there is not the asymmetry of horns, but there is the same fluctuating enlargement with the thin firmness of the horn walls to differentiate it from catarrh of the uterus, and the thin smooth feeling, with the quick moving liquid to differentiate it from a uterus suffering from pyometra, with a denser feeling and a slow moving liquid.

From the third month on there is naturally considerable change in size and form of the uterus, to accommodate the volume and position of to fetus and its membranes. The walls become tenser, the fetal fluids are quite easily, recognized and from about the third month on the cotyledons may be palpated, and at the fifth month it is sometimes possible to palpate the fetus floating in the fluids, becoming more and more recognizable until about the sixth month, when the fetus may rather suddenly drop to the floor of the abdomen and be entirely out of reach. until around the eighth month, but one is always justified in suspecting advanced pregnancy when, on entering the vagina, the cervix is found pulled well forward. These suspicions are further substantiated even if one cannot locate the uterus, but finds the fundus drawn as a flattened band over the anterior border of the pubis. At this period of pregnancy much reliability may be placed on the enlargement of the middle uterine artery, which is usually enlarged to one-half inch in diameter and the throbbing is plainly felt through the rectal wall.

It is true that a growth in the uterus might be of sufficient weight to draw it down, as does the fetus, but in such cases the absence of the enlargement of the uterine artery and other obtainable information, such as the last breeding date, may be of assistance in the diagnosis.

Fortunately, from the seventh to the ninth month there are certain changes in the size of the abdomen and the position of the fetus, which enable one usually to get rather definite information as to the approximate age of the fetus.

When the fetus acquires sufficient weight to pull it downward and forward on the abdominal floor, the anterior extremity of the gravid uterus lies close to the diaphragm. The weight of the fetus and the horizontal position of its body tends to keep it in an anteroposterior position. By the arrangement of the circulation, the anterior portion of the fetus in early life receives more arterial blood than the posterior, which causes the anterior portion, from greater weight, to rest downward and toward the fundus, rather than toward the conical extremity of the

horn, but later, when the hinder parts become more developed, they exceed in weight the anterior part of the body. By this time the uterus is lying upon the abdominal floor and naturally the posterior part occupies the lowest point, with the head still pointing toward the fundus, and, owing to the size of the fetus and the shape of the horn, the fetus has a fixed position, hence the majority of presentations are anterior.

The position of the fetus also explains why, when attempting to locate, say a seven months' fetus, by ballottement, it may be necessary to reach quite under the abdomen; while as pregnancy advances it becomes much simpler to locate the fetus in the right flank, there being a gradual advancement backward and upward toward the pelvis until near the end of pregnancy, when the anterior extremity of the fetus approaches the inlet of the pelvis, consequently, when once the fetus can be located by ballottement, one can again get fairly accurate information as to about the period of gestation, from the location of the fetus from the outside, which of course may be confirmed by rectal examination if desirable.

STERILITY IN CATTLE.

BY

J. F. DEVINE GOSHEN, NEW YORK.

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It is at once apparent that not to crowd out important articles on cattle practice in this number, an article on sterility must be principally introductory, with no thought of dealing exhaustively with any of the impediments associated with sterility. There are but two possible ways that I know to write an article of this sort.

One would be to present much of the information which we have, which meagre though it is, would require several issues of this journal to include it.

The other is to approach the subject as one might in a lecture to a class of practitioners.

After visiting with a large number of cattle practitioners in the United States and Canada and attending, as I do, many meetings each year, in different sections of this country, I find our colleagues, interested in breeding problems. (a far better name than sterility) are torn by conflict between at least two classes.

One is the so-called ultra-scientific men who have no patience with the practitioner whose knowledge and experience is limited and the other—and perhaps the more dangerous—is the fellow who poses as an expert and dispenses much advice before his utter ignorance on the subject is discovered. By following the latter's advice, the practitioner may do incalculable harm to his reputation in his community, which perhaps discourages him and gives him reason for condemning everyone attempting to teach this work.

Naturally, as in most things, there is a middle way. The subject is not as simple as docking and castrating; but I have found as I go about on consultation work, that the average Veterinarian, especially the one who is particular in his every day practice about the way he does things,

especially as to surgical cleanliness, can be taught easily, to do the simple things and do no harm. Fortunately the cow will stand a great deal more abuse than the mare. But even with the cow, there are ever present certain dangers for the novice or crude operator. One can place a crude forceps on a cervix, tear and infect it; he can likewise open and infect uteri that should never have been touched and probably induce adhesions, making breeding hopeless in an animal that might otherwise have bred, had she received the proper treatment and no abuse.

As in all things associated with surgical procedure, a knowledge of the normal anatomy is of first importance. I know of no better way to get this knowledge than to make examinations at every possible opportunity. This we can do in our general practice when examining patient for almost any cause and, if the examination is made in a clean careful manner it should not in any sense aggravate an ordinary illness. Then there is the abattoir, which is a particularly good place. When I began giving attention to this work, some twenty years ago, there was no literature available on it and had I not had access to a near by abattoir, I surely would know even less than I now know about the subject.

On the other hand, I have repeatedly said to men who are in earnest about this work, that, with a little help, it should be possible for them to learn more in one month to-day, than some of us learned in five years, in the past.

The first thing is to acquaint yourself with the normal cervix, uterus ovaries and tubes, keeping in mind that they vary, depending on the age of the animal, the breed and size, and whether virgin, primipara or one that has had several calves. One must always reckon with the asymmetry of the horns, in animals that have borne several young. For instance, if we should take a middle-aged cow, one that has had several calves in the right horn, that horn will, when non-gravid, approximate the size of what the left would at six weeks pregnancy, providing that it were the first pregnancy of the left horn. In addition to this, it will have much the same feel excepting a gravid horn gives evidence of containing fluid to the experienced fingers.

After one has learned to locate the organs, without the use of instruments, and instruments are absolutely out of place in an ordinary examination, then the next thing of importance is to be so careful in every procedure as to not abort an animal that you are called upon to examine. With the hope of helping my fellow practitioner on this point I have prepared an article on the diagnosis of pregnancy, which will be found elsewhere in this issue.

Assuming we are now in a herd, say of from fifty to one hundred cows with some fifteen or eighteen animals to examine. These are giving more more or less trouble or we would not have been called, what are we apt to find? This will depend on many things. Perhaps one of the things that we are ever dreadful of is infection, and when we think of infection, we think of the Bang organism, producing as it does, coty-

ledonitis and placentitis with the resulting retained placenta, endometritis, cervicitis, and in some cases, adhesions. Consequently, infection is rightfully regarded as one of the most likely causes of the trouble.

Then again, we must take into account whether this herd is working under high pressure. If so, we must not overlook nutritional imbalance.

Only recently, I was called in consultation with a colleague to examine the world's record Jersey cow. She has not had a calf in nearly three years, no evidence of infection whatever, just simply milked to pieces. Her ovaries are cystic and her uterus flabby, thin and lifeless and has the feel of a handkerchief soaked in oil. Probably present workers on nutritional balance would describe it as hypocalcemia hypophosphatemia, perhaps as aphosphorosis. Irrigating her uterus and other such foolish acrobatics would be of no use. The first thing to do is to try to build back her nutritional balance if possible. If, from repeated examination of her organs, and the general appearance of the animal she seems to be improved then crushing the cysts at regular intervals of not more than five or six days apart and rolling the uterus between the two hands (which is termed massaging and which some, with little knowledge of the subject, question its merits) will be in order.

Let us take a case in point. I have just sent from my paddocks near my laboratories, a beautiful Jersey cow, that cost about 6,000,00, \$ some four years ago. She was with calf when she was brought; dropped a normal calf at the age of four years, was put on test, milking over eight tons of milk and nearly one thousand pounds of butter fat. They delayed breeding her until the sixth month, with the result that she did not conceive after repeated services. A veterinarian, who is interested in breeding troubles, and his father who is a veterinarian, treated animal carefully and capably, with particular reference to uterine irrigations for about two years, but with no avail. We were called in consultation and, while there was a slight discharge around the cervix, which is perfectly reasonable to expect, when these organs have lost tone and the normal germicidal secretions are lessened and particularly after instrumentation, still it was our judgment, that her trouble was largely, if not solely nutritional. It was arranged to send her to our hospital. For the first three months, sole attention was given to her diet, feeding her what we consider the proper mixture of calcium, phosphorous and yeast. Her physical condition, which was very bad, gradually improved. She took on flesh, not with standing that she got but two pounds of grain daily, just enough to induce her to eat the mineral and yeast mixture. After a couple of months she began having normal heat periods, which had not been the case for nearly two years. We douched her vagina with an alkaline solution, massaged her ovaries and uterus a few times and had her bred. She did not conceive from the first service but, as her organs seemed in every way normal and clean and her condition good, we did nothing more for her but bred her again. She conceived from the second service, which was confirmed by an examination, some seven weeks later, and was then returned to her owner, who was so pleased, he offered a cheque for twice the amount of our charge.

I cite this case particularly to point out the unfortunate prejudices of different ones on this subject. One man will ridicule irrigating the uterus, for any reason, which, of course, in the case of pyometra, severe chronic endometritis and cervicitis is of positive aid, if done with a solution of any preparation that will actually cleanse, do no harm and stimulate the normal germicidal secretions. For this, my choice is sterilized sodium chloride triturated with permanganate of potash.

Another man wants to douche every uterus, which is positively ridiculous and still another man will douche a cervix with a few drops of water leaking from a little reservoir hung up, which to my mind is literally wasting his time, while others will advocate great quantities of hot water thrown against the cervix with force. This latter and the proper use of bacterins, is the method I prefer.

Perhaps I could answer any criticism of this method by stating there have been many, many cases of chronic cervicitis sent to our hospital that have been treated over long periods by others and finally condemned and that nearly every one of these have been sent home either in calf or ready to breed. We all realize this could happen once in a while, but when I state, many I mean many. So naturally I can recommend this procedure to my brother practitioners as results are the thing and the only thing that keeps the practitioner going.

Perhaps the best thing I can say to the inexperienced to give him hope and courage is:

First, understand the anatomy, always improve every opportunity by examining normal and abnormal animals, then practise with great care and particularly guard against too much instrumentation.

We must ever be on the alert for erroneous breeding history. I have mentioned before the fact that I was once asked to go to South Carolina to examine a very expensive imported pure bred-white face. The history was that she had calved some seven months before and had not had any heat periods since. However, I found a five-months calf. When I informed the herdsman that the cow was with calf, he explained to me that it could not be possible as the nearest bull was two miles away and the cow had never been taken there for service or out of the field near the stable. However, the fact that she dropped a normal calf in due time settled that.

But that is simply one of a number of cases, where I have found animals pregnant that were being examined, on account of *bad breeding histories*. So watch out.

I repeat, I regard the diagnosis of pregnancy as perhaps one of the first and most important steps for the man new in the work.

To sum up, some of the things we may find when called to examine a cow that is not breeding are:—

1. She may be pregnant.
2. She may show evidence of infection, manifest in many ways either by cervicitis, endometritis, pyometra, cystic ovaries or adhesions. Several of these conditions may exist in the same patient.

3. Nutritional troubles must not be overlooked.

Malformations may exist even in the cow that has had one or more calves, I recall one case of absolute occlusion of the vagina by adhesion of its walls in a cow that had had two calves previously.

4. There is what I have for convenience termed the "left handed" cow, that is one in which the right ovary is not functioning. We usually find one or more of these in every good sized herd, that is giving trouble. Cows do not conceive as easily and as regularly from the left ovary as from the right one. Don't ask me why. The architect did not consult me in the making.

5. Then we are quite sure to find some cows that need nothing but daily douching of the vagina with an alkaline solution a week or so before being bred. In other words, there is just enough of a catarrhal condition to entangle or kill the semen and douching takes care of that. Here is where the quack sometimes wins out by "opening them up." If his hands were not too filthy, he cleans enough of this accumulation away and, by manipulation excites secretions sufficiently, in some cases, to allow the animal to conceive.

Cows that are apparently normal (and I receive letters daily describing such cases) probably are in some cases as normal as can be determined, but we must not forget there are many minute changes that cannot be detected by the eye or the fingers. When these animals are stabled have them doused a few times weekly for a while, put them on a mineral and yeast mixture and turn a potent bull with them. The probabilities are they are not ovulating normally and should be bred oftener than if normal. If they have not conceived by spring, a hillside and a vigorous young bull is the best treatment we know of.

In any case do not overlook the bull as possibly responsible for a greater or less degree of sterility in the herd; particularly if he be aged. He may appear normal and yet produce spermatozoa of low vitality.

AN OUTBREAK AMONG FOX HOUNDS OF THE MADRAS HUNT CLUB.

(Reprinted from the *Annual Administration Report of the Madras Civil Veterinary Department, 1928-29*).

An epidemic started towards the end of December last among the fox hounds which was of a very acute character, of very short duration terminating fatally in the majority of cases. The chief symptoms noticed were an icteric condition of the visible mucous membranes, punctate hæmorrhages in the lips, discoloration of the urine, conjunctivitis, complete loss of appetite and a pendulous condition of the abdomen due to an effusion of a sanguineous fluid. There was no temperature reaction and the course varied from a day to a fortnight.

The post-mortem lesions presented by all the hounds that succumbed to this disease were all identical with one another in the majority of its respects but differed in some cases in very minor particulars,

Icteric condition of the visible mucous membranes with punctate hæmorrhages in the lips and subcutis being more marked in the region of the flank and the middle region of the sternum, sanguineous effusion in the thoracic and abdominal cavities, hæmorrhages into the intestines more especially into the jejunum and ileum, petechial hæmorrhages in the bladder characteristic changes in the liver and the kidney both being pigmented yellow, punctate hæmorrhages in the lungs and simulating the so-called butterfly appearances so characteristically described as prominent lesions in leptospiral infections as will as in the epicardium formed some of the most important lesions,

Inoculations of blood from hounds suffering from the disease as well as from the liver of those that died made into guinea-pigs caused their death and in these, lesions identical with those due to leptospiral infections were found. In one of the inoculated guinea-pigs that succumbed to this disease as the result of inoculation leptospira could be demonstrated in the liver emulsion.

BACTERIOPHAGE.

BACTERIOPHAGY AND BACTERIOPHAGE

BY

F. D'HERELLE.

(Reprinted from the *Transactions of the 7th Congress, British India 1927 Vol. II*).

In this short communication I shall not be able to dwell upon all the characteristics of the phenomenon of bacteriophagy. I shall consider particularly the question so often discussed, of the nature of this principle. Since 1920 several hundreds of memoirs have been published on this question; moreover, the discussion has been conducted in a very peculiar manner. Since 1917 I have shown that the characteristics of the phenomenon were only to be explained if the bacteriophage is considered to be a living organism; in 1923 I furnished a physiological proof of this which does not admit, I believe, of any discussion. Yet, none of the authors who proclaim the enzymatic nature of the bacteriophage has ventured to explain all the characteristics of the phenomenon on this basis, nor attempted to discuss the physiological proof which I have furnished. As four years have elapsed since then, I am justified in concluding that it is indisputable.

At first sight it might be thought that the importance of this question is of a purely philosophical order, but such is not the case. In reality, the whole question of the nature of ultra-viruses is involved and it has its repercussions on the one hand upon the study of infectious diseases of plants and animals caused by these agents, and on the other hand upon the problem of recovery from infectious diseases, in general, which, as we shall explain in another communication, is not dependent upon a pheno-

menon of immunity, as hitherto believed, but upon the behaviour of the bacteriophage.

It is quite easy to isolate races of bacteriophages from the faeces of a patient suffering from an intestinal infection, obtained at the time when the morbid symptoms are regressing. At this time a bacteriophage capable of destroying and dissolving the pathogenic microbe, *in vitro*, is found in the faeces.

The bacteriophage passes through filter candles, tight enough to retain all cultivable bacteria; it is sufficient then to emulsify carefully one cubic centimetre of faeces in a slightly alkaline medium, the ordinary laboratory bouillon, and filter it through a Chamberland, Berkefield or other suitable candle. The bacteriophage will be found in the filtrate.

Take a tube containing a young culture of cholera vibrios, for example; add to it one drop of the filtrate obtained from the stools of a convalescent cholera case. After a variable interval of time depending upon the activity of the bacteriophage present, say, between 2 and 24 hours, all the vibrios are dissolved and the medium is perfectly limpid.

Add to a new tube of young culture a trace, one millionth of a cubic centimetre of the clear liquid contained in the preceding tube after lysis is complete; the same phenomenon of dissolution is reproduced and we can continue the series of passages indefinitely. A double phenomenon is produced here, destruction and dissolution of the vibrios and at the same time multiplication of the bacteriophages. What was a culture of vibrios is now, at the end of the process, a culture of bacteriophages.

Let us recall that the dissolving power of the various bacteriophages which can be isolated is extremely variable and it is not a question of quantity; the billionth part of a cubic centimetre of a suspension of a powerful bacteriophage will be sufficient to obtain, in a few hours, the complete lysis of all the bacteria contained in 10 c. cs. of a young culture, while 10 c. cs. of a suspension of a weak bacteriophage will only produce a partial dissolution indicated by a slight diminution in the opacity of the culture. This partial diminution may only be momentary, the medium becoming more and more turbid because the bacteria are capable of acquiring resistance against the bacteriophage. In that case there is the formation of a phago-resistant strain which develops in spite of the presence of the bacteriophage.

The question of the resistance of bacteria to bacteriophage is extremely complicated. Although it is of great interest I cannot deal with it here, but it is sufficient to say that the phenomenon of bacterial mutations is for a very great part, if not entirely, dependent on it.

The first question that occurs in considering the nature of the bacteriophage is that of its physical nature. Does it exist in a state of solution in the liquids which contain it or in the form of granules in suspension? The first experiments that I carried out showed that the second hypothesis was the true one and that the size of the particles was equal to those of a micella of serum globulin. This conclusion, at first vigorously disputed, is accepted to-day by every author. The diameter

of the granules has been determined by various methods (ultra-filtration, optical methods); the most careful experiments fix their diameter at 20 to 35 millimicrons.

Experiments carried out by Levaditi show that the corpuscles of vaccine virus, herpes, rabies and of bacteriophagy are all of the same diameter. Recently Bechold has succeeded in staining and observing bacteriophage as well as cow-pox corpuscles by the ultra-microscope by means of a very delicate method consisting in first isolating the corpuscles from all other organic matter present and then precipitating colloidal silver in a condition of maximum dispersion on each corpuscle.

The chemical nature of the bacteriophage corpuscle is still undetermined; in any case it does not seem to consist of a simple protein because it resists the action of trypsin (which destroys, for example, bacterio-toxins and anti-toxins). It is probable that they are composed of nucleina.

Finally, what is its biological nature? The fact that it reproduces at the expense of living bacteria only permits two hypotheses, either it is derived from the bacterium itself and, in that case, is an enzyme or it is independent of the bacterium and so can only be a living autonomous being which utilizes bacterial substance in order to reproduce. No other hypothesis is logically possible.

Before any discussion took place I had, in 1918, already considered the possibility of its enzymatic nature and had rejected this hypothesis because it could not explain all the characteristics of the phenomenon; for example, the fact that bacteria can acquire resistance to the action of a bacteriophage. Consequently, in the enzyme hypothesis it must be admitted that the bacterium responds to the stimulus caused by a bacteriophage by creating a product identical with that which caused the stimulus. But we know that, on the contrary, living matter responds to any stimulus whatever by an antagonistic reaction which results in the production of an antibody, whenever the phenomenon is possible, and this is exactly what happens in the case of the bacterium in its struggle against the bacteriophage; it reacts and acquires resistance. The production of the bacteriophage by the bacterium and the resistance acquired against the bacteriophage are two incompatible phenomena. Let us note besides, that if the fact of the resistance of the bacterium is in favour of the living nature of the bacteriophage, it is by no means a proof in the strict sense of the term. We shall see in a moment what are the conditions which supply an absolute proof; but before coming to this let us examine the principal argument of the supporters of the enzymatic nature of the bacteriophage. It is this. There exist, in nature, strains of bacteria which contain bacteriophages that can be isolated experimentally.

Whenever an author puts forward an argument in favour of an hypothesis he should necessarily take, as the basis of his reasoning, a principle admittedly correct, that is to say, an axiom. In saying, 'There exist in nature strains of bacteria which contain bacteriophages therefore the bacteriophage is produced by the bacterium itself,' it seems to me that the axiom on which this depends can only be the following:—

'Whenever two principles are found together in nature, one of them is produced by the other.' It is sufficient to be in touch with facts of general biology and particularly to have some knowledge of Buchner's work on symbiosis to see that such a principle is false, that symbiosis is a general fact in nature. A multitude of examples could be quoted. Here is one that reproduces, on a large scale, the phenomena which occur in the interaction between bacterium and bacteriophage. It is known that in tropical and even sub-tropical regions all bovines are infected with *Piroplasma bigeminum*, although their health in no way appears to be affected. However, *Piroplasma bigeminum* is a formidable parasite if it is introduced, as has often been done, amongst animals from uninfected temperate regions. These animals contract piroplasmosis very rapidly after their arrival and die. In the case of bovines of tropical regions there is a symbiosis-ox-piroplasma-while in the case of animals from uninfected regions it gives rise to a fatal disease. The accidental symbiosis, bacterium-bacteriophage, cannot, therefore be considered as a proof that the bacteriophage is produced by the bacterium for this phenomenon may be analogous to numerous facts of identical symbiosis. Bacteriophage exists in the intestine of every individual side by side with bacteria which are habitual or accidental inhabitants, and there is no fact known in nature to preclude us from thinking that a symbiosis can be formed between bacteriophages and bacteria which have acquired resistance just as there exists a symbiosis, ox-piroplasma, the ox being resistant and the piroplasma virulent since it is able rapidly to produce a fatal disease in the case of cattle from an uninfected region.

In reality the argument has no value, either in the favour of the enzymatic nature of the bacteriophage or in favour of its nature as a living autonomous being and this is equally true for all indirect arguments that can be put forward.

Shall we say, as some have said, that the bacteriophage corpuscle is too small to be living? Is life then a geometrical property? Certainly not, and since it is not, a geometrical property cannot be used for measuring life. Every phenomenon must be measured with its own particular standard; life is a physiological property and it is to physiology that we must appeal; physiological standards must be taken for measuring life, to know if a being is or is not living.

The problem can be set forth in the following manner:—Are there any particular characters common to all living beings to the exclusion of all others? What are these characters? Does the being under discussion possess these characters? If so, the question is irrevocably settled.

The characters common to all living beings exclusively are (1) auto-entiation it from all other living beings, even those belonging to the same species; (2) the power of chemical assimilation, the faculty of transforming heterogeneous substances into homogeneous substances in harmony with the being that possesses this faculty and, finally, (3) the power of adapting

itself to surrounding conditions. Such are the characters which together constitute the criterion of life.

In the present state of science, the proof of autonomy cannot be furnished for all beings considered as living. Here is a striking example; if the living nature of the Piroplasmata were in doubt, if some author advanced that they were corpuscles resulting from an alteration of the cells of red cattle and explained the disease in a manner analogous to that employed by histologists, in general, to explain cancer, it would be impossible to give any proof to the contrary because we could not demonstrate that what we call 'piroplasma' is an autonomous being, and consequently that it must assimilate in order to reproduce.

Now, this proof of autonomy which cannot be furnished even for many organisms unanimously considered as living, is possible where the bacteriophage is concerned.

The fact that every race of bacteriophages which can be isolated presents peculiar characters, different from those of all other bacteriophages, is already an indication of autonomy since uniformity is, by contrast, a general character of chemical bodies. But it is possible to go further and by direct experiments to give an exact proof of autonomy. I have furnished ten such proofs, bringing different properties into play, as a result of experiments carried out by me as well as by others.

Here is one. There exist races of bacteriophages which are active against a single strain of staphylococcus only and without action on all others. On the other hand races of bacteriophages can be isolated which attack a very large number of different strains of staphylococcus. Thus one race of bacteriophages which we shall designate by the letter *v* attacks only one strain of staphylococcus *V*; on the other hand the race *h* attacks a very large number of strains and amongst others the strain *V*. It is evident that if the bacteriophage is derived from the bacterium, if it is a bacterial product, then the monovalent character of the bacteriophage *v* is derived from a special character of the strain of staphylococcus *v* at the expense of which it multiplies. On the contrary, if we can prove that this character of monovalence specifically belongs to this bacteriophage, then it is independent of the bacterium. It is easy to prove which of these two alternatives is true. Let us make the polyvalent bacteriophage *h* multiply at the expense of the strain of staphylococcus *V*. After a number of passages sufficient for all the corpuscles *h* inoculated into the first culture of *V* to be certainly eliminated by dilution, say, after 20 or 30 successive passages, we prove that the bacteriophage *h* has completely retained its character of polyvalence. Monovalence or polyvalence is thus a character belonging specifically to the bacteriophages and absolutely independent of the bacteria at the expense of which they reproduce. The bacteriophage is therefore an autonomous being:

Shall we say that the bacterium may perhaps reproduce a lytic enzyme of the same nature as that which produced the stimulus? Such a reaction would be strange indeed and contrary to all known biological facts and, further, the possibility of exalting the virulence of the bacteri-

ophage by passages already shows that that is not the case. But here is still a better proof.

Recently Flu has isolated a race of bacteriophages active at the same time for the bacillus of Shiga and of Flexner, *B. coli* and *B. pestis*. He warms a suspension of this bacteriophage at a temperature of 58° C. and shows that the activity persists for *B. pestis* and is entirely destroyed for *B. coli*. Flu then makes a large number of passages with cultures of *B. pestis* and shows that the power to dissolve *B. coli* is regained little by little. Here, then, is a character, 'Virulence for *B. coli*' which is destroyed at a temperature of 58° and reacquired by culture at the expense of *B. pestis*.

The illogical objection which might have been made to the first experiment can no longer even be invoked here.

It is thus experimentally demonstrated that the bacteriophage possesses characters peculiar to itself and independent of the bacteria at the expense of which it multiplies. It is therefore an autonomous being. On the other hand since this independent being reproduces at the expense of bacteria which are foreign to it, it necessarily utilizes bacterial substance to secure its development and this it does by virtue of an act of assimilation.

This autonomous being endowed with the power of assimilation is equally endowed with the power of adaptation, I have indicated, and the fact has been confirmed by various authors, that races of bacteriophages which cannot act in acid medium may become adapted, by a series of cultures in media of decreasing pH, to produce total lysis in media of pH 5.8. where the same bacteriophage, non-adapted, is totally inactive. I have adapted bacteriophages to the action of glycerine. Prausnitz has succeeded in adaptation to phenol and corrosive sublimate in such a manner that the adapted races survive in media containing quantities of these antiseptics sufficient to destroy the same, but non-adapted, bacteriophages. Asheshov has also carried out adaptation in citrate of soda. Prausnitz has succeeded in adaptation to anti-bacteriophage serum.

These numerous experiments do not allow of any doubt of the fact that the bacteriophage possesses the power of adaptation.

Autonomy, the power of assimilation and of adaptation together constitute the criterion of life; all beings which possess these characters and the bacteriophage is one of them, are undoubtedly living.

The bacteriophage, a living being, is therefore an ultra-virus parasitic on bacteria and provokes in them an extremely contagious infectious disease manifesting itself to us through the phenomenon of bacteriophagy. In another communication we shall see the consequences of this on the course of infectious diseases in nature.

PSITTACOSIS.

In view of the incidence of Psittacosis amongst human beings recently on the Continent and the campaign against Parrots, as being the causal factors of this disease, the following extract from Wallis Hoare's "System of Veterinary Medicine" will be read with interest by the profession:—

(Reprinted from Wallis Hoare's "System of Veterinary Medicine"
Vol. 1—Page 472.

Definition. A contagious septicaemia of parrots and parrakeets, characterised by fever, great weakness, stupor, and diarrhoea. It is considered to be caused by a bacillus of the paratyphoid, B, (human), or swine fever type, and alleged to be transmissible from bird to man and from man to man.

Etiology. Although contagion, either direct or indirect plays a part in the dissemination and maintenance of this disease, it is of lessor importance than the conditions under which the affection generated. It usually arises in birds during the period from the time they are first caged to the time they are landed in Europe. When one considers that freshly-caught birds are crowded so thickly together that they can scarcely move in boxes or bamboo cages, their food flung on to the floor of the cage, which is soon covered with faeces, accumulating and decomposing for days or weeks together, and from which the birds have to pick it; that they are often kept short of water, and maintained for a rather long period in a very high temperature, and then somewhat suddenly submitted to a low European temperature, especially in inclement weather, often after a boisterous passage on board ship, there is no wonder that the system becomes weakened, and the constant passage of saprophytic germs enables these to become virulent, and thus set up disease in creatures that have hitherto led most sanitary lives.

Every tissue and discharge of the bird is virulent. A healthy parrakeet placed in an infected cage, or a clean cage containing infected feathers, soon becomes ill, and dies within three weeks from the time it was first placed in the contaminated cage. Contaminated food and water, utensils, and hands may also transmit the disease. Mice may contaminate the food by their feet being soiled during their wanderings in infected cages.

Bacteriology. The incriminated organism is included in Lignieres' group of Salmonellos, of which the so-called bacillus of swine fever is taken as the type. It is a short and fairly thick bacillus, having rounded ends, aerobic and anaerobic, and extremely mobile. It does not take Gram. Cultures are obtained in all media having a neutral or slightly alkaline reaction. On peptonised broth at 37°C, the culture forms rapidly and abundantly. The medium is uniformly turbid, and gives a cloudiness which the least shake breaks up and causes to fall to the bottom of the tube. On gelatine inclined, it gives at first a shining, transparent, bluish, iridescent trail, which soon becomes thick, opaque, creamy, and porcelainous white. The medium is not liquefied. On agar its growth is very

rapid, and forms a thick, whitish, opaque layer, without special characters. On potato the culture is similar in appearance to that of the *Bacillus coli communis*. It does not ferment lactose nor coagulate milk.

By inoculation it is pathogenic for the parrot, parrakeet, pigeon, fowl, mouse, rabbit, guinea-pig, etc.

The bacillus is found in the blood, bone marrow, feathers, and other parts of the sick bird. In man it has been found in a pure state in the heart-blood. It has never been encountered in the sputum, urine, blood, and serosity, in living subjects.

Achard and Bensaude have isolated Nocard's bacillus in a case of sternoclavicular abscess, and in another of purulent cystitis. In neither instance was it connected with the parrot disease. Probably the isolated organism was only the *Bacillus paratyphosis*, B, (human) type.

The antityphoid serum only slightly agglutinates it; the minimum quantity of a serum capable of agglutinating the *Bacillus typhosus* is without any action on Nocard's bacillus. The serum of persons affected with alleged psittacosis agglutinates very irregularly Nocard's bacillus.

Gilbert and Fournier have isolated an analogous microbe from the intestinal contents of parrakeets having all the appearance of good health.

Mode of Contagion.—It may be transmitted by infested cages, contaminated food or water, feeding utensils, feathers, and sick birds. As the bacillus resists desiccation, it may also be conveyed by the atmosphere; but ingestion seems to be the usual way of its gaining an entrance to the system.

It is alleged that it is conveyed to man by feeding infected birds out of one's mouth, by contamination of the hands from handling sick birds, infected cages, or soiled feathers, and that it may be conveyed from man to man.

Inoculation of the cultures obtained on various media under the skin or into the muscle gives varying results. Sometimes death occurs in two or three days, but usually after a week or two, when the animal becomes very much emaciated, accompanied by a profuse diarrhoea. Recovery rarely takes place, and then only after a lengthy period of convalescence. Ingestion and inhalation produce similar but slower effects. Intratracheal, intraperitoneal, and intravenous injection kills the parrakeet, pigeon, fowl, mouse, rabbit, and guinea-pig, in less than forty-eight hours.

Period of Incubation.—By natural infection or contagion symptoms of the disease manifest themselves within three or four days to as many weeks. Occasionally they are delayed beyond this period. Very often the disease declares itself a few days after the arrival of the birds in this country.

Mortality.—This is rarely under 50 per cent of the total. Frequently quite 90 to 95 per cent succumb; some have computed it at 999 per 1000.

Symptoms.—The bird shivers, loses its appetite, seems dull, has a frothy, greenish diarrhoea, which sometimes contains blood, becomes drowsy, disinclined to move, and has great thirst. After a short period the wings droop, the feathers stand open and have lost their gloss, the eyes are closed, the bird hides his head under his wing or in the feathers

on his shoulders, and when made to move shows signs of great weakness. Towards the end convulsions appear, and are soon followed by death. If the bird should happen to live enough, there is a discharge of clear mucus or yellowish muco-pus from the nostrils, sneezing or snuffling, a watery or purulent discharge from the eyelids, cough, and difficult breathing, which is sometimes of a panting kind. Emaciation, lightness in weight, and a prominent breast-bone, are usually present. Occasionally vomiting may be observed. As a rule, there is disinclination or inability to sit on the perch, the bird preferring the floor of the cage, and especially one corner of it.

Lesions.—The muscles are often striated, and show greyish spots. The medulla of the bone is congested. The lungs often present small atelectatic patches, or yellowish patches of pneumonia, or reddish areas of congestion, or even consolidation. The air-sacs, especially the thoracic pair, are sometimes lined on their interior with a yellowish or greenish-yellow layer of an adherent, more or less soft fibrinous membrane, and occasionally contain a small quantity of a greenish seropurulent fluid. The myocardium is often stained a dark red colour; the endocardium and pericardium show some ecchymoses. The abdominal organs are usually intensely congested and the peritoneum ecchymosed. The liver may contain small grey, greyish-white, or yellowish nodules, varying from the size of mere point up to a fig-seed, hempseed, or something larger. Similar lesions may be found in the spleen and kidneys, and rarely in the lung. As a rule, the spleen, like the adrenal glands, is enlarged, soft, and hæmorrhagic. The intestine shows some catarrh, often some superficial ulceration in the small intestine, is dotted with greyish, irregular spots, and mostly presents, in lieu of these lesions, general congestion.

Nocard's bacillus is found in abundance in the heart blood, splenic pulp, intestinal contents, and bone-marrow.

Diagnosis.—This disease is likely to be confounded with the parrot form of avian plague, which is due to an invisible organism capable of passing through the Berkefeld or Chamberland F and even B bougies or filters (vide Avian Plague, p. 484). Tuberculosis in parrots generally occurs in acclimatised or aged birds, and rarely runs an acute course, as does this disease. In man serum diagnosis should be adopted.

Prognosis.—Death is usually the result of this affection. If the bird survive the eighth or ninth day, some hope may be entertained, especially if there should be some appetite.

Treatment.—The usual means of disinfection and isolation should be strictly carried out. The bird should be kept in a room having the temperature of from 90° to 100° F. maintained day and night. Aspirin or cyllin should be given in the drinking water. Bread-and-milk, honey, boiled maize, sponge-cake soaked in sherry, banana, etc., should be offered from time to time. If the bird should show improvement, the aspirin may be replaced by aromatic sulphuric acid and quinine sulphate.

Transmission to man.—According to Osler, a disease in man characterised by an atypical pneumonia, great weakness, and depression, and signs of a profound infection, has been ascribed to contagion from birds, parti-

cularly parrots, in Germany, France, and Italy. These have usually been house epidemics, with a very high rate of mortality. A few cases have been reported in England, and Vickery of Boston has reported three probable cases. Dujardin-Beaumetz and Dubief consider that itinerant bird dealers, who usually travel about to sell infected birds, and bird shops should be under sanitary control, and the bird trade treated as an unhealthy occupation. Assuming that the disease is transmissible to man, bird fanciers should be warned of the danger they run by feeding diseased birds from the mouth, and of becoming contaminated, by the discharges or by handling cages, etc. According to Dupuy, the mortality from this disease in Paris from 1892 to 1897 was twenty-four out of seventy cases, or on an average 34.28 per cent. He believes, however, that this total is not high enough, and that a number of cases returned as influenzal pneumonia really being to psittacosis.

A proposition for the regulation of the transport of birds was discussed by the Veterinary Hygiene Section of the Madrid (1898) Congress of Hygiene and Demography.

LAW FOR THE VETERINARIAN.

BY
LESLIE CHILDS,

(Reprinted from "VETERINARY MEDICINE" Dec. 1929.)

Liability of Veterinary Surgeon for Injury to Animal Caused by Negligence in Throwing Preparatory to Administering Treatment.

The Veterinarian, in the treatment of the larger animals, must of necessity upon occasion resort to hobbling and throwing, and where an animal is vicious or unruly it is obvious that this operation may be attended by some danger. The question then, of the liability, for injury to an animal in a situation of this kind, is one that any practitioner may upon occasion be called upon to face, and appears to be of interest to veterinarians in general.

And in this connection, it may be stated broadly that, by the weight of authority, a veterinarian assumes the same liability for injury to an animal caused by negligence in throwing as he does in any other operation undertaken. It also appears, that neither will the fact that the throwing of the animal was but preparatory to another operation, excuse him if it appears that his negligence in performing this act was the cause of the injury.

This phase of the law of liability, as applied to veterinary surgeons, was passed upon in *Staples vs. Stead*, 167 Ala. 241, in an interesting and instructive manner. The facts and circumstances which culminated in the action were not given very fully in the report, but appear to have been, in the main, as follows:

Animal Injured in Throwing.

The defendant, a veterinarian, was employed to treat a spavin upon a horse owned by the plaintiff. In preparation for the application of the cautery, the horse was thrown, and, it appears, that the animal died a

few hours thereafter. The death of the animal was attributed to a rupture of the diaphragm caused either by the manner in which it was thrown or by its struggles during the application of the cautery.

The plaintiff thereafter brought the instant action for damages against the defendant, alleging that the death of the horse was caused by his negligence. The defendant defended the action on the grounds, among other things, that as there was no negligence shown in the treatment, i.e., the application of the cautery, he should not be held liable. In other words, the defendant appears to have contended that as the horse was injured during the preparatory operation, of hobbling and throwing, liability should not attach to him for the injury sustained.

Court finds Defendant Guilty.

Upon the trial of the cause there was evidence to the effect that the horse was thrown upon the side of a hill, which was, it appears, unsuited for the purpose. There was also evidence that because of this the horse was thrown in an unnecessarily violent manner. Upon this evidence the trial in the lower court resulted in a judgement against the defendant.

Reversed by Supreme Court.

An appeal was taken to the Supreme Court of Alabama where in passing upon the contention of the defendant, that he should not be held liable for the injury sustained by the horse during the preparatory operation of hobbling and throwing, it was among other things, said.

Hobbling and Throwing Held Part of Treatment.

"But to bind and throw the animal was a part of the treatment undertaken on the advice and under the direction of the defendant, and is necessarily resorted to in cases where the animal is unruly or violent, as the Jury might have inferred was the case here. We do not doubt that the complaint authorizes a recovery on proof of negligence or unskillfulness in causing the animal to be thrown so as to produce its death in a way which ought to have been anticipated as a probable result.

"Such result does sometimes follow, it seems, where there has been no lack of care and skill. But in this case there was evidence which may well have afforded inference that the place selected for throwing the horse—being on the side of a hill, whereas a level spot was available—was so unsuited to the purpose as to cause the horse to be thrown with unusual and unnecessary violence, thereby causing its injury and death.

Whether, therefore, the death of the animal resulted from negligence, or was an accident, inevitable because not to be foreseen in the exercise of due care and skill, was a question which the Court properly submitted to the decision of the Jury.

As has been noted, the trial of the cause in the lower court resulted in a judgement against the defendant, the veterinarian. The Supreme Court, however, after the review of the evidence, outlined above, turned to a consideration of other evidence, and reversed the judgement of the lower court. This on the grounds that certain evidence, which is not

material to this paper was improperly admitted upon the trial of the cause.

General Rule of the Case Stated

This reversal, however, of the judgement of the lower court in no way detracts from the clear statement of the law, in situations of this kind, as outlined in the opinion given above. From the language of the court, when taken in connection with the facts involved, it is clear that a veterinarian cannot hope to escape liability for injury caused by negligence throwing an animal preparatory to another operation or treatment.

It is no doubt true, as noted in the opinion of the court quoted from, that there may arise occasions in which an animal may be injured in throwing which cannot be blamed upon the veterinarian in charge. Cases of accidents pure and simple, which the exercise of the utmost care could not have avoided, and in such instances there would of course be no liability attached to the veterinary surgeon.

However, in the light of the foregoing Alabama decision, it is plain that the responsibility extends through all the phases of the treatment of a case once undertaken. And that, if injury to an animal results from his negligence in any part of the treatment, directly under his control, even though it is but preparatory to the main operation or treatment, he may be compelled to assume liability therefor.

Correspondence.

AT ABATTOIRS.

To

The Editor,

The Indian Veterinary Journal, Madras.

Son:— Father, why are these with staggering paces
Marching slowly with unhappy faces?

Father:— It is a herd for the slaughter and sale,
For us to buy, cook and eat to be strong.

Son:— See that herd, how reluctant stays,
If unchecked, gets extinct that race.
Meat eating we should not promote,
Rather talk of humane act in bold.

Father:— Meat we eat to prevent us getting pale;
But vegetation tells that we are wrong.

Son:— Father, to right let us life devote,
I would not condescend even for Gold.

Dr. G. OSMAN KHAN,
Malay States.

"MOOSI" Fish Water as a Prophylactic against Foot and Mouth Disease.

TO

The Editor,

The Indian Veterinary Journal, Madras.

Dear Sir,

The use of a kind of fish called "Moosi" as a prophylactic against foot and mouth disease in cattle seems to be very rampant in certain stables in the city of Bombay. Charlatans seem to favour and talk very highly of it, so much so that they are found sometimes trying to instill such faith in the minds of the professional members who fortunately or unfortunately happen to be their subordinates.

I shall be much obliged if any reader, specially one of Bombay Civil Veterinary Department, who may have had experience of this fish treatment and its rationale, will be kind enough to throw some light on the subject.

Yours faithfully,

J. N. BAROWAJ, G. B. V. C.

TO

The Editor,

The Indian Veterinary Journal, Madras,

Sir,

The Minister for Development, Government of Madras in his speech, before the Sixth All-India Veterinary Conference, Madras spoke:—

"Private practitioners should increase in number and each agricultural village should have one". After retirement from Government service, I had tried this experiment in my native place Umreth, Kaira District, for 16 months. The place is surrounded by villages full of cultivators and cattle. My income was from Rs. 10 to Rs. 40 per month. I believe the Veterinary practitioner cannot make a living by private practice, unless he establishes in a place where the cultivators are exclusively rich and advanced in education.

He stated "Animal husbandry is very much needed. It should be an important factor in your work". Nowadays, great importance is attached to Animal husbandry and Dairying in India, as the milk is very dear and is not always available in its pure state. The subject should be taught in in the Indian Veterinary Colleges.

The Minister also advocated the use of country drugs in cattle practice. The teaching of indigenous drugs should be compulsory in the Veterinary Colleges. The Government aided Veterinary Dispensaries where the treatment is free should use country drugs as much as possible. The clinical experience thus gained should be reported in the Indian Veterinary Journal.

Yours faithfully,

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

*Retired Veterinary Assistant Surgeon, and
Superintendent, Shree Ranchhodrayjee Gaushala,
Dakor District.*

TO

The Editor,

The Indian Veterinary Journal, Madras.

Major P. B. Riley, Director of the Civil Veterinary Department, Bihar & Orissa, unveiled the portrait of late Capt. G. G. Howard on the evening of the 15th February, 1930, in the office of the Deputy Director, Civil Veterinary Department, Orissa Range at Cuttack, in the presence of the officers and the office staff. Major Riley delivered a short speech on the life and character of Capt. Howard who was the first Deputy Director of the Orissa Range—a very popular and able officer and was universally liked for his simplicity and sobriety of manners and a prominent social figure in the European circle of this town. But his death was most tragic one as he met with a fatal shooting accident in the Angul Forest of Orissa on 21st January, 1927. Rai Sahib P. N. Das in charge of Orissa Range also addressed the meeting in this connection reviewing the good qualities in the personage of late Capt. Howard. The function was a great success and the meeting dispersed with light refreshment.

A. C. RAUTRA,

Veterinary Office, Cuttack.

Reply to Correspondents

TO

A. M. MUTHAPPA,

Veterinary Assistant Surgeon, Ammatti

Dear Sir,

We ourselves have been a Touring Veterinary Assistant Surgeon more than 15 years ago and even at that time, we found no room for such pessimism. You must cheer up and show yourself as a useful member of society practising the noble profession of attending to dumb animals.—(Ed. I. V. J.)

Association News

**THE ALL-INDIA VETERINARY ASSOCIATION, MADRAS
BRANCH, MADRAS.**

NOTICE

26, Wallajah Road, Mount Road, Madras 17th March 1930.

Sir,

Owing to the causes beyond control, it was not possible to hold the usual Annual General Body Meeting of the Association during the last Christmas and the business which had to be transacted then, has been held up. Also many subjects of great importance to the profession and members have been held up, and it is the desire of many members that the consideration of these should not be postponed till next Christmas. Therefore, it has been decided to hold the Annual General Body Meeting during the ensuing Easter Holidays. The meeting will be held at 8-30 A. M., on Saturday the 19th April 1930, in the hall of the Madras Veterinary College, Vepery, Madras.

2. The Principal of the Madras Veterinary College has very kindly consented to arrange for the demonstration, for the benefit of the meeting, of many items of interest and usefulness to the members in the mofussil, especially to those engaged in preventive measures. If any member desires that any particular subject should be included among the items for demonstration, he is requested to communicate the subject to the

Secretary at Anantapur before the 9th April. It is the desire of the Committee to make this meeting educationally very interesting and instructive and professionally of great value to the community. This is possible only with the active help and co-operation of all the members in the profession. Many members who are actively engaged in the treatment and prevention of diseases especially those of epizootic nature, can help their colleagues by contributing articles recording their observations with facts and figures. Now, that many members have been actively engaged in the Serum simultaneous inoculation against Rinderpest for over a year all over the Presidency, and that subject has been of great absorbing interest to the profession and the country, members are cordially invited to contribute as many papers as possible on this and other subjects. The papers should reach the Secretary at Anantapur before the 9th April 1930.

3. Members desiring to move resolutions are requested to send them also to the Secretary at Anantapur on or before the 12th April 1930. The resolutions should be, as far as possible, accompanied with a brief summary of facts and figures in their support to enable to decide their inclusion in the agenda. If the whole of the agenda of the professional articles and resolutions cannot be gone through in one day, the meeting will continue the next day too.

4. This Association has to pay up its quota of contribution to the Central Committee and to clear up all the arrears. Further, to enable this Association to pursue its programme of work and function as actively and usefully as before, funds are urgently needed. Therefore, the members in arrears are requested to pay them, either in lump sum or in monthly instalments according to their convenience.

5. Those who have not yet become members are earnestly requested to enroll themselves as members, as only an Association with a large membership and adequate funds will be able to work for the cause of the entire profession.

6. *It is desirable that all the members attending the meeting should live under one roof, as actual community life and inter change of ideas are possible on such occasions, only if all the members live together.*

Therefore, with this object in view, the committee desires to arrange for the common lodging and boarding of all the members in one and the same place, if the members communicate to the President at Madras, before the 15th April, 1930.

7. Once again we request you for your kind co-operation and help as indicated above, and your presence at the meeting.

Yours sincerely,

P. SRINIVASA RAO,
President.

M. S. SASTRY,
Secretary,
P. O. Anantapur.

**THE MADRAS VETERINARY ASSISTANT SURGEONS'
SERVICE ASSOCIATION, MADRAS.**

NOTICE.

VEPEERY, MADRAS
17th March, 1930.

SIR

At a meeting of the Executive Committee held on the 16th instant, it was unanimously resolved to hold a General Body Meeting of the members at 4 P.M. on Saturday the 19th April, 1930 in the hall of the Madras Veterinary College Vepery, for the consideration of many subjects affecting the interests of the members. You are, therefore, cordially requested to attend the meeting. If you have any resolutions for moving at the meeting on the subjects arising out of your official duties, you are requested to kindly send them with a summary of facts and figures in their support, to Mr. M. S. Sastry, Vice-President of the Association, to reach him at Anantapur on or before the 12th April, 1930, as I may be away from Madras for a few days from the 1st April during the summer holidays.

It is heard some times from individual members, that the Association has not been paying any attention to the welfare of its members. But this is not the fact. If the Association has not been able to do more work than it has done now, it

is because of want of active help and co-operation of all the members in the Presidency. If all the members of the subordinate service become members of the Association and take an active interest in its affairs, the committee will then be in a position to render greater help than now. The strength of the Association depends upon the number of members on its rolls and the amount of money at its credit. Over and above this, if every member evinces a keen interest and writes to the Secretary as to the circumstances in his surroundings, the committee deems it a great privilege to render any service possible, under the existing circumstances. Therefore, all the members of the Association are requested to attend the ensuing meeting in good numbers. Those who are not already members are earnestly requested to become members at once and attend to meeting.

Yours sincerely,

V. JANAKIRAMA AIYAR,

Secretary.

AGENDA.

- (1) Correspondence between the Hon'ble Development Minister and the Secretary of the Association regarding the deputation.
- (2) Correspondence between the Secretary and the Director of Veterinary Services, Madras, regarding the deputation and the resolutions passed at the last Annual Meeting.
- (3) Correspondence from the Government to the Secretary inviting the views of the Association on the proposed different schemes of pension and provident fund in lieu of the present system of pension; the resolution of the committee thereon and the reply from the Association.
- (4) Any other subject or resolutions of which due notice will be given by the members to the Vice-president (Mr. M. S. Sastry, H V. A. S. Anantapur.) before the 12th April 1930.

College News.

Madras Veterinary College.

The following students of the Final year class of the Madras Veterinary College, have passed the annual examination held in March, 1930. Their names in the order of merit are:—

- | | |
|------------------------------------|-------------------------------|
| 1. Sadashiva Bhat, P. | 11. Subramanian, N. |
| 2. Gopalakrishna Ayyar, K. S. | 12. Vaidynathan, D. |
| 3. Krishnappa, K. S. | 13. Subramanian, B. L. |
| 4. Venkatanarayana
Sarma, A. N. | 14. Vedha Bhat, P. |
| 5. Rajagopalan, N. | 15. Natesan, K. K. |
| 6. Venkatraman, S. | 16. Lakshmana Rao, O. |
| 7. Ramasubramanian, K. | 17. Narayanan, R. |
| 8. Cheah Phee Phay. | 18. Rajagopalan, T. S. |
| 9. Pattabiraman, D. | 19. Kalyanasundaram,
G. S. |
| 10. Benjamin, B. | |

In class A-36 students out of 47 have passed.

In class B-23 students out of 32 have passed.

Departmental News

MADRAS CIVIL VETERINARY DEPARTMENT

MADRAS VETERINARY SERVICE

G. O. On Reorganisation

The Government have passed orders on the question of the reorganisation of the Madras Veterinary Service. The G. O. states as follows:—

The Royal Commission on superior services recommended that no further recruitment should be made to the Indian Veterinary Service and that the personnel required therefor should in future be recruited and appointed by Local Governments. In accordance with the above recommendation recruitment to the Indian Veterinary Service was stopped in 1924 and vacancies in that service were filled up by the creation of temporary posts in the Madras Veterinary Service pending the creation of the new Provincial Service.

The Royal Commission on Agriculture which examined the question recommended that the Provincial Veterinary Service might be constituted into two classes, class I replacing the Indian Veterinary Service and Class II the existing Provincial Service with the corresponding scales of pay. The chances of recruitment of non-Asiatics to Provincial Services are small and future recruits will ordinarily be from local men. The demand of Indians in the post for high salaries was based on the claim that they should get the same salary as the majority of the service. Now that the Provincial Service will recruit few non-Asiatics, the scale of pay should be fixed so as to be suitable for the fields from which recruitment is to be mainly made. The Government have given this question most careful consideration and have come to the following decisions:—

(1) The present members of the Indian Veterinary Service will continue with no change in their conditions of service; (2) where there is a permanent or temporary vacancy in the Indian Veterinary Service the post will be abolished or kept in abeyance, as the case may be, and a corresponding post created in the Madras Veterinary Service; (3) the new Provincial Service will consist of only one class on Rs. 250-2550-25-750 with 10 of the cadre being in the selection grade on Rs. 800-25-1000. During the transition stage when the new Provincial Service and the existing Indian Veterinary Service will exist side by side the number of appointments in the Indian Veterinary Service will count against these 10 selection grade posts; (4) the Principal of the Veterinary College when he is a member of the Provincial Service will be given a special pay of Rs. 100 in addition to grade pay; (5) the pay of the Director of Veterinary Service when held by a member of the Madras Veterinary Service will be Rs. 1250-50-1500.

The existing four Indian Veterinary Service posts will continue as such till they are vacated by their holders and the temporary posts in the Madras Veterinary Service created in lieu of the post in the Indian Veterinary Service which fell vacant consequent on Mr. Aitchison's retirement, will be added permanently to the cadre of the Madras Veterinary Service.

MYSORE CIVIL VETERINARY DEPARTMENT.

Last year in the October issue of this Journal, we referred to the Committee appointed by the Government of Mysore "to go into the question as to how best to control Cattle diseases" in the State. We are glad now to publish below the rules issued by the Government of Mysore as a result of the deliberations and recommendations of that Committee. These rules are comprehensive and best suited for the purpose under the present circumstances. We wish the term "animal" in the rules should be made to apply to sheep, goats, donkeys, asses and elephants, as some of the diseases in the list attached to the rules, also attack the above animals. We hope this will receive the due attention at the hands of the authorities. In the last Mysore Veterinary Conference, Dr. Leslie Coleman, referred in his speech to the heavy responsibilities thrown on the Veterinary Surgeons in enforcing these rules. We are sure the Veterinary Surgeons of the Mysore State will rise equal to the occasion, discharge their duties, enforce these rules to the great advantage of the ryots, to the great credit to the profession and justify the confidence and trust placed in them by the Government.

One member of the Madras Legislative Council suggested in the course of the recent budget discussion, rules should be introduced in the Presidency of Madras to control the movement of Cattle from the infected areas. We heartily commend the Mysore rules for adoption in all the other parts of India with necessary changes to suit the localities. Mysore has always been progressive in all matters affecting the welfare of the agriculturist. We hear of much sympathy expressed by the Hon'ble Ministers in charge of the Veterinary and Agriculture portfolios towards the welfare of the agriculturist class in British India. What has been possible now in Mysore should also be possible in all the other parts of India, only if the concerned authorities sincerely move in the matter.

But, then, if these rules are enforced in British India and other Indian States the difficulty arises with regard to the requisite staff necessary to enforce these rules: Mysore State has now got one Veterinary Surgeon nearly for each of its taluks, whereas British India and many other Indian States cannot boast of this. Most of the British Indian Provinces

have not got more than three or four Veterinary Surgeons for a whole district—the area of which ranges from 6,000 to 8,000 square miles. Each district of British India is twice in area as that in Mysore State and each taluk in British India is similarly twice in area as that in Mysore State. Therefore, the Veterinary Surgeon in Mysore has got much smaller jurisdiction than his confreres in British India. Now, if the British Provinces intend introducing rules similar to those in Mysore for the control of the Cattle diseases, they should first see their way to employ a greater number of Veterinary Surgeons than now. Will they do this? [Ed. I.V.J.]

DEVELOPMENT SECRETARIAT

No. D. 5330—C. V. 47-28-14, dated 22nd November 1929.

In exercise of the powers conferred by Regulation No. VI of 1899, as amended by Regulation II of 1927, the Government of His Highness the Maharaja of Mysore are pleased to make the following revised rules in supersession of those issued with Government Notification No. 6991—Legis. 61, dated 18th December 1899.

1. For the purpose of these rules the following diseases shall be considered contagious or infectious diseases provided that Government may at any time add to this list.

- | | |
|----------------------------|----------------|
| 1. Glanders and Farcy. | 4. Rabies. |
| 2. Epizootic Lymphangitis. | 5. Rinderpest. |
| 3. Surra. | 6. Anthrax. |

2. Whenever any animal (by which term as employed in these rules shall be meant dogs, horses and cattle) is attacked by any such disease it shall be the duty of the owner or the person in charge of such animal to give immediate notice of the fact to the patel or where there is no patel, to the chairman of the local village panchayet.

3. The patel or the chairman of the local village panchayet shall on receipt of this report or on other information report at once to the Veterinary Officer for the area in which the animal is attacked.

4. The Veterinary Officer shall, on receiving such report, or on information from any other source, of the outbreak of such disease, proceed to the spot and make such enquiry as may be necessary. If he is satisfied that the removal or

segregation of any diseased animal or animals is necessary he may require the owner or person in charge to segregate such animal or animals in such manner as may be approved by him. The owner or person in charge shall comply with such requisition and shall not allow the animal or animals to move about at large.

5. A notification to the effect that the village is declared infected shall be posted in the village chavadi or other prominent place in the village and also in the Taluk Office. The infection of the village shall also be notified by beat of drum in neighbouring villages within a radius of five miles of such infected village.

6. (a) No person having in his possession or under his custody any animal which has been in the same shed or stable or in the same herd or flock as an animal declared to be suffering from such disease shall allow it to mix with other animals or shall, exchange or transfer it.

(b) When a village has been declared infected no owner or person in charge of cattle within the village shall take his animal or animals outside the limits of the village nor shall he take his animal or animals to a gomal or common grazing ground the right of grazing in which belongs wholly or in part to other villages.

Provided that restrictions specified under (a) and (b) of this rule shall not apply to cattle inoculated at least ten days prior to the date of such movement, sale, transfer or exchange.

7. A village notified under Rule 4 shall be deemed to be free from infection after a period of twenty days during which no fresh attacks have occurred or in the case of cattle diseases, after a period of ten days after all the cattle in the village have been inoculated and shall be so declared.

8. If the Superintendent, Civil Veterinary Department considers that the destruction of any animal suffering from Glanders, Surra, Epizootic Lymphangitis or Rabies, is necessary to prevent the spread of contagion or infection, he may by order in writing, require such animal to be destroyed, and no compensation shall be claimable in respect of any loss incurred by reason of such destruction. Provided that in the case of rabies this power may be delegated to the Veterinary Inspector of the area.

9. When any animal has died from or has been destroyed on account of any contagious disease, the carcass thereof shall not be sold or made use of in any manner, but shall either be burnt or buried at least six feet below the surface of the ground away from water courses. The cost of such cremation or burial shall be borne by the owner or person in charge of the animal. The disposal of the carcasses of unclaimed animals shall be carried out by the local body concerned.

10. The carcasses of infected animals buried, shall not be dug up.

11. Every place which has been occupied by an animal suffering from a contagious or infectious disease, and every thing which may have come in contact with such animal while so suffering, shall be immediately cleaned and disinfected by the owner or person in charge of the animal in such manner as may be required by a Veterinary Officer not below the rank of a Veterinary Inspector, the disinfectants not locally available being supplied by the Veterinary Department. If in the opinion of such officer, any such thing cannot be effectively disinfected, he may require it to be destroyed, and no compensation shall be claimable in respect of things so destroyed. The Superintendent, Civil Veterinary Department shall from time to time issue instructions as to the kind of articles which shall be destroyed and the circumstances under which they shall be destroyed. No such stall or building which has been disinfected shall be reoccupied for at least seven days after it has been disinfected.

12. The Deputy Commissioner may close temporarily cattle markets whether public or private and may also prohibit the movements or the collections of cattle, buffaloes, horses, asses, mules, sheep, goats, pigs or other animals whenever he considers such a course necessary in order to prevent the spread of a contagious or infectious disease among animals. No person shall bring animals to a cattle market or fair in contravention of an order passed by the Deputy Commissioner under this rule.

13. The provisions of the above rules shall *mutatis mutandis* apply to cattle brought to markets, fairs, and shows and the contravention of any rules issued by constituted authorities for the conduct of such fairs and

shows shall be punishable in the same manner as the breach of these rules.

14. For the purpose of carrying out the provisions of these rules, it shall be lawful to an officer of the Civil Veterinary Department not below the rank of a Veterinary Inspector to enter on any premises including dwelling houses where he has reasons to suspect the presence of animals suffering from a contagious or infectious disease subject to the provision of the Criminal Procedure Code relating to searches.

15. A breach of any of these rules shall render the offender liable on conviction to a fine not exceeding Rs. 50 and to a further fine of Rs. 5 for every day after such conviction during to which the breach continues.

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