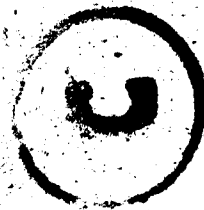


Madras Veterinam Journal



No 20 May 1923

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THE MADRAS VETERINARY JOURNAL

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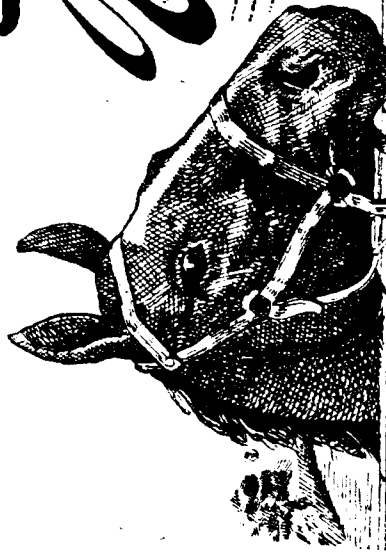
EDITOR

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

*Published under the Supervision of the Chief Superintendent,
Civil Veterinary Department, Madras.*

Subscription Rs. 2 per annum or price per copy As. 6 only.

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EDITORIAL.

In the previous issue of this Journal we published a letter from a correspondent who suggested that extracts might be published from the annual reports of the Civil Veterinary Department in the different Indian provinces and from the Indian Agricultural Journals and Reports.

While we agree with the idea of publishing items of professional interest from the above mentioned, we are afraid that at least the Reports are mostly taken up with administrative matters which this Journal does not profess to cater for. For this reason we have taken our extracts in the past mostly from Veterinary or Medical Journals of other countries, there being no other English periodical devoted to Veterinary Medicine in this country, but we will endeavour to satisfy the wishes of our correspondent in the way he suggests, as far as possible in future.

In return we hope, he will try himself or induce others in his province to give the Journal more practical support in the shape of original articles or comments than it has received lately.

Some of the articles published in this number, in view of the failures reported, indicate how much improvement there is to be made in our treatment of some conditions and this might be done by a freer interchange of ideas between our readers.

We would also call attention to the article on Vitamines among the farm animals and suggest that this be read in conjunction with the two previous extracts on the subject of Vitamines in Numbers 6 and 7 of this Journal.

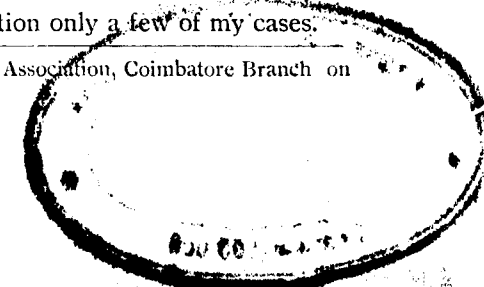
* DYSTOKIA.

BY

*M. Ponnayya, G.M.V.C., Veterinary Assistant, Veterinary Dispensary,
Tiruppur.*

In proposing to read this paper before this meeting, though I feel doubtful if this could be called a paper, I do it only to elicit information on the subject. I shall mention only a few of my cases.

* Read before the Veterinary Graduates' Association, Coimbatore Branch on 8-4-'23.



1. In this case, a cow, only one foreleg was presented, the head was just inside the os uteri and the other foreleg was backwards along the body of the calf. A rope was attached round the neck and the leg presented and delivery was effected. The calf was alive.

2. In this case, a cow, both the forelegs were presented but the leg was reflected over the shoulder. The calf was pushed in, head was brought to the position of normal presentation, rope was applied to the head and both forelegs and delivery effected, the calf being alive.

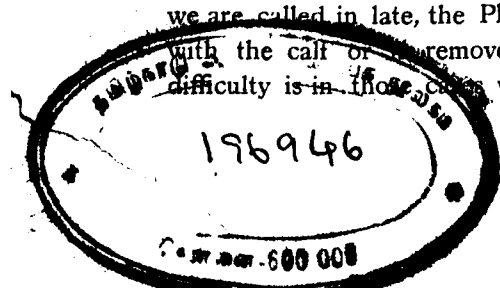
3. I was called in to see this case, a she-buffalo, on the third day after signs of delivery. The calf was very much bloated, the forelegs were presented but the head was turned back, twisted and turned under the body of the calf. After 2 hours' toil, a hook was applied to the orbit of the foetus the forelegs were pushed back into the uterus and the dead calf was delivered. I had two more cases like this, but the call was earlier and the delivery effected similarly.

4. In this case, a she-buffalo, I was called in on the 2nd day after it was tried by others. On examination it was found that the head and one of the forelegs were in the Pelvic cavity under the Vagina, the muzzle of the calf was just under the vulva and the other leg had been presented. The head and the leg under the Vagina were pushed back into the uterus, the leg was brought into the vagina and both the legs were tied with a rope. Then the animal was turned over, the head was brought into the os uteri, a rope was attached to the head also and delivery effected. The calf was dead. Now, I was surprised to find that both the hind legs of the calf had been tied with a rope by those who tried before me. I was not able to reach the hind legs within the uterus. Leaving this side, I think the head and one foreleg were just under the lower border of the os uteri within the uterus. Blind force was applied to the presented leg and this brought the head and the leg into the pelvis under the Vagina.

5. In one of the 2 cases of hock presentation, it was easy to deliver the calf after applying rope round the hocks, but in the other this was found impossible. The tendo-achilles tendon was cut and delivery effected. Now, in such cases, after delivering the calf the Placenta is to be removed. In those cases where the calf is dead and we are called in late, the Placenta is quite loose and it comes off with the calf or is removed very easily by a mere pull. But the difficulty is in those cases where we remove the calf alive or just

after death in which placental attachments are still strong and also in those cases of Retention of Placenta after a normal delivery. For this it is said "the handling of retained placenta is entirely a matter of judgement. The proper time to remove placenta is when it is ready to come away and can safely be removed. In some cases, this can and should be removed in a few hours 24 to 36 while in others grave harm can be done by removing it sooner than 7—8 days. In cases where it cannot be satisfactorily removed early a portion should be made to hang through the cervix to prevent its closing and feebly soluble antiseptics introduced into the Placental cavity as a preservative (Iodoform, Boric acid, Iodoform in oil, etc.) and allow to loosen the membrane." In such cases, I have simply douched the uterus with warm Pot. PerManganate lotion and left it alone. The whole quantity of the liquid runs out as the os uteri is open. This keeps the inside aseptic and placenta comes off very soon. Again in such cases of retained Placenta, a cleansing drench containing Mag. Sulph., Spts. ammon. aromat., and Ergot. is usually given. In some cases it is successful and the Placenta comes away. I consider these cases as lucky ones. If Placenta does not come away even after the drench, a difficulty arises. Ergot contracts the uterus, in fact all involuntary muscles and it contracts the os uteri also. Then to pass one's hand into the uterus and remove the Placenta is a troublesome task and in some cases it is impossible. So I give Mag. Sulph. and Spts. ammon. aromat. only until the after-birth is got off and then add Ergot.

I have been searching for some information as to the whole course of after-treatment in cases of Dystokia and Retention of Placenta, the length of the course and the symptoms presented. As far as I have read, any information given seems to end with the first day of treatment. I think the after-treatment is more important than the removal of the young one and the Placenta in both kinds of cases. Regarding this, it is said "So many practitioners think when they have removed the after-birth, the job is done and their responsibility in the case is at an end. This attitude is perhaps tenable on the grounds that many such cases get along alright as far as the life of the cow is concerned; she gets thin, stinks, etc., but often does not die. From the point of future breeding powers, this attitude is untenable. The Veterinarian's work has just begun when the after-birth is removed." Again it is said, "A case of retained Placenta in the cow is often a disappointment and a sepsis, but not necessarily and even rarely a death."



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Now, I shall try to put before you the course of symptoms observed by me in cows since the first cleansing after the removal of the after-birth. On the first day after the removal of Placenta there is a blood tinged mucous discharge from the vulva. From the next day the blood tinge begins to disappear and the discharge is mere mucus and this too in some cases almost stops. The temperature goes down to normal and the animal seems to be all right. About the 4th day, a thin watery pus is discharged in small quantity and increases day by day to copious quantities and soils the perineum, tail and thighs. One can find a pool of this discharge in the morning where the animal has been lying. In some cases this discharge is ejected out every time the animal lies down and gets up when it passes urine and dung and in severe cases at every move the animal makes. The discharge is also very foul-smelling. There is fever and the animal goes more or less off-feed. This is about the 2nd week of the course and I think it may be considered a crisis in the course. Then in the course of treatment, the discharge begins to get thicker in consistence, smaller in quantity and the foul smell about it begins to diminish. Then the discharge stops, temperature falls to normal and the animal recovers. For this the animal has to pass on to about the 3rd week. This is the course observed by me in spite of daily attention, uterine irrigations, etc.

For douching the uterus, some recommend Pot.Per.Manganate others Lysol and some saline solution. In doing this, it is essential that the whole quantity of the lotion should be taken out. This the animal itself may do but it depends upon the condition of the os uteri, the uterus and the age and constitution of the animal. Any quantity of the fluid left behind in the uterus adds very much to the inflammation that already exists and sets up Tympanites in these cases.

For the drainage of the uterus, some recommend a special aspirator through which the fluid can both be injected into and ejected out of the uterus, but I am yet to see one of this type. It is possible to take out the fluid through a syphon arrangement of the rubber tube which is used for irrigating the uterus. I am now using for this purpose the vaginal irrigator without the wooden nozzle. A good length of it is introduced into the uterus and after emptying 3 or 4 irrigatorfuls of the fluid into the uterus, the tube is removed from the irrigator and the end of it is held to the ground with the other end still into the uterus and thereby the fluid is drained out. But I can only say that as much of the fluid as can come out through the tube is taken.

It may not be complete. Nobody knows where the end of the tube inside the uterus lies, it may be pointing downwards or upwards or resting on some cotyledon. We are working in a closed cavity. Anyhow it is possible to do much by working the tube in and out. I do this every day until the discharge begins to diminish, then once in 2 days and then at longer intervals. Some recommend daily irrigation of the uterus, while others recommend swabbing the uterus with cotton-wool or sponge wrung out of some antiseptics. This, I think, is possible only on the first day as the os uteri contracts very soon.

Again, even for irrigating the uterus another difficulty comes in in some cases and this is due to a valve-like arrangement met within the uterine cervix of cows. This is said to be due to a swollen or inflammatory condition of the circular folds of the mucous membrane of the part and to the contractions of the circular muscle fibres around the os or posterior uterine segment. In the cow, the circular folds of mucous membrane are 4 or 5 in number, the anterior and posterior ones being usually the best developed. In such a condition one may be able to introduce fluids into the womb but may not be able to get it out or it may be impossible to do either.

So every case of retained placenta or Dystokia in the cow is a case of Sepsis but it is of slower development, more enduring and less easy to manage than equines. Now, I shall try to describe 2 of my cases to show the resistance in cow to septic poisoning.

1. This case was a cow in a very good condition, a heavy milker and I saw her on the 4th day after the 4th calving. A portion of the Placenta dry and black in colour was hanging behind. The animal never looked back nor showed any signs of uneasiness. She was eating well and was giving a good quantity of milk. The history of the case was that the Placenta falls off in shreds after every calving and this goes on for 7 or 8 days and the health of the cow is not at all affected. This time also she was let alone and she was all right.

2. I was called in to attend to this case of abortion. The animal was a young strong Ongole cow and she was in her first calf about 6 months. There were the symptoms and the foetus was removed and the after-treatment was given as usual. The owner was advised not to have her covered for at least one year even if she comes in season sooner. But the animal came in season very soon and was covered. After the 4th month a white discharge from the vulva was noticed by the owner but he did not care about that for

about a month. Then the discharge was increasing and the animal was brought to the hospital for treatment. I inserted my oiled hand into the Vagina and found that the os uteri was closed. So I douched the Vagina with Pot.Per.Mang. lotion. But on the 3rd day I found the os uteri a little dilated and on introducing my finger noticed a sharp, hard substance like a bone. Then after well oiling my hand and the part the os uteri was slowly dilated and the hand introduced and I felt the skeleton of the foetus in a pool of this discharge. The mass of bones was removed, the uterus irrigated and after-treatment was given eventually, the discharge had the decayed softer tissues of the foetus in solution and the uterus contained the decomposed matter for over a month : but the animal showed no symptoms of illness, not even a little uneasiness, and strange to say the animal again came in season shortly, conceived, calved normally and was yielding a good amount of milk.

I think only 2 of my cases are worth mentioning among monstrosities.

1. In a she-buffalo, there were twin calves, but both of them were attached together at the chest.

2. Recently I had a case of Dystokia. The cow was old and very much exhausted. On examination it was a case of tail presentation. On manipulation the hips and hocks were brought into the vagina but for passing a rope round the hocks it was impossible as there was folding of skin and attachment from the flanks to about the fetlocks, filling up the hollow of the hocks. So rope was passed round the groins on one side and pulled. Delivery was effected but the calf in addition to deformities had two well developed heads and necks, the other organs being single. Regarding equine cases, it is very rarely we get cases of foaling or retention of Placenta. I have had only 3 cases till now. Though equines are very much susceptible to septic poisoning all favourable cases seem to get well in a very short time and not so very troublesome as cows.

1. My first case was one of retained placenta with bleeding. The animal died the next day after the removal of placenta and after treatment owing to bleeding.

2. The second case was one of abortion and when I examined the vagina and pulled out a little of the foetal membranes, it was so thick resembling intestines that I felt and almost gave out a diagnosis of Hernia. But when I examined further, I felt the head of the

foetus. While this was being pulled out, the straining and uterine contractions were so very strong that the foetus together with the membrane was shot out. The after-treatment was only two uterine irrigations and one cleansing drench.

3. The third case was one of abortion. A sequel to sunstroke. The foetus was removed but the placental attachment was still strong. So the placenta was gathered together and ligatured close to the vulva, the uterus was irrigated with warm Permanganate of Potash lotion and I waited for about 6 hours. Then again it was irrigated with the lotion and the placenta was slowly and steadily pulled with a twist. It was given the usual treatment, but the animal died probably due to complications.

In sheep and goats, naturally, the duration of the after effects, symptoms, and treatment required seem to be almost the same but in a reduced scale.

In the bitch it is a very difficult task, one having to work with only one or two fingers. Moreover many of the cases are brought in very late and in a decomposed condition. This handicaps us in many ways. A few cases of Caesarian section were performed by me, but the mother and pups died in 2 or 3 days.

ADRENALIN CHLORIDE IN VETERINARY PRACTICE.

BY

*S. Ananthayya Sastri, G.M.V.C., Veterinary Assistant in charge,
Veterinary Dispensary, Coonoor.*

Adrenalin is the constricting, heart stimulating, and blood-pressure raising principle of the suprarenal gland isolated by Dr. Takamin in 1900.

If the cases are diagnosed correctly, it is the most effective and reliable remedy to save the lives of many animals.

The following are a few of the interesting cases cured by me by the use of adrenalin.

1. A cross-bred English cow passed dark thick urine, went off-feed and had a high temperature. The next day the cow was prostrate and refused rations. Dark coffee-coloured urine was voided. Injection of 1 ounce of one in ten-thousand solution of adrenalin was

given at 8 a.m. and 3 p.m. The next day the urine was lighter in consistency and clear in colour with but a slight tinge of redness present. Gastric and Cardiac stimulants were given and adrenalin injected again. Injections and internal medicines were continued morning and evening for 3 days and the cow was completely cured and has not had any relapse these 7 months.

2. A case of Epistaxis in a horse.

The usual medicines having been tried in vain, one drachm of adrenalin diluted in an ounce of normal saline solution was injected subcutaneously and immediately after, the bleeding stopped.

3. Ascites in a dog.

After withdrawing the fluid from the abdomen one C.C. of adrenalin (1 in 10,000 in a drachm of normal saline) was injected into the cavity. This was done every alternate day and the dog which belonged to a Military Officer here is quite all right even till to-day. Of course, the day adrenalin was injected into the cavity, the dog went off-feed, but the appetite resumed the next day.

4. A bull suffering from *Red-water* for the last 2 years was completely cured by adrenalin. In this connection, I may mention that the dose mentioned in text books was found quite insufficient here in Nilgiris and I have even given 2 drams of 1 in 1000 solution diluted in normal saline solution, subcutaneously. The high dose is very effective and brings about the desired effect speedily. The bull in question had to be given 6 injections before it was cured.

5. Milk-fever.

A pure-bred English cow was suffering from milk-fever. The cow was lying on its side with the neck bent towards the flank and partially unconscious and could not swallow anything. Abdomen was tympanitic, urination suspended, bowels constipated and the temperature 104°F.

Treatment :—Enema was given; and vagina was douched. I inflated air into the four quarters of the udder improvising an apparatus by connecting the milk syphon to a cycle pump. The animal did not show any signs towards recovery even after half an hour and had great prostration. 3 drachms of 1 in 1000 solution of adrenalin diluted in 2 ounces of normal saline solution were injected hypodermically in the region of the neck.

Immediately after the injection, the cow raised its head and shivered all over; the face looked brighter and in 10 minutes she got up and began to feed. No more medicine was administered and the cow was completely cured.

6. Traumatic conjunctivitis in a dog.

Due to a scuffle with a cat, a terrier got his eyes scratched, and they were blood-shot; the conjunctiva and the membrana nictitans swelling up covered the entire eye. 5 drops of adrenalin chloride solution were poured into each eye thrice daily and on the 2nd day the eyes became normal and the dog was discharged on the 3rd day.

7. Operations in the eye.

Epitheliomatous tumours were removed from the eyes of a bulldog. Excessive bleeding resulted and the dog could not retain any bandage. A few drops of adrenalin 1 in 1000 were instilled into the eyes and a gauze soaked in the same kept in the eyes for 3 minutes.

The bleeding entirely stopped, and there was no resulting inflammation, the dog being discharged on the 4th day.

8. Excision of tumours:—A huge tumour was excised from the sternal region of a buffalo. About 12 small arteries and arterioles were spurting out blood and haemorrhage could not be stopped with tow-packing, haemostatics or sutures. The wound was sutured after keeping a gauze in it, and one drachm of adrenalin diluted in normal saline was injected in the neck. In 5 minutes the bleeding stopped.

9. Arterial haemorrhage:—A horse running over a barbed wire accidentally sustained a serious incised wound on the inside of the pastern at 6 p.m. The owner finding the whole stable wetted with blood still spurting out in jets, took me there at 1 a.m. in the night. Every means being tried in vain, 5 C. C. of adrenalin solution 1 in 1000 was injected hypodermically, just above the wound in the region of the blood vessels. Instantaneously bleeding stopped and the wound was sutured the next day. The horse was all right in a fortnight.

Conclusion.—Continental authorities hold the drug in high esteem and having tried the same in various diseases recommend its use in the following affections:—laminitis, post-partum haemorrhage, azoturia, pleural effusions in dogs, purpura haemorrhagica, internal haemorrhages, haemoptysis, epistaxis in race horses, lymphangitis, septic metritis, laryngitis, surgical shock, chloroform narcosis, parturient

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paresis (milk-fever), chronic haemorrhagic nephritis, haemoglobinuria (redwater), straining after parturition, eversion of vagina or uterus bovine coccidiosis, etc.

The drug must be absolutely transparent for use and should not be brought into contact with sun light or oxidising agents, metallic salt, etc. I have given trial for this drug in every possible case and feel highly optimistic about its use in our practice.

MY EXPERIENCE OF CASES OF BOVINE LITHIASIS.

BY

*K. Mallikarjuna Rao G.M.V.C., Veterinary Assistant,
Veterinary Dispensary, Nandyal.*

CASE No. 1.

Subject.—An aged bullock, poor in condition.

History.—The bullock was brought to the dispensary on 24-11-22. with a history that the animal was not passing urine since the 22nd night.

Symptoms.—The animal was very exhausted almost unable to get up. When made to stand, it stood with an arched back. The abdomen was slightly distended. It was not taking any feed or grass. There was continuous straining to micturate, but to no avail. There was a slight swelling in the perineal region, beginning from the rectum extending downwards to within a few inches of the scrotum. This swelling was very loose and fluctuating showing that the urine had effused into the surrounding tissues. Rectal examination showed that the bladder was very much distended. Palpation along the urethral passage revealed no cognisable obstruction at any part. The sheath and penis were examined with the same result. After evacuating the bladder by means of an equine Trocar and Canula passed through the rectum, the animal was placed on its back and the bladder was also examined, but no stone was detected.

Diagnosis.—Urethral obstruction somewhere near the place where the penis takes the S shaped curve, as the swelling referred to above did not extend below.

Treatment.—It was decided to perform urethrotomy at the S shaped curve of the penis. So after the usual antiseptic precautions

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an incision about 3" long was made just 2 inches above the scrotum. After dissecting, the loop of the penis was drawn out; now by palpation I was able to detect a small hard object in the urethral passage just above the beginning of the S shaped curve of the penis. The stone was removed by directly opening the urethra on the obstructing mass. The stone was of the size of a big pea. Urine came out of the opening thus made showing that there was no other obstruction above the seat of opening. Then the stilet was passed downwards and it went freely towards the end of the penis. The opening of the urethra was not sutured as it was thought that it would close of itself. The animal was afterwards passing urine both at the opening made and from the natural passage.

After-treatment consisted of daily washing the part with antiseptic solution and dressing. In spite of this, I think on account of contact with urine, the fatty tissue at the part began to decompose and made the wound very unhealthy. There was rise of temperature on the 3rd day after operation and there was also much swelling at the part. By careful treatment the temperature came down and the swelling disappeared and I thought the animal would recover. But the animal continued to be very weak as it was taking very little feed and at the end of a week it died. No *Post-mortem* was held.

CASE No. II.

Subject.—A bullock, aged but fair in condition.

History.—The animal was brought to the dispensary late in the evening of 29th December, 1922 with a history that it was not passing urine for the last 2 days.

Symptoms.—Same as case No. 1 excepting that the animal walked a little slowly and took some feed and grass.

Diagnosis.—Same as case No. 1.

Treatment.—After the usual examination the bladder which was full was emptied by means of a sterile Trocar and Canula passed through the rectum and it was decided to perform urethrotomy at the S shaped curve of the penis on the 30th instant. In spite of the advice the owner took the animal home to a village about 6 miles from Nandyal and it was brought again on the 30th morning at 11 o'clock. Now to my surprise it was found that the bladder was almost empty. The rectal mucous membrane was congested and hot and it was

suspected that there was severe cystitis and nephritis. Any way the operation was performed and a calculus was removed from the beginning of the curve. The calculus was smaller in size than the former one. A little urine came out of the opening made. In this case the urethra as well as the outer skin were sutured with sterilized silk ligature and the part was painted with Tincture of Iodine and Boro Iodoform was applied. Internally a stimulating dose containing Spts. Ammonia Aromaticus and Spts. Aetheris nitrosi each one ounce was given. Boric acid was given in drinking water. Hot water fomentations to the loins and warm water enema were also given.

30th December, 1922 :—In the evening the temperature was 102° 4°F. The rectal mucous membrane was much congested. The animal was very uneasy and had dull pain over the region of the abdomen. Hot water fomentations to loins and warm water enemas were continued. Linseed Tea was thought of but no linseed could be had at the place. Rice congee was given as diet.

31st December, 1922 :—Condition was much worse. The animal was continuously lying down. Temperature 97° 5°F. No urine was passed. The bladder continued to be empty. The treatment of the previous day was continued with Tincture Belladonna half an ounce in the drench. Hot water fomentations etc., were continued. The animal died in the night.

Post-mortem was performed on the 1st instant. A fair quantity of serous fluid was found in the abdominal cavity. The bladder, kidneys, the posterior portion of the bowels and peritoneum were much congested and inflamed. There was no rupture of the bladder. No other calculus was found in any other part of the urethral passage.

Remarks :—From the foregoing cases it will be seen that even though the calculi were removed without much trouble the animals did not survive. Here cases of this nature are common among bullocks. During the last six months not less than 10 cases came to my knowledge. Out of these, 6 cases were brought to the dispensary. Of these 4 cases were brought after 7 or 8 days' retention of urine and treatment was not of any avail. The other 2 are described above. I wish to know whether any of my professional brethren have been more fortunate in treating such cases with success, if so, what line of treatment they adopted.

CANKER IN A HORSE.

BY

*P. S. Kuppuswami Ayyar, G.M.V.C., Veterinary Assistant in Charge
Veterinary Hospital, Trichinopoly.*

A grey country-bred gelding was admitted into the Hospital on the 13th September, 1923 for Canker of the near hind. On examination the toe was turned up and very much overgrown and the hoof presented a deformed appearance. The horny wall was separated all round from the sensitive laminae as far as the coronary band; and there was offensive greyish discharge with fungoid growth from the diseased portion; the animal was going dead lame on the near hind. This poor animal was suffering from this disease for about a year; seeing the nature and extent of the complaint it was decided that an immediate surgical operation alone should be resorted to; so the animal was prepared for the operation; one ounce of Chloral hydras dissolved in three pints of jaggery water was administered direct into the stomach by means of a stomach tube. The animal became partly narcotised within half an hour; the animal was then cast down and was completely anaesthetised with one ounce of Chloroform. To prevent haemorrhage, a tight bandage was applied to the leg above the hoof. The horny wall was completely extirpated all round as far as the disease extended. The diseased portion was curetted by Valkmann's spoon, cauterised by actual cautery and dressed with lint and tow, soaked in 5 per cent formalin lotion and then bandaged and booted. The animal was at last allowed to get up. It was then taken to its stall where sufficient bedding was provided. The hoof was left undressed for three days; when the hoof was examined on the fourth day there was still the fungoid growth with the characteristic, offensive and greyish discharge. The fungoid growth was sliced away and triple sulphate dressing was applied. There was no improvement for about a fortnight. The tissues had no tendency to get hardened and the discharge and the fungoid growth did not stop. Injection of Atoxyl in 7 grains dose was tried along with local treatment of five per cent formalin lotion; this injection was continued once a week in gradually increasing doses up to twelve grains; after the first injection there was a tendency for the tissues to get hardened; but there were two patches in the inner and outer quarters where the discharge was persistent and foul smelling. Even the hardened portion round these patches did not get united with the structures underneath. To bring

about a healthy condition of these parts the animal had to be operated on six times within a period of three months. After the 15th December, 1922, when the last operation was resorted to, the growth of the hoof assumed the normal appearance and no trace of Canker could be seen in any part of the hoof. Various dressings described in text books and Veterinary periodicals were now and then tried in this case and from my experience of this particular case, I find that five per cent formalin lotion, the application of firm pressure by means of pledgets of tow over the diseased portion, and subcutaneous injections of Atoxyl in gradually increasing doses at an interval of one week can bring about the recovery of the worst type of Canker; of course the first and foremost point in treatment is that the horny portion must be completely extirpated so as to expose the underlying diseased structures: the other point worth mentioning in such very bad cases of Canker is that the client, the patient and the doctor must have a good deal of patience as Dollar remarks in his regional surgery.

* INTESTINAL LAVAGE IN DOGS.

BY

R. Swaminathan, B.A., G.M.V.C., Coimbatore.

Before commencing the practical demonstration I should like to say a few words with regard to the indications for and the technique of the intestinal lavage, rather, Gastro Intestinal lavage in dogs. This term simply means washing out the alimentary tract of the dog. It is indicated in many cases of intestinal troubles viz.—auto-intoxication, poisoning, and chronic constipation without any ostensible cause or with frequent attacks of indigestion which can generally be put down to bad undigested matter in the intestines giving rise to toxins. These, gradually getting absorbed by such auto-intoxication, disturb the general metabolism of the body. In such cases lavage is of immense benefit.

The Technique :—In doing this operation certain precautions are very essential. The animal must be starved for the preceding 12 hours and then a good dose of castor oil must be given. After the bowels had acted well, an enema of soap and water must be given, to empty the posterior portion. After this is done, the dog is held in a standing posture by the head with the hind limbs well raised in the air (the fore limbs alone resting on the ground). Normal saline solution is then allowed to flow by gravitation into the rectum,

* (Read before the Veterinary Graduates' Association, Coimbatore Branch on 8-4-23.)

through a rubber tube connected to an ordinary irrigator-can, care being taken to prevent the escape outside of water by pressing the sides of the anus. About 2 pints of water may safely be allowed to flow in when signs of discomforts will be noticed. The stream of water must then be steadied down and slowly allowed to gravitate. Symptoms of sickness will soon appear which will be followed by vomiting. The vomit will consist of mucus, bile and it is a sure indication that the passage is patent and when once it occurs the flow of fluid may be pushed on and persisted in till only clear fluid comes out through the mouth. The injection of fluid may then be stopped. The time taken for the whole operation is only 20 minutes.

A CASE OF FOLLICULAR MANGE IN A CALF.

BY

M. S. Ramachandra Ayyar, G.M.V.C., Veterinary Assistant in Charge, Zamindar's Veterinary Hospital, Kuppm.

Subject.—A country-bred cow-calf, aged 1½ years.

History.—The calf originally showed circular eruptions all over the body like Rash, the hairs of the affected parts standing erect, and the calf rubbed the affected parts constantly owing to irritation, and as a result of which the parts were hairless and they became enlarged into a black hard nodular swelling, which when squeezed contained thick pus looking like dried butter but without any odour and in some places, these eruptions which were of the size of a pin to a quarter anna became thick, exposing a raw surface from which an oily substance oozed out. The calf did not show any other digestive trouble and the condition was fair. The disease was noted 6 months before and the owner suspecting it to be the after-effect of some poisonous insect bite had tried all country treatment but to no avail.

At the time of admission in the hospital, the nodular swellings were found in the head, face, neck and back with eruptions all over the hind quarters and legs. I treated it by washing the parts with a solution containing calcium chlorinatum one ounce and boric acid two ounces dissolved in ten ounces of water every alternate day and washing with Hydrargyri perchloridi lotion and rubbing with Unguentum Iodine the next day. After a fortnight's treatment the hairs were growing over the body and face and the neck portion remained in the same state. Then I submitted smears from the pus

discharge and it was confirmed by the principal, Madras Veterinary college that it was a case of follicular Mange. Now I am trying a new treatment for follicular Mange mentioned in the professional circular of the department and after a week's trial, I shall report whether there is any good of the treatment in cattle. The greatest difficulty in following that treatment in cattle is the brushing of the Sodi-Hyposulph solution over the skin as the skin of the cattle is thicker than that of the dog. I am also giving Liq. Arsenicalis internally. As the disease is rare in cattle, I bring it to the notice of the Journal, so that some other ways of treatment may be discussed. The calf is housed with 20 other calves and cattle, but no other animals showed any symptoms of the disease. The source of infection to this calf remains a mystery.

CAUTERY IN OLD CASES OF BROKEN HORN.

BY

*P. K. Devanayakam Pillai, G.M.V.C., Veterinary Assistant in charge,
Veterinary Hospital, Cuddalore.*

A case of broken horn—broken at the lower third of the horn with a central cavity - the horn core sinus - about $\frac{3}{4}$ of an inch in diameter, came for treatment sometime ago. The fracture was about 4 months old and the superior portion was almost dried up.

The cavity was dressed with Ol. Picis crude for 14 days and there was no improvement. The dressing was then changed to Tr. Iodine and Zinc oxide ointment and this was continued for 25 days and no marked improvement was seen after the period. The cavity could not be packed with any dressing as it was very deep and the dressing used for packing, in a short time, went into the sinus and as a result there was profuse discharge for some days after.

The appearance of the structures surrounding the cavity was very pale and they required stimulation. Hot iron was used at the superior portion and it was fired till it became brown in colour and Zinc ointment was continued as before.

7 days after the firing, there was marked improvement and in another week the cavity completely closed.

NOTE :—I record this as I observed a marked difference in the closing of the cavity before and after firing.

CLINICAL CASES.

BY

*M. T. Krishnaswami Ayyangar G.M.V.C., Veterinary Assistant,
Veterinary Hospital, Erode.*

CASE NO. 1

Shoulder slip in a foal.

Subject.—A chestnut country bred foal, 18 months old.

History.—The animal was allowed free range in the fields. While it happened to jump over a low fence into a shallow pit on the other side, its off-fore shoulder slipped and hence the trouble.

Symptoms.—The animal was brought to the hospital a week after the accident. Typical shoulder lameness with bulging out of the shoulder joint when the animal is made to walk and a slight wasting of the external muscles of the Scapula were observed.

Treatment.—The animal was given complete rest and blisters of Bin. Iodide of Mercury ointment (1—16) were twice applied and the animal improved gradually in a month's time.

CASE NO. 2

A successful case of Tetanus in a mare.

Subject.—A grey country bred mare, aged.

History.—The case was one of traumatic tetanus. The animal sustained a serious lacerated wound in the left fore-arm while attempting to jump over a fence. I was called in to see the animal just when the following symptoms were gradually progressing. She had trismus and opisthotonos. I was informed that there was no micturition or defaecation for the past 24 hours.

Treatment.—Scraped the wound, cauterised with Acid Carbollic and dressed with Perchloride gauze and bandaged. Advised to wire for large doses of anti-tetanic serum. Observed complete quietude and darkness. In about 4 hours after the wound was cauterised, I was glad to notice the animal slightly moving its jaws. Half a bucketful of warm gruel was given and the animal slowly drank it and was able to pick up a few blades of grass. I thought this should have been the effect of the immediate attention to the wound. The next

day I injected 1,500 units of anti-tetanic serum in the neck. There was defaecation and micturition the next day. The animal was able to move its jaws more freely, and took more food. She gradually made a complete recovery and was afterwards sold for a good price.

A CASE OF DOUBTFUL ETIOLOGY.

BY

*M. S. Ramachandra Ayyar, G.M.V.C., Veterinary Assistant in charge
Zamindar's Veterinary Hospital, Kuppam.*

Subject.—A white country-bred cow calf, aged 15 months.

History.—This calf was admitted for Eczema on the 18th September, 1922, the parts affected being head, face, neck and some portions of the legs. This was detected two days before admission, as the calf by rubbing the parts showed red patches devoid of hairs, discharging a sticky discharge. The general condition at that time was good. The calf was fed on guinea grass in addition to mother's milk, and kept on healthy surroundings, being the property of the Zamindar. After a week's treatment with equal parts of Tr. Iodine and Tr. ferri perchloridi externally after washing with Hydrargyri perchloridi lotion, hair began to grow on the affected parts. Again on 9-12-1922, the calf showed some ulcers with red patches devoid of hair, in the region of the flank and stifle joint which after 2 or 3 applications of Tr. Iodine changed, but the general condition was not good, as the whole body was covered with coarse long hairs. There were no other constitutional symptoms, to take particular attention. And again on 17-1-1923 the calf refused milk and showed rise of temperature 103° F. Mucous membrane of the eye was very anaemic and the general condition weak. A saline purgative followed with tonics relieved the complaint and Liq. Arsenicalis in 2 dram doses was given for a week to improve the coat. The calf was taken to Bangalore on 1st February, 1923 when it was fed on paddy straw in addition to its mother's milk. After a fortnight, hairs from the region of both sides of the shoulder blades fell which resulted in a red patch with flyblown ulcers. The calf was treated at the Cantonment Veterinary Hospital for about a month, and was brought back to this place on the 28th March, 1923. When hairs from the neck, forearm and some portions of the back and shoulder blades had

completely fallen off the parts exposed red scaly surfaces with numerous subcutaneous swellings from the size of a nut to that of a lime fruit. The swellings were soft to the touch with thick pus inside. As I had a case of follicular mange in a cow calf with such nodular swellings all over the body, I suspected this also to be a case of mange and submitted pus smears to the Principal, Madras Veterinary College together with scrapings from the scaly portions. To my entire disappointment various organisms were found in the pus. No mange parasites were found in the scrapings and hence no opinion could be given. Meanwhile, I treated the calf by opening the subcutaneous swellings and dressing with Unguentum Iodine and rubbing the parts devoid of hairs with the following dressings after washing the same with soft soap.

Re.

Creasotum—half an ounce.

Ol. Picis—2 ounces.

Pot. Bicarb.—1 ounce.

Sulphur—2 ounces.

Cocoanut oil—16 ounces

Mft. Sig. / to be rubbed on the affected parts, and internally a drench containing pot. Iodide grs. X and sodi. salicylas—1 drachm was given. This was continued for about 12 days. After a week's application, hairs were growing in the affected parts but still there are some hard small subcutaneous swellings in the shoulder blade. The calf was not showing any other constitutional symptoms. I was then applying unguentum. Iodine to the swellings and giving Liq. Arsenicalis half an ounce in a drench. As I could not arrive at any definite diagnosis, I request my professional brethren to give their opinion both directly and to the Journal. I am sorry that the idea of taking blood smears in the early stages when there was rise of temperature did not strike me when it may be possible to detect whether it may be a case of surra as some of the symptoms agree with the symptoms given in Wallis Hoare's system of medicine in cases of surra in cattle and in the advanced stage it is not possible to detect organisms. The cow boy says that the animal had numerous ticks at the commencement of the disease which were removed for fear of punishment.

(We received for identification a Tarantula spider which is said to have bitten this calf—Ed.).

PREVENTION OF YOKE DISEASE.

BY

*N. Muniyappa, G.M.V.C., Veterinary Assistant, Agricultural College,
Coimbalore.*

It is a well known fact that our working animals, especially cattle, are subjected to indiscriminate handling, when they are yoked for various purposes. The Indian ryots, as a matter of fact the whole Hindu race, are confirmed cow worshippers. Yet their idea of kindness is quite different from all recognised and approved principles of humanity. There is no necessity to dilate much upon this point as our professional brethren may well understand what I mean. In some places of this district, I have seen even cows yoked. The animal yoked as aforesaid is subjected to ill treatment whether knowingly or otherwise and the result is that they get diseases in the yoke place, which, in my opinion can be easily avoided with a little bit of prudence and care. I shall enumerate here the various causes which lead on to this unfortunate condition of the yoke region.

1. Undue pressure.
2. Unequal weight.
3. Improper driving.
4. Bad roads.
5. Undue friction.
6. Accumulation of dirt and filth in the yoke as well as the region.

Of all these, my experience has shown that friction plays a prominent part and is undoubtedly the chief cause. With this object in view I devised a better protection to overcome the said friction. This is nothing but a piece of flexible soft leather fixed on to the yoke region during work to ward off friction. The animals in my charge which were getting constant yoke complaint are provided with this sort of leather piece, and I am glad to inform my brethren that they never had it afterwards. As a particular instance, I can here state that a bullock which was discarded and included in the auction list was retained for this experiment and I feel extremely glad to report that the animal is free from yoke disease ever since it was thus protected. The sample I am just now showing may kindly and confidently be advocated for all classes of animals yoked. I know that many were the devices attempted by some of the members of

our department, and so far I could learn nothing has been proved practicable. This piece of leather is most economical, being within the means of even the poorest man easy to carry anywhere, and fix, less cumbersome and most useful. I hope with confidence that this will be of immense use and this bane of a complaint will be completely eradicated in a very short time.

EXTRACTS.

RESEARCHES ON ANIMAL NUTRITION AT THE
ROWETT INSTITUTE.*Vitamins and Mineral Salts.*

The first report of the Rowett Institute for Research in Animal Nutrition contains a summary of the very important work which has been done at that institute by Dr. Orr and other workers upon many aspects of animal nutrition. The investigations upon the effects upon farm animals of deficiency of vitamins and of minerals are of special interest to the medical profession.

Most people have probably felt that the continual resort to rats, pigeons, and guinea-pigs, as the subjects of experiments upon vitamin deficiency is rather unsatisfactory, since these few animals form a very narrow basis upon which to frame any general conclusions as to the importance of vitamins in the economy of animals in general and of man in particular. The animals mentioned are of course subjects of choice because they are inexpensive, easy to keep, and happen to show effects of vitamin deficiency relatively quickly. It is, however, very important to remember that the different species of animals vary enormously in their susceptibility to vitamin lack; for example, deprivation of vitamin C kills a guinea-pig from scurvy within a month, but a rat can live indefinitely on such a diet, although it is soon affected by deprivation of either vitamin A or vitamin B.

Cats, dogs and human beings are moderately susceptible to vitamin lack, but the report of the Rowett Institute shows that farm animals are remarkably resistant to vitamin deficiency. Their results agree on the whole with those of Sir Arnold Theiler, who found in South Africa that cattle, sheep, goats, horses and pigs were not affected when fed on vitamin deficient diets for periods of from six to twelve months.

Experiments at the Rowett Institute showed that pigs, when fed on a diet deficient in vitamin C for 124 days, grew perfectly normally, and showed no signs of disease. Deficiency in vitamin A produced no ill effects for about 100 days in young pigs, but more prolonged experiments gave results which suggested that deficiency was producing injury. Young pigs were fed on a basal diet of bran and oats with a little blood meal and mineral salts; one group was given codliver oil, and another group an equal amount of linseed oil; the second group was therefore on a diet deficient in vitamin A. Both groups grew normally for 120 days; after this period growth in both groups slowed down, but the linseed oil group stopped growing altogether after 150 days, whilst the cod-liver oil group continued to grow slowly. The authors conclude from this and other experiments that cod-liver oil has a definite beneficial effect on the health and rate of growth of pigs, but that the effect is greatest when the animals are on a diet in which the mineral matter is deficient or ill balanced. Experiments upon lambs gave more definite results, for in a period of six months lambs given cod-liver oil increased in weight 66 per cent, whereas control animals in which linseed oil was given instead of cod-liver oil only increased 25 per cent. Experiments at Reading upon pigs showed that pigs deprived of vitamin A grew for about seventy days, but that ultimately growth ceased, and signs of defective nutrition appeared. Experiments at Reading also showed that pigs at a certain stage of vitamin deficiency might grow and appear to be in normal health and yet might be incapable of producing normal offspring.

These results seem to suggest that young pigs and sheep have very low vitamin requirements, but that they cannot thrive indefinitely when the vitamin A supply is reduced below a certain level.

Dr. Orr, however, points out that the vitamin requirements of farm animals are so low that there is very little likelihood of any animal on an ordinary diet suffering from vitamin deficiency. This conclusion is rather important, for it indicates that it is possible for a cow to continue in perfect health when it is receiving so little vitamins that its milk is practically vitamin free. Such a result might be satisfactory to the cow but would not be beneficial to any infant living on its milk.

The researches upon pigs at the Rowett Institute showed that, while their vitamin requirements were very low, yet on the other hand, their requirements of mineral salts were very high. It was found that a young pig which puts on about a pound of weight a day

could retain about 5 grams each of lime and of phosphorus daily. Moreover, deprivation of minerals in the food produced signs of malnutrition within thirty days.

Rickets is a common disease in young pigs, and experiments showed that deprivation of a proper supply of mineral salts regularly produced the disease, whereas deprivation of vitamin A did not produce the disease. This last result is, of course, in sharp antagonism to Mellanby's results upon puppies. The report concludes:—

“The results of these experiments seemed to show that, in pigs at least, the chief factor in the production of rickets is the lack of proper amount and balance of the mineral matter of the food, and that the beneficial influence of fat-soluble A and sunlight on mineral metabolism is most marked in cases where the mineral balance of the food is defective. It is probable that rickets in children is to some extent due to the same cause as the disease known as rickets in pigs. The disease usually comes on between the age of six and eighteen months, which is the period when the child is being weaned on to foodstuffs derived largely from cereal grains. These refined products are even more deficient in essential minerals than the grain and offal fed to pigs”.

There is general agreement that deficiency of vitamin A, lack of mineral matter in the food, and lack of sunlight, are all factors in the production of rickets in children. The experiments of the Rowett Institute seem to show clearly that in the pig the lack of mineral matter is the dominant factor in producing rickets. This is to be expected since the pig has a low vitamin requirement and its rapid growth imposes a very high mineral requirement. It does not, however, seem safe to assume that the same will be true of human infants, for these grow at only about one-twentieth the rate of pigs, and the available evidence suggests that man is fairly easily affected by vitamin lack.

The differences between the results recorded above and those obtained by Mellanby in dogs suggest that rickets is produced by different causes in different animals, and therefore it is very desirable to have information as to the mode of production of deficiency diseases in as many different species of animals as possible. Metabolism experiments on large animals are of course only possible at institutes which, like the Rowett Institute, are specially equipped for this purpose, and hence work of the kind under review has a very special value.

(From the British Medical Journal March 10, 1923.)

BOVINE LYMPHANGITIS.

BY

A. L. Sheather, B. Sc., M. R. C. V. S., Director and First Bacteriologist, Imperial Bacteriological Laboratory, Muktesar.

Introductory.—

Before describing the experimental work which has been done in connection with the investigation of cases of bovine lymphangitis occurring in the Madras Presidency, it is necessary to consider briefly the accounts which have already been published regarding the occurrence of this disease; more especially as a disease of this nature has been twice investigated in India in recent years.

The literature on the subject of lymphangitis in cattle appears to be very scanty. Omitting the accounts published during the first half of the nineteenth century, the earliest detailed study of the disease is that by Nocard, who examined specimens from Guadeloupe, and published an article on the subject in the *Annales de l'Institut Pasteur* in 1888.

From this article (*Ann. Inst. Past.*, Vol. 2, 1888, p. 293) it appears that the causal organism of the disease investigated was a streptothrix. This was easily discoverable in pus and in preserved tissues sent to France for examination. It was recovered in culture from original materials and also from animals inoculated experimentally.

The disease is described as starting, as a rule, on the limbs and spreading to the belly. Cording of the lymphatics and enlargement of the glands were noted. This disease was of a very chronic nature.

Nocard found the rabbit resistant to inoculation. In the guinea-pig intraperitoneal or intravenous inoculation caused death in from 9 to 20 days, and the lesions produced "resembled those of miliary tuberculosis." It is subsequently stated that the thoracic organs were never involved and that careful examination of the abdominal lesions showed that they were confined to the peritoneal coverings of the organs, the organs themselves remaining quite healthy.

Subcutaneous inoculation of guinea-pigs lead to the development of an abscess at the seat of inoculation, with involvement of the adjacent glands only, in practically every case.

The organism found could be stained by the Gram-Weigert method but was decolorized by Gram.

The cultural characters were those typical of streptothrix organisms. The organisms retained its virulence for months in culture.

The disease described in these articles was observed in Sumatra. It was characterized by the development of abscesses in the skin, connective tissue, lymphatic vessels and glands. The glands usually affected were the prescapular, superficial inguinal, and, more rarely, the popliteal and pubic. There were some times lesions in the lungs.

The disease was of a very chronic nature and recovery was the rule. About 10 per cent of the affected animals died or were killed.

Special note is made of the fact that there was a great tendency to overgrowth of the hoofs owing to the peculiar gait during the later stages of the disease.

As a rule cases were sporadic in herds, but occasionally actual outbreaks were observed. Such outbreaks were spread over long periods, a few animals being affected month by month. It would appear from the context that, in many cases at least, draught oxen were the subject of the disease.

Vryburg found that the disease was due to a small bacillus which was present in the pus in pure culture.

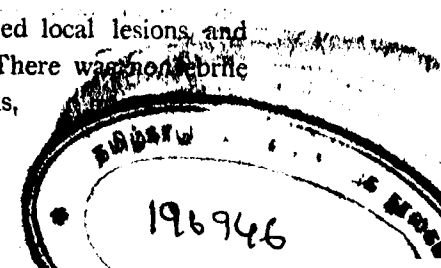
He noted particularly that it was difficult to find by means of the microscope, more particularly in old lesions.

The bacillus was easily stained with aniline dyes and sometimes shewed bipolar staining. It was Gram-negative, and somewhat variable in size. It was non-sporulating, a facultative anaerobe, non-gas-forming, and produced indol.

It could be cultivated upon ordinary media, but growth was very slow at first. The addition of serum improved media. No growth was obtained upon potato.

Inoculation of cattle with cultures produced local lesions, and abscess-formation in the lymphatic glands. There was no febrile reaction and recovery took place in three months.

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Animals which had recovered from natural attacks lasting for periods ranging from 2 months to 3 years failed to become infected when inoculated with cultures.

This agreed with what had been observed under field conditions. A recovered animal seldom became affected a second time.

Pus protected from desiccation retained its virulence for at least a month.

Outside the body the bacillus rapidly lost its virulence and frequent transplantation of subcultures did not prevent this.

Cultures six weeks old seldom produced abscesses when inoculated into cattle, and cultures eight weeks old provoked no reaction at all.

Experiments shewed that subcutaneous inoculation of virulent cultures produced immunity lasting for some months only.

Avirulent cultures produced no immunity.

The blood of infected animals proved sterile in two instances.

A few attempts were made to prepare a protective serum, but the results published are too few to warrant the expression of any opinion as to its value. It appears to be unlikely that a serum would be of any value in so chronic a disease.

Reference is made to the inoculation of a single rabbit only. It is not stated what material was used for the purpose. An abscess developed in a fortnight.

Guinea-pigs inoculated subcutaneously with culture developed abscesses at the seat of inoculation in about three weeks. Intraperitoneal inoculation with culture produced purulent orchitis and death in about two months. The peritoneum near the seat of inoculation showed small abscesses.

In some cases guinea-pigs inoculated intraperitoneally with culture recovered after suppuration of the testicles had taken place.

Intraperitoneal inoculation of a culture 73 days old produced orchitis and death after two months.

The earlier reference to Vryburg to the rapid loss of virulence of the organism in cultures, must, in view of this statement regarding

the infection of a guinea-pig with a culture 73 days old, be held to mean that cultures rapidly lost their virulence for cattle.

The serum of infected animals has very feeble agglutinating powers.

Lymphangitis of cattle in India has been investigated by Raymond and Holmes.

Raymond's investigations began in 1906 and the results were published in 1909 (Note on Infectious Lymphangitis amongst Draught Bullocks in Calcutta, Bengal Secretariat Press, Calcutta, 1909).

Holmes commenced his investigations in 1907 and his results were published in the Journal of Tropical Veterinary Science, Vol. III, Part 3, 1908, p. 288.

From the details given it would appear that both of these officers were investigating the same outbreak. If that was actually the case, the dissimilarity of the results arrived at is very striking.

* * * *

As Holmes' publication antedates that of Raymond, it will be taken first.

Clinically the disease investigated did not differ in any material respect from those described by Nocard and Vryburg.

It was characterized by the appearance of small nodules under the skin of the shoulders, ribs and flanks, with subsequent involvement of the prescapular and precrural glands. The glands shewed no tendency to burst. There was no rise of temperature until the very first stages. The more severe cases ran a course of about three months, but other cases were far more chronic. In the majority of cases the infection followed a wound of the neck or hump, but in one instance, as in the case of most of the animals referred to by Nocard, the infection appeared to have gained access through a wound in the foot.

The affected glands were found to have thickened fibrous capsules. In some cases the whole of the gland substance had disappeared, the capsule containing thick yellow caseous pus which

was smooth to the touch. In other cases the normal tissue remained, but the glands contained a number of small encapsuled abscesses.

* * *

Where only slight degenerative changes had occurred, the substance was studded with hard gritty nodules of a yellowish colour resembling the granules of actinomycosis. The pus was "invariably" noticed to be gritty when rubbed between the fingers or slides. (This appears to be in direct contradiction with Holmes' previous statement that the pus was smooth to the touch.—A.L.S.)

In some advanced cases encapsuled abscesses were found in the lungs and bronchial glands.

In every specimen of pus examined Holmes found granules resembling those of actinomycosis.

"Stained with methylene blue, without decolorizing, the masses showed no structure, except at the periphery, where small individual coccus-like bodies could be distinguished.

By Gram and Gram-Weigert methods the details of the composition of those groups were brought into evidence. They consisted of a dense collection of small cocci, identical in appearance with the spores of actinomycosis. Closely interwoven with these spores were thin branching filaments.

The filaments were easily decolorized by Gram's method, and were consequently difficult to demonstrate clearly. Unlike the ray fungus there is no concentric (? radial—A.L.S.) arrangement of the filaments, and as a rule no peripheral club formation.

In preparations obtained by scraping the fibrous capsule of the abscesses groups showing peripheral clubs were found. (It may be here noted that the illustrations do not appear to bear out the descriptions in the text).

In sections of affected lymphatic glands the same microscopic appearances were seen as in the pus.....Stained by Gram there appeared, scattered throughout the new tissue, the same characteristic dark masses as seen in the pus shewing a dark-stained amorphous centre with cocci and traces of filaments at the periphery.

In many sections masses of filaments alone were found. They were composed of very fine light-stained interlacing threads clearly defined. No cocci or club terminations were present in these latter groups.

This account of the staining reactions and morphology of the organism found by Holmes has been quoted at length because, owing to the somewhat contradictory statements made, it is very difficult to get a clear idea of the appearance of the organism and to make a satisfactory abstract.

Cultures were obtained in about 5 per cent of tubes inoculated and growth was very slow in the original tubes. Growth took place more rapidly in subcultures. Passage through rabbits and guinea-pigs caused the organism to grow more rapidly on artificial media.

Aerobic conditions at 37°C were the most favourable for growth, but growth was obtained between 20°C and 37°C., both under aerobic and anaerobic conditions.

On solid media the organism grew with the usual general characters of streptothrix organisms.

In broth a thick greyish white pellicle formed on the surface and subsequently ball-like masses developed at the bottom, the broth remaining clear.

The morphology of the cultivated parasite generally resembled that of the organism as found in the lesions. In old cultures some filaments showed club-shaped thickenings.

"In other preparations no filaments were present and they consisted of rods and a large ovoid cell taking the stain at the periphery and at either end" This description and the illustration given rather suggest the presence of a large sporulating bacillus as a contamination.

Guinea-pigs inoculated subcutaneously with pus from lesions in cattle developed abscesses at the seat of inoculation only. These showed no tendency to burst.

Cultures made from such lesions were used for the inoculation of other guinea-pigs and rabbits. The method of inoculation is not mentioned. Death took place in from 2 to 7 days. No mention is made of any lesions being present, but an organism similar to the original culture was isolated from the heart blood.

"Small animals" inoculated intraperitoneally with fresh pus died in from 2 to 6 weeks. In most cases there were no lesions, but from the heart blood of several, pure cultures were obtained.

In two guinea-pigs and three rabbits small abscesses were found scattered over the peritoneum. Cultures from these proved fatal to guinea-pigs and rabbits in a few days and the organism was recovered from the heart-blood.

From this it would be seen that cultures of the organism produced a septicaemic condition, although it appears to be strange that a pus-producing organism should be capable of infecting guinea-pigs and causing death from septicaemia after a delay of from 2 to 6 weeks without producing any suppurative lesions, as is said to have been the case in guinea-pigs inoculated intraperitoneally with fresh pus.

Two bulls inoculated subcutaneously and two intraperitoneally with pus emulsion failed to react. I have had the opportunity of seeing the charts of the latter animals, and I find that they were kept under observation for less than a month. This appears to be a very short time in view of the nature of the disease.

One cannot help feeling a little diffidence in accepting Holmes' accounts of his investigations, as many of the statements made are far from lucid.

The animals which came under Raymond's observation presented the same clinical picture as those seen by Holmes, Vryburg and Nocard.

* * *

SUMMARY.

With pus taken from natural cases of bovine lymphangitis it has been found possible to reproduce the disease in plains calves to the extent that subcutaneous inoculation has led to the formation of an abscess and suppuration of the nearest lymphatic gland. The condition so produced resembled the natural disease in that the

lesion developed very slowly and the suppurating glands showed little tendency to burst spontaneously; there was no rise of temperature and the animals showed no general disturbance of health.

The intraperitoneal inoculation of male guinea-pigs with original pus has been followed in a very large proportion of cases by suppurative orchitis.

With cultures of an organism isolated from pus derived from animals experimentally infected with original pus it has been found possible to again produce similar lesions in both plains calves and guinea-pigs.

From the literature dealing with bovine lymphangitis it would appear that there are two distinct forms of the disease, one caused by a streptothrix (Nocard) and the other by a bacillus (Vryburg and Raymond).

After considering the reports of Raymond and Holmes regarding their investigations into the same outbreak, the only conclusion that one can come to is that Raymond's is by far the more acceptable.

The organism described in the present paper agrees in the majority of its characters with those described by Vryburg and Raymond. It differs in certain minor respects.

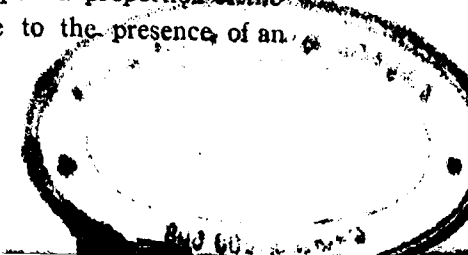
Raymond's organism is described as being negative to Gram's method of staining but positive to Gram-Weigert; the organism here described is negative to both. Vryburg does not mention the reaction to Gram-Weigert but his bacillus was negative to Gram.

Raymond's organism developed no surface growth on broth.

Both Vryburg and Raymond obtained positive indol reactions. None could be obtained with the bacillus here described.

Considering these differences it may be pointed out that there is sometimes room for a divergence of opinion as to whether an organism is or is not positive to Gram and its modifications. The bacillus described in this paper was certainly negative to both as an exposure of ten seconds to the respective decolorizing agents was sufficient to render it almost invisible.

The development of a surface scum upon a proportion of the broth tubes was at first thought to be due to the presence of an



impurity, but repeated plate cultivation indicated that it was not. A parallel case in which the development of a surface scum is not constant is to be found in the glanders bacillus.

The bacillus does not appear to agree in all its characters with any of the pus-producing bacilli hitherto described. It approximates most closely to the Preisz-Nocard bacillus but differs from that organism in being Gram-negative.

(From the Memoirs of the Department of Agriculture in India—May, 1921.)

DEPARTMENTAL NOTES AND NEWS.

1. Mr. Hurley took charge of the office of the Superintendent, I Division, Vizagapatam on 28th March 1923, from Mr. Saunders, who has gone on deputation to the Imperial Bacteriological Laboratory, Muktesar.

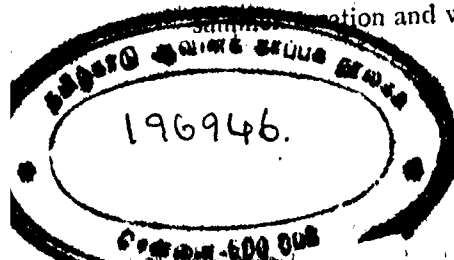
2. Veterinary Assistant S. Ramnarayanan who was working as a Veterinary Inspector at the Muktesar Laboratory has returned to this department.

3. Three new touring billets have been recently opened at Kumbakonam, Tiruvannamali and Yellamanchili.

STUDENTS' CORNER.

The annual examinations of the Madras Veterinary College were held between the 19th and 28th March, 1923. The following Imperial Officers formed the Board of Examiners this year. J. Hewlett, Esq., (President) D. A. D. Aitchison, Esq., F. Ware, Esq., Captain P. B. Riley and M.R.Ry. V. Krishnamurthi Iyer Avargal. The special feature of this year's examination is that it consisted of both written and oral tests. The results were on the whole satisfactory. Out of 24 students that appeared for the final examination 18 came out successful and they are as follows: Messrs M. K. Velayutha Nair, R. Kalyanasundram, K. I. Subramanyam, A. S. Theagaraj, R. S. Narayana Iyer, V. Jeganathan, A. Moberly, A. Alagar, P. R. Krishna Iyer, T. V. Kuppusami, V. R. Gopalakrishnan, H. Khader Khan, Abdul Azeem, M. Rammohan Rau, K. Krishnamurthi, M. S. Rajendram, S. Chundrasekaran and P. Narayanan—In the 2nd year class 21 passed out of 31 and in the 1st year 23 out of 33.

The College was closed on the 29th March, 1923 for the mid-summer vacation and will reopen on the 2nd July, 1923.

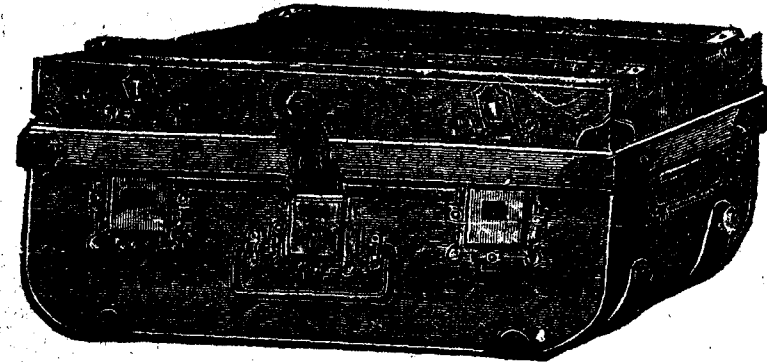


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THE EDITOR,

Madras Veterinary Journal,
CHEPAUK, MADRAS.

PRINTED AT THE N. M. S. PRESS, VEPERY, MADRAS.