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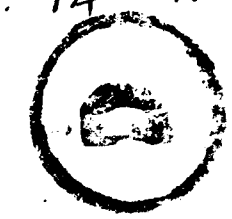

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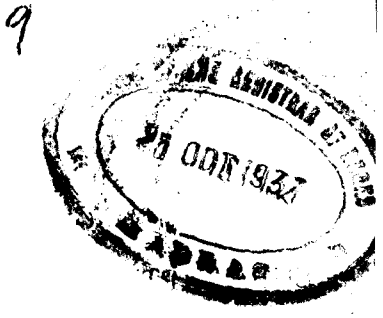

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NOTICE

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A quarterly record of Veterinary Medicine and Surgery
devoted to the cause of the Veterinary Profession.

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Vol. XIV.] OCTOBER 1937. [No. 2.

CONTENTS.

RAO SAHIB V. P. SUBRAMANIA MUDALIAR, G.B.V.C.,
Retired Dy. Superintendent, C.V.D., Madras,
whose 80th Birthday was celebrated on 1st August 1937.

THE

INDIAN VETERINARY JOURNAL.

Vol. XIV.] **OCTOBER 1937.** **[No. 2.**

General Articles.

409

SOME OBSERVATIONS ON THE VIABILITY OF RINDERPEST GOAT VIRUS UNDER DIFFERENT CONDITIONS*

BY

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AND
G. A. HARDIKAR, G.B.V.C.

Due to economic importance of Rinderpest, workers in different countries have been trying to find out effective means of immunising cattle against it. Towards the attainment of this object, tissues such as spleen, blood, serum, etc., from the infected or hyper-immunised animals are being made use of in different forms to get passive or active immunity. Since Koch (1896-97) made his first observations on the behaviour of Rinderpest Virus in Goats, many workers attempted to find out to what extent it could be put to practical use. Bliss and Topacio (1922-26) respectively appear to have first studied the practical importance of Goat Virus in immunising cattle against Rinderpest. In India the early observations of Edwards and Cooper led Stirling and Kerr in C.P. and Bengal respectively (1932-33) to study the practical side of the researches

*Paper read at the Ninth All-India Veterinary Conference, Bombay, December, 1936.

under field conditions. They thus protected a fairly large number of animals and have recorded their views. Since then Goat Virus alone method of immunising cattle is being practised on a very large scale in almost all the Provinces.

Rinderpest virus being very fragile and liable to be quickly destroyed by heat and light, has also led the workers to find out how long the virus would remain alive outside the animal body. The researches on this line are being conducted in the Muktesar Laboratory and in the Provinces and the results are made available in their reports. G. N. Hall, working in Africa, has also placed his observations on record in his Thesis. From the time the Virus Depot was started here experiments have been conducted under laboratory conditions in order to find out the viability of the virus outside the body of the donor.

The investigations in these experiments are mainly restricted to finding out how long the virus would remain alive outside the animal body, in blood, spleen tissue, and tissue extracts.

Blood virus at room temperature.

On one occasion during hot days (September and October 1935) when the temperature was between 98-102° F blood virus used after 5 and 6 days storage at room temperature failed to react and on immunity test these goats showed satisfactory reactions except one which proved resistant even to the second injection with fresh virus. The virus in this case was quite sterile though slightly discoloured. On another occasion in cold days (November and December 1935) when the temperature was between 80 and 84° F blood virus stored at room temperature for 5, 6, 7 and 10 days was found infective. The reactions in each case were found delayed proportionately to the number of days and the latest day of reaction recorded was on the 5th day from the date of injection. The onset of discolouration of blood in this case was not so rapid as in hot days but the degree of discolouration was progressive as the number of days increased.

In a third experiment equal quantities of blood virus and sterile N. S. solution were mixed together and kept at room temperature

between 80 and 85° F. On the 4th and 6th day this mixture when used in 0·5 c.c. dose gave very encouraging results. The work on this line requires further investigations during hot days before conclusive results could be declared. If this were to prove successful it would go a long way in increasing the output and economising the virus production on the whole.

Blood virus direct from refrigerator.

In this case blood virus was found quite infective when used in goats on direct removal from refrigerator after 1, 2, 8, 11 and 19 days storage. The reactions were proportionately delayed to the number of days of storage. This phenomena revealed that the concentration of viable cells was decreased gradually from day to day and the virus was thus attenuated.

Blood virus from refrigerator and room temperature for varying periods.

During January 1936, blood virus was stored in refrigerator for 7 days and subsequently at room temperature (between 77-82° F) for 4, 5 and 6 days and when tested gave the following results.

In the first case (7 days Ref. and 4 days R. T.) the virus reacted well in one goat on the 5th day while in the other animal it failed. On immunity test the latter failed again and thus it proved resistant to rinderpest.

In the second case (7 days Ref. and 5 days R. T.) one goat reacted well on the 7th day whereas the other failed. But the latter, on immunity test, showed reaction. This appeared to prove that the dose of blood used at the time of the first injection was found to be inert. Thus the duration of storage appeared to have a considerable effect on the virus concentration.

In the third case (7 days Ref. and 6 days R. T.) both goats reacted, one on the 6th and the other on the 8th day.

Viability in saline extracts with spleen tissue.

In the first experiment during November 1935, spleen tissue emulsion when tested after 2, 3, 4, 5, 6 and 8 days storage at room

temperature (85-90° F) was found infective up to the 4th day and non-infective thereafter. Similar results were also obtained in a second experiment in the same month.

In the third experiment however in January 1936, when the temperature was between 75-82° F, saline extract was found to be quite viable after 3, 4, 5 and 6 days storage at room temperature.

These three experiments showed that the virulence in saline extracts markedly decreased with the rise in temperature when exposed to room temperature even in cold days. Therefore one may conclude that the saline extracts of spleen are much less favourable for general use in all the seasons than blood virus.

Viability in spleen tissue.

In a series of experiments carried out to find out how long the virus is conserved in spleen tissue in the refrigerator and subsequently at room temperature, the following results were recorded. In one experiment it was observed that the virus in spleen tissue was conserved for 40 days when the same was stored in refrigerator but when kept at room temperature 85° F after only 29 days storage in refrigerator it soon lost its viability completely. But when the period of refrigeration was reduced to 9, 10 and 14 days only the tissue was found to conserve the infectivity up to 5 days at room temperature 85° F.

Conclusions.

1. All the foregoing experiments showed that the virus got attenuated quicker in hot days than in cold days.

2. Saline extracts of spleen lost the viability earlier than blood in hot as well as cold days.

3. Discolouration of blood and tissue extract though sterile was gradually progressive in hot as well as cold days but much slower in the latter case. It was found that high temperature helped in bringing about discolouration of blood.

4. The degree of room temperature was a potent factor in determining the duration of viability after refrigeration.

5. Delay in reaction was directly proportional to the period of storage.

6. Refrigeration of tissues was found to be of great value in maintaining a strain of virus during the days when virus demands were low.

7. During the experiments it was observed that a virus which was stored for a long time either failed to give any reaction or the reaction was delayed and as well as mild. We are of the opinion that this phenomenon can be taken advantage of in using such attenuated virus for milch buffaloes in the towns where the owners do not like the milk yield to drop.

A BRIEF NOTE ON THE GOAT TISSUE VACCINE INOCULATION AGAINST RINDERPEST IN H. E. H. THE NIZAM'S DOMINIONS*

BY

NARSINGH PERSHAD, G.B.V.C., P.G. (MAD.),

Veterinary Inspector, Mahboobnagar, H. E. H. The Nizam's Dominions.

Different methods of protecting cattle against rinderpest have been practised, during the past few years, in India including the Hyderabad State. Goat Blood and Tissue Virus inoculation appear to have gained grounds and are being employed in the field to immunise cattle on a large scale and to control outbreaks. These operations being cheap and effective were taken on hand in the Dominions after the preliminary investigations carried out by the Veterinary Investigation Officer Mr. Mahajan.

A description about the Goat Blood Virus inoculation has already been given by Mr. R. R. Joshi, G.B.V.C., of the Civil Veterinary Department, Hyderabad-Deccan, in his paper "Active Immunisation of cattle against Rinderpest with special reference to vaccination with Goat Virus alone in H. E. H. the Nizam's

*Paper read at the Ninth All-India Veterinary Conference, Bombay, December, 1936.

Dominions", read during the 1934 session of the All-India Veterinary Conference.

I will confine myself to the Goat Tissue Vaccination work introduced in the Dominions.

Advantages over the Goat Blood Virus.

This method has its own advantages as compared to Goat Blood method. The first and foremost is keeping quality of the tissue vaccine as compared with goat blood virus. Furthar we can get a large amount of tissue vaccine as compared to goat blood virus from one goat.

The reaction with tissue vaccine is milder than with the goat blood virus vaccination and as such if used under parallel conditions the mortality would probably be somewhat less with tissue virus vaccination than with the other.

Production of tissue vaccine.

Tissue vaccine is manufactured at the virus station attached to the office of the Director, Civil Veterinary Department, Hyderabad. Goats are regularly sub-inoculated with the original strain of tissue vaccine obtained from the Imperial Veterinary Research Institute, Muktesar, destroyed on the 5th day of reaction, spleen removed and ampouled aseptically. This product and the blood virus are regularly issued to the field for operations against rinderpest.

Circular Instructions for the Preparation of Goat Tissue Vaccine for use in the field.

I. *Field requisites* :—

(1) Spt. Methylatus.
(2) Glass pestle and mortar.
(3) Sodium chloride (soloid brand).
(4) Stoppered bottle one pound capacity.
(5) Gallipot with lid.
(6) Measuring glass (4 oz. capacity).
(7) Funnel enamelled (4 oz. capacity).
(8) Filter paper.

(9) Mug enamelled with lid (1½ lbs. capacity).
(10) Hypodermic syringe 1 c.c.
(11) Forceps one pair.
(12) Cotton wool.

II. *Preparation of 0·5 per cent. saline solution:*—The exact strength of this solution is important. Take 20 ounces of clean water in the large enamelled mug and add on "soloid" brand sodium chloride to it and boil for 5 minutes, Allow it to cool and filter in the stoppered bottle supplied. This solution can conveniently be made at head-quarters and carried to camp for use.

III. *Technique in the field—(i) Sterilisation of pestle and mortar.*—The pestle and mortar are thoroughly washed with soap and water and when dry rubbed with a small quantity of methylated spirit and lighted. After the spirit has burnt off, the articles should be rinsed in two changes of sterile saline solution, taking care not to touch the inside of the mortar and the rubbing end of the pestle with fingers.

(*ii*) *Preparation of the Tissue Vaccine Emulsion* :—The sealed end of the ampoule containing the spleen tissue is sterilised with cotten wool soaked in methylated spirit before the end is broken with the sterile forceps. The tissue is then jerked out into the sterile mortar for trituration. When sufficiently triturated it is emulisified with 5 to 10 c.c. of saline solution. It is then poured off into the Gallipot and more saline solution is adddd to the emulsion to make the volume 100 c.c. Allow the emulsion to stand for sedimentation for some little time and decant the supernatant emulsion into the sterile gallipot and cover it.

(*iii*) *Instructions.*—(1) The ampoule of spleen tissue must be smelt on opening, to ascertain its conditions. If decomposed discard it.

(2) During the process of preparation and use, the emulsion must not be subjected to heat or direct sunlight.

(3) The emulsion prepared must be used as soon as it is made and not kept over for use on the day following. The dose is 1 c. c. per animal.

(4) Spare tubes of spleen tissue should be wrapped in cotton wool and kept in cold water.

(5) The ampoules of spleen tissue should not be used after six days from the date of issue.

(6) The discarded spleen tissue should be destroyed.

Experimental Camps.

To compare the efficiency of this method over that of goat blood virus vaccination inoculation camps were opened in different places throughout the Dominions. The district field staff were trained at such camps.

The experience gained in these different camps is that a reaction is observed in each animal immunised, but such reaction was milder than the one produced by goat blood virus. It was also found that immunising buffaloes with tissue vaccine or with goat blood virus was attended with considarable risks.

Animals Immunised.

In all 26,839 animals were immunised with tissue vaccine throughout the Dominions till September 1936, with negligible mortality.

Acknowledgment.

I am very grateful to Mr. M. R. Mahajan, M.R.C.V.S., Veterinary Investigation Officer, Hyderabed State, and to Mr. B. K. Badami, G.B.V.C., Director, Civil Veterinary Department, Hyderabad-Deccan, for their help and guidance.

RINDERPEST—METHODS OF IMMUNISATION

BY

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(*Continued from page* 34.)

Serum-simultaneous method—This is also known as double inoculation or sero-virus inoculation and consists in the subcutaneous injection of Anti-Rinderpest serum on one side of the

animal and virus on the other. The virus may be in the form of blood or any infective material obtained from a Rinderpest affected animal. In this article bull virus, *i.e.* virulent blood of a very susceptible Rinderpest affected animal such as hill bull of the Kumaon and Garwhal districts, will be taken as the virulent material.

It was originally introduced in Africa by Kolle and Turner in 1896, and they were able to obtain reactions in about 90 per cent. of cattle inoculated with a loss of about 1·5 per cent. Other workers there had less successful results. Rogers who experimented in India about 1900, on the Hymalayan cattle was able to obtain favourable results and even suggested that such animals as failed to react at the first inoculation should be inoculated with virulent blood alone about a week later to ensure their immunity. This method was not adopted on a large scale in India at first as it was in the experimental stage and involved a certain amount of risk, which was enhanced by the fact of existence of several types of cattle, whose degree of susceptibility to Rinderpest was not known. Some rather heavy casualties which resulted from the adoption of this method in the cattle both in North and South India gave it a set back and the chief method of immunisation of the cattle then adopted was the serum-alone. About the year 1916, Shilston experimented at Muktesar with different breeds of cattle of low resistance with a view to ascertain the rate of serum that would be necessary to protect them against their simultaneous infection with virulent blood and was able to obtain such good results as to encourage him to adopt and carry out successfully, with the help of two experienced officers, serum-simultaneous inoculations of the cattle of the Military Dairies, both of northern and southern circles. This success led to the gradual adoption of the method in the civil dairies and districts and the Native States.

The method has both its advantages and disadvantages. Its chief advantage lies in the production, in the animal thus treated, of immunity, which is of active nature and which may last from a few years to even its lifetime, the period depending on the reaction brought about by the materials injected. If the operation is carried out successfully with due regard to the production of the

reaction, on which depends the length of the period of immunity, the owner of the animal can rest assured that it will not contract Rinderpest again if outbreaks occur frequently among the herd in his village. The disadvantages are many. There is risk of a certain percentage of mortality among the animals inoculated and the risk is greater if the person responsible for the operation is not sufficiently experienced and acquainted with the dosages of serum and methods of combating the complications that may arise. The cattle subjected to this operation cannot be worked nor let out for exercise or grazing and have to be kept indoors for observation for three weeks or so. It is inadvisable to immunise cattle by this method in localities where strict isolation of the inoculated animals cannot be secured, as otherwise infection is likely to spread to the non-immune animals, which may be grazing or loitering about the infected area. The inoculations of virulent blood may give rise to several complications such as Piroplasmosis, Surra, etc., and these may raise the percentage of mortality by causing the death of the animals independently or conjointly with Rinderpest disease.

In order to carry out the double inoculation and obtain the best results it is essential that the officer in charge of the operations be an experienced man who has both a theoretical and practical knowledge of the following ;

(*a*) Rinderpest disease, its causes, symptoms, treatment, post-mortem appearances, differential diagnosis, and mode of propagation so that diagnosis can be easily and readily made.

(*b*) The mode of preparation of Anti-Rinderpest serum, the method of testing the same and classifying it and its action and uses.

(*c*) The susceptibility of the breeds of cattle to be immunised and the method of ascertaining the susceptibility of the breeds not known to him.

(*d*) The action and uses of the virus in the form of virulent blood or other virulent material and the conditions which can influence its potency.

(*e*) The use of microscope and various stains and abiltiy to diagnose microscopically some of the diseases which may supervene as complications during the immunisation period.

(*f*) A practical knowledge of the use of the different syringes and instruments employed for the double inoculation and also later treatment of the complications that may arise.

(*g*) Skill in the different operations such as bleeding of large and small animals and subcutaneous and intravenous injections.

(*h*) A thorough grasp of all the details before commencing the operations such as the names of the articles required and preliminaries to be arranged and precautions to be taken both before and after the inoculation of the animals.

The technique of the double inoculation consists in inoculating an animal with a dose of Anti-Rinderpest serum depending on its weight and the rate of dosage, on one side, preferably behind the right shoulder and 1 c. c. virulent blood on the other. The serum employed should be of high potency and in order to obtain the necessary kind, the authorities supplying the serum should be informed the breed of cattle to be immunised by this method, along with other details that may enable them to supply the right quality and quantity of the serum. The virulent blood may be either of bull, buffalo or goat but must be potent and the most potent virus would be 'bull virus' produced on the spot, *i.e.*, from a susceptible bull infected on the spot with Rinderpest. As far as possible it should be piroplasma free and this precaution is necessary particularly when the highly susceptible imported cattle are to be immunised. After the first double inoculation, it is a practice with some workers to inoculate the same animals about the seventh day with a dose of 5 c.c. virulent blood each, subcutaneously whether they react or not. This reinforcing dose is necessary in the case of animals that give what is known as 'blocked out' reaction.

In carrying out the serum-simultaneons inoculations in the field, the ideal procedure would be the following:

A site should be selected for the inoculation camp which should be isolated and well fenced to prevent stray cattle from entering and picking up infection. The accommodation for the men and animals will depend on the weather conditions at the time. There should be a small hut in a secluded spot in the camp for the accommodation of the virus producers and an office for the officers near the main sheds for writing and microscopic work. The cattle to be immunised being previously weighed and the necessary quantity of serum obtained, all arrangements should be made to make the camp self contained as far as possible and keep all the men, animals, and material in the form of ropes, drugs, firewood, smocks-charts, thermometers, and other instruments and appliances necessary for inoculations and making observations. On receipt of the virulent blood from the Muktesar Institute or any virus depot, two susceptible bulls should be inoculated with 1 c.c. each and observations taken. At the height of temperature about the 4th or 5th day, the animal that has had better reaction should be bled a sufficient quantity and the blood defibrinated in a bottle or flask and kept in a cool and shady place. The cattle should then be immunised at once with serum on one side and virulent blood on the other, the inoculations being done subcutaneously prefer, ably behind the shoulders. Of course the necessary precautions will have to be taken previously, *viz.*, microscopic examination of the blood to see if free from piroplasma and that all the cattle show normal temperatures and appear well. At the same time that the cattle are immunised, two susceptible bulls should be injected with virulent blood alone to serve as controls and to provide the virus for the second inoculation about the seventh day. The animals will require good nursing during the immunisation period and careful observations will have to be made so that any complication can be immediately treated and the animal relieved. The second inoculation of 5 c.c. virulent blood alone subcutameously about the seventh day is given as a routine measure by some officers, whether the animals react or not. In the case of the

imported or other very highly susceptible cattle it would be advisable to confine this injection to only such animals as show a 'blocked out' reaction. After the cattle have been under observation for three weeks and they appear in normal health, they should be transferred to their original healthy sheds after their feet have been well disinfected.

The important thing to know is the rate of serum for the animals to be immunised as the breeds of cattle in India vary in susceptibility. The following is the list of cattle, whose degree of susceptibility has been ascertained and whose rates of serum have been recommended by the Muktesar Institute.

Ayrshire cattle	at	250-300 c.c.	per 600 lbs. B.W.
Holstein „		250-300 c.c.	„
$\frac{7}{8}$ European bred		220-240 c.c.	„
$\frac{3}{4}$ „ „		175-200 c.c.	„
$\frac{1}{2}$ „ „		125-150 c.c.	„
$\frac{1}{4}$ „ „		100-125 c.c.	„
$\frac{1}{8}$ „ „		80-100 c.c.	„
Scindi bred cattle		60 c.c.	„
Sohiwal „		40 c.c.	„
Harina „		30 c.c.	„
Delhi buffaloes		60 c.c.	„

The Officer-in-charge should see that cows in an advanced stage of pregnancy, very young and weak calves, and grown up animals, which are debilitated and show suspicion of ill-health are not inoculated and suitable time of the year, preferably the cooler, and when the animals can be spared by the owners, is selected.

In consequence of the inoculations the cattle are likely to develop any of the following complications which must be dealt with immediately.

Piroplasmosis.—This disease is caused by the invasion of the red blood cells with the parasites known as Piroplasma Bigeminum. Its presence is evidenced by a sharp rise of temperature, and passage of urine of reddish tint. A microscopic examination of blood smears made at the height of the temperature will

reveal in most cases the presence of the parasites in the shape of two pears meeting towards their narrow ends within the red blood cells. This disease can supervene as a result of inoculation of the virulent blood and also as resuscitation of the parasites dormant in the system of the animal brought about by the Rinderpest attack. In the former case the sharp rise of temperature may be observed about the 9th day from the date of blood injection and in the latter at any time during the immunisation period. The treatment consists in injecting the animal subcutaneously with 100 c.c. of one per cent solution of Trypan blue which is freshly prepared by boiling one grm. of the powder in 100 c.c. of water and allowing the solution to cool until it reaches body temperature. If the symptoms are serious, the solution may be injected intravenously but it should be previously filtered through blotting paper.

Trypanosomiasis.—This complication is brought about by the inoculation of the blood which contained the parasites or as resuscitation of the parasites dormant in the system, in much the same manner as described above. Ususally it does not cause much systemic disturbance in the cattle beyond slight rise of temperature but on rare occasions the animal may exhibit serious symptoms of brain disorder such as coma, extreme dullness etc. Examination of blood smears will easily reveal the presence of the trypanosomes, which are identical in appearance with those of surra. Treatment consists in injecting the animal intravenously with a solution of tartar-emetic at the rate of 5c.c. of a 3 per cent solution per 100 lb. body weight.

Coccidiosis.—This disease is due to the presence in the digestive tract of egg-shaped parasites known as 'coccidia,' which can be detected by examining a fresh film of faeces or the mucous constituents of the faeces of affected animals. The symptoms of this disease are colicky pains and passage of small masses of pure blood clots with the faces which may be soft and watery and covered with slime.. Normally the cattle harbour these parasites in the intestines in small numbers but when their powers of resistance are lowered by attacks such as of Rinderpest, the parasites multiply rapidly and cause serious changes in the lining of the bowel. No drug has yet been discovered which can

cure this disease; good nursing with rice gruel and other nourishing food which can strengthen the animal's power of resistance should be advised.

Theileriasis—This complication is frequently present in the Indian Cattle. The parasites known as 'Theileria Mutans' are very minute piroplasms and may be comma-shaped, rod shaped, or somewhat oval. Examination of the blood smears miscroscopically will reveal them usually situated within the red blood cells, either in small or large numbers, according as the infection is slight or severe. They may make their appearance in the blood about the tenth day or even earlier and may be seen occasionally during the period of immunisation. They do not appear to cause much systemic disturbance in the Indian cattle beyond a rise of temperature but may produce serious symptoms such as high temperature, diarrhoea or soft faeces etc., in the imported cattle. The injection of Trypan blue appears to have very little effect on the parasites. Cooper obtained slightly favourable results with Plasmoquinol (30 c.c. of a 1 per cent solution) injected intramuscularly.

The ideal procedure with regard to the production of bull virus on the spot as described above cannot be adopted in all cases as in certain places susceptible animals may not be available. Under such circumstances the virus obtained from the virus depot will have to be employed direct for immunisation if it is fresh and suitable and two young bulls of the type of any of the cattle to be immunised should be inoculated with this virus alone to serve as controls and also to provide the blood for the second inoculation. Of course it is possible that these controls may not react in which case virulent blood for the second inoculation will have to be obtained from the virus depot.

The cattle inoculated by the double method may exhibit any of the following reactions, *viz.*, block out, mild, fairly severe or severe and the immunity produced will be of active nature, as opposed to the 'serum-alone' method, where the immunity is passive, *i.e.*, the animals do not take an active part in manufacturing its own antibodies but only a passive part in receiving

antibodies contained in the serum injected. It is maintained by some workers that doses of serum and virus should be so adjusted that a 'block out' reaction is set up. If the controls fail to react and the majority of the animals inoculated with serum and virus show no reaction, there is grave suspicion that the immunity produced may not be of lasting nature and that after a lapse of about two years, the immunised animals may contract Rinderpest if artificially infected or exposed to natural infection. Even in cases where the virus is not very potent as evidenced by mild reactions in the controls and the serum employed is very potent, the resulting immunity is not lasting as it is possible that the effect of the weak virus will have been modified by the potent serum and the system will not be sufficiently stimulated to produce immunity of a lasting nature. To ensure immunity of a lasting nature, it is essential that the virus employed for immunisation be very potent so that even in the face of a potent serum, it can give the necessary stimulus to the system. The advantage of a symptomless reaction is that the animals do not lose condition and the possibility of complications is obviated. Fairly severe and severe reactions are inadvisable, as they may cause deaths and resuscitation of other diseases and extreme debility if recoveries take place, though the immunity produced would be permanent. The kind of rection that would be recommended is the 'mild but decided' as the animals would not lose much condition, complications would not occur or be reduced to mihimum and the resulting immunity would be of very lasting nature. Though easily said, it has been found very difficult to adjust the doses of the inoculum even for known susceptible cattle so that the majority of them exhibit the desired kind of reaction.

The point is sometimes raised whether it is advisable to immunise cattle by the serum-simultaneous method during an outbreak in the field. There is great risk in doing so, as a fair number of the animals will be infected though looking well, some may be incubating the disease and difficulty may be experienced in getting the correct weights and making the microscopic examinations and other observations necessary for the success of the method. The precentage of mortality is likely to be high. If the method has to be adopted, then only such animals, that appear well, should be immunised and the rate of serum slightly increased. The virulent blood if available on the spot and suitable could be employed. It will not be surprising if some of the animals exhibit such symptoms as fever, mouth lesions, etc., as early as the 3rd or 4th day from the date of virus inoculation. These are the suspicious ones, which have been incubating the disease or had slight elevation of temperature at the time of inoculation.

(To be continued.)

COLD STORAGE OF THE ARTHUR CRAWFORD MARKET

BY

D. S. LAUD, F.R.H.S., F.Z.S.,

Superintendent of Markets, Bombay.

In 1922, the Refrigerator was installed at the Arthur Grawford Market to store fish and fruit. The cold storage consists of four chambers. Each room has a floor space of 600 square feet with a height of 7 feet and with a capacity for storing 21 tons of fish or 33 tons of fruits. Chambers Nos. 1 and 2 are used for storing fish and mutton and the temperature maintained therein is 28°F to 15°F. Chambers Nos. 3 and 4 are used for storing fruits, vegetables and eggs, and the temperature maintained in these chambers is 45°F to 35°F.

The ammonia system is used with a Light-foot Compressor and a 60 horse power electric engine.

There are two Engineers employed to look after the machinery and plant and one Inspector for issuing receipts, keeping account of the commodities stored in the Cold Storage, etc, with two labourers. The plant is worked generally from 6 A.M. to 9 P.M. daily.

The cost of the construction of the Crawford Market Cold Storage amounted to Rs. 92,456. The Refrigerating plant was supplied and installed by Messrs. Greaves Cotton & Co., Ltd., at a cost of Rs. 1,14,378.

Three years' experiments in storing mangoes in this Refrigerator by the Horticulturist to the Government in 1929 proved successful and made possible the mango shipments to England in 1932 and 1933.

Recently in 1933, a new Cold Storage has been opened by private interests in Mint Road. It consists of a large number of small rooms and is mostly used for storing European imported fish and meat and sausages, cheese, films, etc.

Similarly at the Kermani Market at Arthur Road is a cold storage plant installed for fish and fruit.

Ice is manufactured at the two latter cold storages.

The two accompanying statements show the Income and Expenditure of Arthur Crawford Market Refrigerator and the Schedule of fees to be leived for storing articles.

Schedule of fees to be levied for storing articles in the Refrigerator rooms at Arthur Crawford Market for 24 hours.

Name of article.	*Fees for 24 hours.*
Fish baskets.	3 annas for every 50 lbs. or under.
Fish: Dhara, Ghol, Salmon and Surmai (large)	1 anna each.
Mutton.	4 annas for every 25 lbs. or under.
Tongue or brain (mutton)	½ anna each.
Head (mutton)	1 anna each.
Liver, heart, etc, (mutton)	½ anna each.
Kidneys (mutton)	2 annas for every dozen or under.
Fish (English), Poultry and game birds.	3 annas for every 50 lbs. or under.
Fruits.	1 anna for every package of 50 lbs. or under.
	8 annas *per month* for a package weighing up to 50 lbs.
	or 6 annas *for 15 days* for a package weighing up to 50 lbs.
Grapes.	1 anna per case weighing up to 50 lbs.
	8 annas *per month* for a case weighing up to 50 lbs.
	or 6 annas *for 15 days.*
	2 annas per kulu (bamboo basket of larger size).
	One rupee *per month* per kulu (bamboo basket of larger size).
	or 12 annas *for 15 days.*

Name of Articles.	*Fees for 24 hours.*
Vegetables.	1 anna for every package of 50 lbs. or under.
Butter, cheese biscuits, dry fruit and oilmanstores.	1 anna for every 50 lbs. or under.
Eggs.	2 annas for a packet of 100 lbs. or under.
Medicines, serums and other chemicals.	2 annas per packet of 100 lbs. or under.

N.B.—The following articles will not be allowed to be stored :—
Ham, bacon, pork, beef, sausages and meat of wild pigs, nilghai or peacock.

Statement showing the income and expenditure of Arthur Grawford Market Refrigerator.

Income.

	Rs.	A.	P.
1931-32	31,834	6	6
1932-33	32,911	2	0
1933-34	29,114	3	9
1934-35	27,376	12	0
1935-36	23,308	3	3

Expenditure.

1931-32	19,442	0	0
1932-33	19,236	0	0
1933-34	19,472	0	0
1934-35	18,500	0	0
1935-36	15,110	0	1

THE MARWARI HORSE

BY

DR. C. J. FERNANDES, G.B.V.C., P.G. (BOM.),

P. G. (PORTUGAL), F.R.H.S. (LONDON), F.Z.S. (SCOT.)

Director, Animal Husbandry Department, Government of Jodhpur, Rajputana.

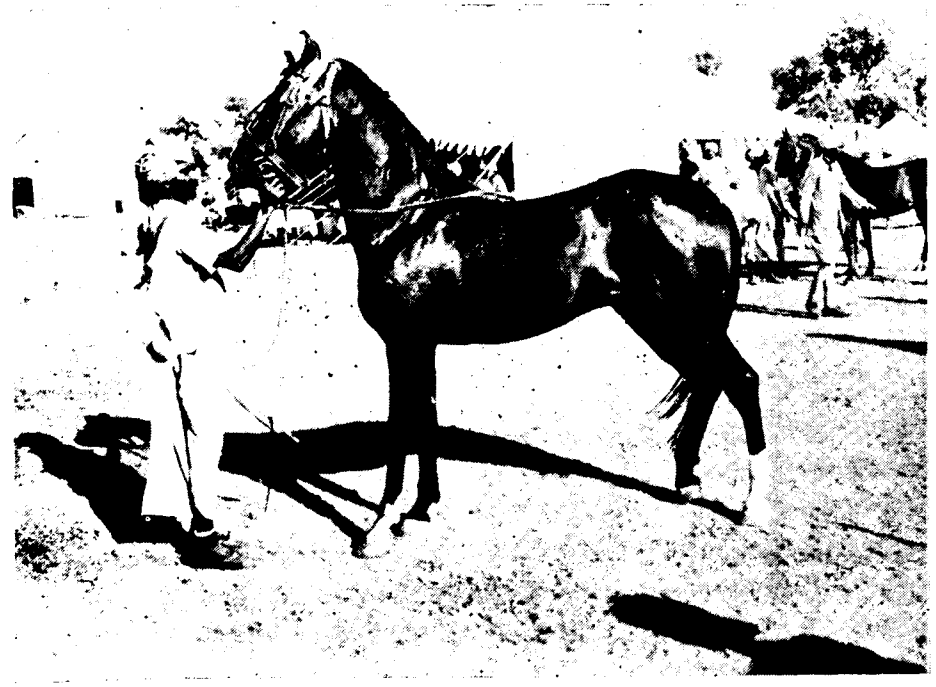
The God of the most vital planet, the Sun, runs his race in his chariot driven by white horses, signifying in their motive force all the active elements of creation.

To the heroic race of the Rathors which claims descent from the Sun, the horse has a hereditary importance almost divine in veneration and inseparable from their historical associations.

The fall of the kingdom of Kanauj saw the valiant Rathors withdraw to less favourable lands of uninviting weather and physical features, so that the war of independence may continue to be waged without drawing the enemy's attention. The horse to them was an indispensable part of their existence. Speed and the capacity to withstand the intense heat and intense cold, and to gallop for hundreds of miles together at one stretch, were factors which endeared to them their equine possession. During this period, when they came to settle down in Marwar, horse breeding received much impetus. Special emphasis was on speed and hardihood. The yellow coloured Chaitak of Maharana Pratap Singh whose achievements on the battle fields and on the hunting grounds are only second to that of his master, was a native of Marwar and so was "Kaisar Kalimi" of Pabuji, the pioneer horse and camel breeder of Marwar in the 14th century. This black mare has become a legendary figure for traversing the great Indian desert in one night to rescue a herd of cows from the dacoits. Motiya of Baluji Champowat and the studs of Maharaja Amar Songhji Rathor have made history in Marwar. Less than a century ago, Kavi Rajji Murardanji, the then Fozdar completed in one night the journey from Sanchor to Jodhpur to attend the Gangor festival and was back again to Sanchor the next day, and all this on his favourite mare.

Throughout the middle ages of Indian history, horse breeding remained the chief occupation in Marwar. During the period of the Moghul Emperor, the whole of the Rajput population of this country formed an Imperial service cavalry of over 50,000 horses proudly described in "Ainai Akbari" as "One Lakh Talwaran-Rathoras."

All the big Thickanas had studs of their own, and reared hundreds of horses, and paid great attention to pedigree, discriminate breeding, and proper feeding, and maintained



THE MARWARI STALLION.

Plate No 15.

THE MARWARI BROOD MARE.

experienced "Salihotri" the ancient progenitor of the modern Veterinary Surgeon.

To encourage good breeding of horses and horsemanship, regular seasonal shows, races, cattle fairs, and horse fairs were organized on occasions of festivals, marriges and other State functions, the Dasehra, the Tijan, and Gangor serve as examples wherein, the horse was in the fore front of all merry-making and festivities.

The bardic literature speaks volumes of the horoic exploits of the Marwar studs, leaping up to "Haudahs" of elephants during battles, and across high barrier walls of cities and forts. It is difficult to trace the origin of the *bona fide* horse with much precision, but it is probable that originally it derives its blood from the Persian, the Turkish and the Arabian horses, for the wandering Arab and the Persian trader passed very often and crossed Marwar from Kathiawar and Sind. Their caravans consisted of among other commodities of livestock, like horses, camels, sheep, goats, donkeys, etc., and made contribution to the pedigree of the Marwari horse. In recent years His late Highness, Sir Pratab Singh introduced, the English and Australian stallions, for cross-breeding purposes.

Character of the Marwari Breed.

The Marwari horse is well known for his magnificence, face, beauty, build, ease of pace, speed and hardihood.

The Rajputs of Marwar paid attention to the quality of intelligence and courage and so, for intelligence, faithfulness, great lung capacity, tense muscles the Mawari horse is the best and is noted for covering long ditances under severe conditions. In modern times they have distinguished themselves in polo and other Military feats. They are also capable of carrying heavy loads.

The Marwari breed of horses consists roughly of various colours in the following proportions—Chestnut or bay 35 percent, brown 15 percent, grey 25 percent, black 10 percent, piebald and skewbald 10 percent, and white 5 percent. Of these, the Marwaris favour the chestnut or bay known for endurance and other military purposes,

the black is a good charger, brave, faithful, spirited and beautiful while the white is a noble handsome animal of delicate temper suitable for royal rides. Thd piebald and skewbald horse with white head and forelegs, is auspicious and is a fancy, and the brown is gentle, fine and appropriate as a lead in a procession.

Distinguishing Characteristics of the Marwari Horse.

There are certain special features of a horse of this land that distinguishes it from the rest of the horse breed. The head is of pleasing appearance and quality and is of moderate size. Its forehead is broad with tapering mouth. The Marwari breed has its ears erect, active and smart, acutely pointed, bent a little inward and medium sized. Its eyes are prominently large, clear and intelligent. There is in them an element of brightness indicative of vigour and staying power. In the case of a stallion, there is a redness in the angles, viewing obliquely, with fervour and sexual intensity. The nostrils of a typical Marwari horse, are wide, orbicular, thin, dilatable, pink within, and are moist in appearance. The nostrils of the male are slightly raised. Its neck is long, arched, well-outlined, strongly muscular and is thicker towards the shoulders. Its chest capacity is large, wide, deep and lappy, its arm pits open, permitting free play of shoulders and legs. Its shoulders are proportionate, sloping obliquely to give elasticity and freedom of movement and support the neck high, while the ribs are well sprung and are close to each other, and curved with a depth at withers. The belly is roundish, depressed and tapering backwards. The back and the loins are comparatively broad, roundish, level and muscular, well covering the back-bone channel, hind quarters full and roundish, thighs, strongly and profusely muscled, the gaskins being prominent, when viewed from behind, the muscles of under-thighs, fitting the space behind the hind limbs. The hind legs are deep and wide at the back, and free from fleshiness and the cannon bone is sharp, flat and clear. The entire leg is well proportioned, with ankle joints long enough to give spring and elasticity, while the arms are strong and humerus short, upright and stylish. The knee is broad at the front and is strong. Its, feet are medium, firm texured, looking like a buffer, the whole suggesting speed and long pacing. The hoof is curved and projecting in the middle indicating speed and ease of movement. Its tail is long, curved in upperpart, hair long, tapering, hanging straight and giving liverage.

The Pure Marwari horse has won many a laurels at the battle field, on the hunting ground. in the Polo field. It is one of the four distinct breeds, which the parent stud at Ahmednagar produced, *i.e.*, (*a*) Pure Arabs, (*b*) Pure Kathiawari, (*c*) Pure Marwari and (*d*) the Anglo-Arab.

It was suggested by Bt. Lt., Colonel D. Robertson, whose Regiment the 11th P.W.C. Lancers had one of the oldest and the best stud farms, that, for a light cavalry stamp, the Marwari horse was the most suited to local conditions, the breed of which can be improved further by selection of Sire and Dam. An "Arab-Marwari" may be tried, but in his opinion it was highly undesirable.

The Marwari horse has a big future. The interest that His Highness the Maharajah Sahib Bahadur of Jodhpur has been taking in horse breeding and horse maintaining is a great impetus to the improvement of horse breed in Marwar. By birth and by heritage it has a claim over all other breeds and by careful management it can easily demand the blue ribbons of Indian "horsing."

THE PRESENT PROBLEM OF VETERINARY EDUCATION IN INDIA

BY

M. V. PILLAI, G.B.V.C.

Late Assistant Veterinary Surgeon, Penang.

Events are fast moving in India now on account of the new constitution that is in operation. The New Indian Premiers are trying very hard to justify their positions by introducing "Nation Building Programmes". The atmosphere at present has become "live-stock minded" due to the initiation started by the present Viceroy of India. Rajahs, Zemindars and other landlords, who have been adopting a dignified silence till now, have now been roused by His Excellency's country-wide appeal

of life-stock improvement and presentation of stud bulls to improve the conditions of animals. Out of fear or favour or to sudden emotion which is characteristic among us, all big men have started taking unusual interest in live-stock improvement upon which lies the future prosperity and progress of the people as a whole.

Experience has shown that no nation has become civilised, no nation has attained health, happiness and prosperity without cows, for they produce and provide us with the finest food possible under the Sun, for rich and poor, healthy and unhealthy, young and old. When a country is deprived of such a valuable food there is no doubt that, that country will ever remain poor, unhappy and unhealthy. What we want at present to make our country rich and prosperous, is increased production, more natural food, more wealth, more milk, healthy children and so healthy men. It is on account of these, that His Excellency the Viceroy, having carefully studied the problems in time, prescribed, improvement of live-stock as a suitable remedy to overcome the crushing poverty and un-employment among the people.

It is admitted on all hands that improvement of live-stock in India—a country which possesses the largest number of animals—must necessarily go side by side with the improvement of Veterinary education, because it is the highly trained and qualified Veterinarian that is more responsible for the health of the animals. Every one is aware that he is not only a man to treat them but also a man who can co-operate with the owners in developing better type of animals, by adopting Scientific methods of breeding, feeding, and management. This is one of the main reasons why Veterinary education in Western countries has been given such an important place. In all these countries there are fully equipped institutions with ample facilities for research work in all branches of Science, and manned by highly distinguished teachers who are authorities in their own lines.

A little bit of self-criticism is necessary to understand what we are, where we are and how we are in a vast Agricultural country like India as regards Veterinary education is concerned, inspite of the abundant number of animals and innumerable

diseases present among them. We have been told already by the army authorities, Royal Commission on Agriculture in India, and the Royal College of Veterinary Surgeons in England, that the standard of teaching imparted in the five colleges in India is inadequate and unsatisfactory when compared with the other colleges of the Empire. No one can deny that the remarks of the above recognised bodies are untrue and the pity of it is that no one has ever tried to remove this long-standing discredit thrown on to our colleges. I am not in the least ashamed when I say that we are at present looked down by others as out-castes on account of our position, education and salary, though our colleges have produced a fairly good number of able men who have proved themselves efficient in certain administrative work, research work, and teaching.

Specialisation has become the order of the day, in all professions. In Veterinary also the education has become complex, having many branches according to their changing conditions. Animal husbandry, poultry rearing, public health work, and laboratory work have been given importance in these days in all Veterinary Colleges. Under these circumstances, it is not difficult to convince any one that a three years' course in Veterinary education in India is absolutely insufficient and inadequate to meet the above demands. An ideal teaching staff containing an expert teacher in each subject with suitable assistants is also lacking in many of our colleges. I can cite many other concrete instances to prove that the present system has its own defects.

We must hang our heads in shame when we see around us that the sister professions such as Medicine, Law, Engineering and Agriculture have advanced so far that they are provided with very high standard of education which can favourably be compared with that given in Western countries, with the result the degree-holders of the above professions, from India are given exemptions to take higher degrees in British Universities. Even the licentiates of our Indian Medical schools have been given certain privileges and exemptions to take the diploma of the Royal College of Physicians and Surgeons of England, Ireland and Scotland after two years extra course. Whereas no favour, no con-

cession and no exemption is given to a poor Indian Veterinary graduate however clever or experienced he may be, to take even a post-graduate diploma from Great Britain and as a result, some of our experienced graduates rush to Edinburgh to attend certain courses just to satisfy themselves in putting after their names (P. G. Edin). Of course, certain people were benefited by this short course in getting higher appointments in olden days.

Lack of uniformity in teaching, entrance requirements, professional examinations, and granting of diplomas are some of the common defects that are seen in our colleges and these should be eradicated. As regards diplomas are concerned, each Principal has his own ways of changing according to his whims and fancies. For example, Madras, Bombay and Patna still retain the title of "Graduates" of these colleges, the Punjab after the introduction of four years course changed into "Licentiates" and Bengal showed the originality of introducing a different one as "Graduate" in Veterinary Science. Except these insignificant changes no material improvements have so far been introduced or cared to be introduced by the Directors of Veterinary services, or the Principals of colleges or by the Central or Provincial Governments with the result that the Veterinary education in India has been subjected to criticisms from different sources and by different people. A thorough overhauling of the present system of education is long over due and it has now become a very serious problem that is engaging the attention of the authorities at present. So long as there are well equipped colleges already existing in the five provinces, it is not a head racking problem to improve the standard provided these colleges are fully and properly developed and staffed according to the present day conditions so as to train up efficient Veterinarians both for higher and lower jobs in India without incurring much expenditure. Unfortunately, the experts who have been entrusted to reorganise Veterinary education adopted a short sighted policy in recommending to establish a central college, somewhere in the jungle, at an enormous expense. There must be some motive behind this recommendation, because this is a policy unknown and unheard of in any other part of the civilised world. Anyhow it is not too late for the present Premiers to include this question of Veterinary Education among the various nation building programmes and set up a fresh Committee of enquiry into the reorganisation as they have recently done in England and thus increase the status and value of the profession to the great benefit of the country.

THE OCCURRENCE OF COCCIDIA IN DOGS AT BOMBAY *

BY

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This paper is intended to record the presence of Coccidia (Isospora rivolta) and the affection 'Coccidiosis' caused in dogs at Bombay—India. Besides a brief description of the parasite itself, the history of the cases treated is also given.

This protozoon parasite of the intestinal tract appears to have gone unnoticed possibly on account of the following three reasons (1) paucity of workers, (2) lack of interest in the treatment of dogs on the part of owners and (3) lack of Laboratory facilities to the Veterinary Practitioner.

From the literature available two references are worth mentioning so far as the work in India is concerned.

Cooper (1927) reports "Recently an examination of a small number of various animals has been undertaken at the Muktesar Institute and infection has been found to occur in Bovines, Buffaloes, Sheep, Goats, Ducks, Geese and in domesticated and wild pigeons." In the same article he (Cooper) mentions of coccidia occurring in other animals as Rabbit, Cat, Dog and man but there is no mention of actual findings either in the dog or cat at the Institute.

The Editor of the *Indian Veterinary Journal* also makes a passing reference to the article in question in a foot-note. He states "Isospora species have been encountered in the dog occasionally in South India and it does not appear that any work has been done on it. Apparently the infection is harmless but one cannot think it is so unless it is proved."

*Paper read at the XXIV Session of the Indian Science Congress, 1936.

It may be noted that neither Coopor nor the latter author make definite mention of the species encountered by them.

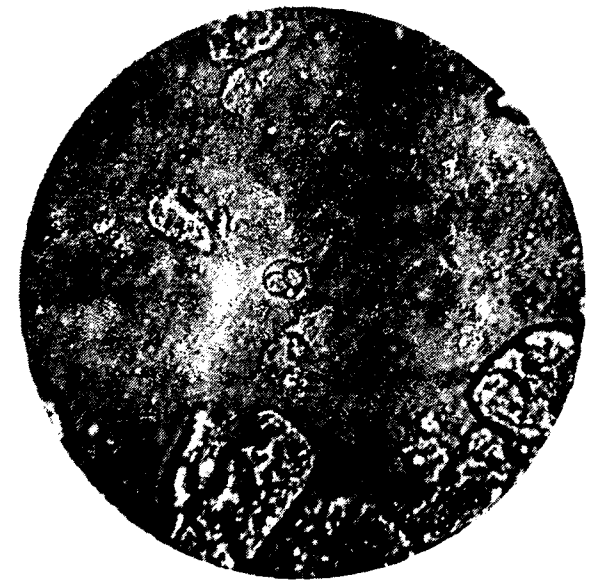
There are four species of coccidia belonging to the two genera concerned in the coccidiosis of dogs as mentioned by Wenyon. They are (1) *I. bigemina*, (2) *I. rivolta*, (3) *I. felis*, and (4) *E. canis*.

The chief distinguishing features of the three species of Isospora is their respective size of their oocysts although Dobell disputes this criterion. The dimensions in microns as stated by Wenyon are :—

Species.	Oocyst.	Sporocyst.
I. rivolta	20-24 × 15 to 20	12-15 × 9-10
I. bigemina	18-20 × 14 to 16	13·5-15·5 × 9-10
I. felis	39-48 × 26-37	20-27 × 18-21

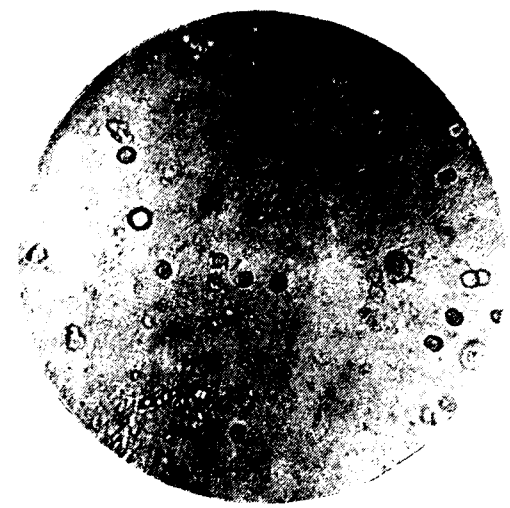
I shall quote here in support of my paper some conclusions arrived at by Wenyon in an article on the distinguishing features of the various species of Isospora (1) that there occur in cats and dogs three species of coccidia of the genus Isospora, *viz.*, *I. felis* n. sp., *I. rivolta* (Grassi 1879) and *I. bigemina* (Stiles 1891). The last named is a small parasite of the deeper tissues of the villi of the small intestine and development of the oocyst may be completed in the vertebrate host, while the two former are larger and parasitic in the epithelium covering the villi, the development of the oocysts not taking place till they have left the body. (2) the complete development including schizogony and sporogony of *I. bigemina* takes place in large cells in the intestinal tissues of the villi and hence the oocyst is formed and completes its development. Its wall is comparatively thin while that of the sporocyst is relatively thick. (3) The development of the oocyst of *I. rivolta* was studied and this takes place only after it has left the body as in the case of *I. felis*. This theory has been again revised by Wenyon as can be judged from his book (1926).

Various Continental and English Veterinary Surgeons and others (Zaphe), (John Heath), (Prof. Martin) have described the clinical symptoms of their cases and the genus of coccidia encountered by them.



COCCIDIA IN DOGS.

Plate No 17.



COCCIDIA IN DGGS.

In the Patho-Bacterological Laboratory attached to the Bombay Veterinary College on an average at least 500 samples of faeces of dogs alone are examined per year for the presence of Ova of intestinal parasites. Various methods are employed for their detection, as, concentrated solution of salt, sheather's sugar method, sedimentation method, direct examination as for amoeba, etc., and never before came across with coccidial infection. Only very few samples of faeces of cats have been examined and the author of this paper cannot refute the presence or absence of coccidial infection in them.

During the latter part of January 1934, one after another two cases of coccidial infection in dogs were observed and this paper is the result of those observations, though four more cases have been diagnosed since then. The faeces of the first case were examined as a matter of routine only by the concentrated solution of sodium chloride. The presence of oocysts of coccidia was detected. The infection was a poor one (one oocyst for every six or eight fields). There were also present two or three oocysts containing two sporocysts with more or less developing sporozoities four in each, with a residual body. It should be noted that the faeces were sent to the Laboratory the previous day to the examination. For further development and as an aid to the classification of the genus of this coccidia the faeces were left in a 2 per cent Pot. Bichromate solution. Fresh faeces were collected again the next day and the examination revealed the presence of oocysts in different stages of development four sporozoites and a residual body in each sporocyst. The thickness of the wall of the oocyst in comparisoon to that of the sporocyst was greater. On an average the oocyst measured 22·5 × 20 microns (see Fig. 1). These descriptions of morphology and measurements agree with that of *I. rivolta.*

Another dog's faeces on examination by the sheather sugar method revealed the presence of a heavy infection of *I. rivolta* and also a heavy infection of hook worm. The heaviness of infection of the former can be judged from the accompanying figure (see Fig. 2). Administration of Nema Capsules (P. D. & Co.) for the eradication of hook worm resulted in the complete disappearance from the

faeces of hook worm ova almost in 36 hours but not any diminution in the number of coccidia.

The following are the clinical reports of the two affected dogs :—

Case No. 1.

Subject:—A black mongreal dog, age 1½ years, property of Mr. M. with a history of vomition and diarrhœa admitted on 20-1-34. Fæces sent for examination on 23-1-34. Result of examination, positive for coccidiosis—*I. rivolta.*

Treatment:—Intestinal antispetics and astringents. Faeces on examination on 24-1-34, negative for coccidia. As the owner insisted that the dog should be given back to him, the dog was discharged at his request. The owner was instructed to bring back the animal to Hospital on the first sign of diarrhœa or dysenteric stools.

This case was again admitted on 29-1-34 for dysenteric stools but the fæces on examination did not reveal the presence of oocysts of coccidia. Two days later faeces showed the presence of large number of hook worm ova and was then treated with Nema Capsules. The animal was discharged as fit on 7-2-34.

Case No. 2.

Subject:—A black mongreal dog age 4 years, property of Mr. K., admitted on 25-1-34, with a history of poor appetite, emaciation and diarrhœa, temperature 102·4° F was recorded.

Disease suspected:—Worms. Faeces on examination proved to be of a mixed infection of Isospora and Hook-worms. Administration of Nema Capsules eradicated the latter but not the former as shown by the microscopical examination of faeces. Though on subsequent days the temperature was normal, the animal gave up food, stools were more bloody, the condition of the animal having become very poor, the animal collapsed on 29-1-34. The owner did not allow a Post Mortem.

Conclusions:—(1) *Isospora rivolta is* recorded as a parasite of dogs in Bombay. This would appear to be the first authentic record of coccidial parasites from these animals in Bombay.

(2) that no percentage of coccidial affection could be struck since only a small percentage of total population of dogs are admitted into a hospital, there being no examination of healthy dogs to investigate the incidence of affection.

(3) that owing to lack of reports from other parts of India on Isospora in Dog and Cat, it cannot be said whether other species of Isospora than *I. rivolta* are encountered.

Acknowledgments:—It is my pleasant duty to acknowledge my indebtedness to Mr. V. R. Phadke, G.B.V.C., J.P., the Principal and Mr. A. N. Gulati, M. Sc., for their valuable suggestious, to Dr. V. R. Khanolkar, M.D., Professor of Pathology and Bacteriology, Seth G. S. Medical College, for allowing the use of microphotographic apparatus, and to Mr. S. M. Nadkarni, B. Sc., (Asst. to Dr. Khanolkar) for taking the microphotographs.

(Since the report of these cases four more have been recorded to be infected with Coccidia *I. rivolta.* In all these cases there have been either hook-worms or Ascarid infection and treatment only of these has been adopted leaving the coccidia unaffected. It appears that spontaneous recovery does take place and cases of death are due to secondary infection and general weakness.

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THE

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Editorials.

RECOGNITION.

We have already shown that the proposal to establish a Central Veterinary College at Izatnagar is most uneconomical and ill-advised in many respects. In the British Isles which are smaller in area than any major province in India, there are five Veterinary Colleges presumably at the same level of education. In India also there are five Veterinary Colleges, but the standard of education in these Colleges differs. The blame for such a state of affairs rests on the shoulders of the stalwarts having sway over Veterinary Education in India. All these years, those stalwarts in conference kept down the advancement, possible in education in these Colleges; yet in spite of them, one or two Colleges boldly marched forwards, thanks for those responsible for it. In the face of these events, the stalwarts suddenly became aware last year of the necessity of raising the standard of Veterinary Education in India to 'almost' the level of what obtains in Great Britain. The idea of raising the level of education is commendable but the ways employed to that end are condemnable. In Great Britain that level of education is made available in all the five Colleges, but in India things are made to shape differently. Only one Central College is to be opened for the whole of India! The idea of this Central College is like building a huge big reservoir at an enormous expense for irrigation purposes but with half-an-inch pipe as an outlet for the needs of millions of acres of land. There appears to be

as much sense in that as in the other. Why not copy the example of Great Britain fully and make the requisite standard of education available in all the five Colleges in India, even as they have, in the British Isles? The Central College will require nine lakhs of Rupees initial and two lakhs of Rupees recurring expenditure annually. Why not this amount be distributed to the Provincial Colleges which can easily be developed to the required standard? We have already two castes, the M.R.C.V.S. and the Indian Graduate and why add one more and make a third caste in the new products of the proposed Central College? For obvious reasons let there be only one 'caste' in this profession in India as it is in Great Britain.

The sponsors of the Central College say to us that they hope to obtain recognition for that Institution by the Council of the R.C.V.S. They seem to count without the host! If recognition is granted, the Diploma-holders of the Central College are eligible for registration in British Isles as Veterinary Practitioners under the Veterinary Surgeons' Act of 1881. But section 13 of the Act has been operated in such a way by the Council of R.C.V.S. that no degree or diploma other than that of the R.C.V.S. entitles one to practise as a Veterinary Surgeon in that country. So far not one of the Veterinary Graduates from other countries, colonies or dependencies has been registered as a Veterinary Practitioner in Great Britain unless he obtained a diploma of the R.C.V.S. in addition. In other words the R.C.V.S. has set upon itself a premium to keep out the rest and this is guarded so zealously or shall we say jealously! More light is thrown on this question of recognition if one reads the correspondence between the Secretary, R.C.V.S. and Dr. Lionel B. Bull of Australia, published elsewhere in this issue of this *Journal*, extracted from our esteemed contemporary 'The Australian Veterinary Journal,' Vol. XI, No. 4, August 1935.

The R.C.V.S. may at best grant a concession in permitting a Graduate of the proposed Central College to attend lectures and demonstrations for a year or two and then to take the examination to obtain the diploma of the R.C.V.S. This is a collosal waste of time and money. One can as well go to the R.C.V.S. straight away and finish his studies in 5 years in Great Britain and begin

his career instead of spending five years in a College here and then two or three more years in England in the R.C.V.S. at the end of which he may still be considered as '*ineligible*' or '*unsuitable*' for any particular appointment as it has happened in this country if he happened to be an Indian M.R.C.V.S.

As the irony of fate would have it, recently a post for a Poultry Research Station was advertised for and it was stipulated that, application from M.R.C.V.S. or from those possessing equivalent qualifications would be considered. We are anxious to know which other qualifications are considered to be equivalent in the eyes of the R.C.V.S.?

The development of the existing five provincial Veterinary Colleges to provide tbe highest Veterinary Education in the country is long overdue and so also the opening of a Central Dairy Institute in a more suitable central place than Izatnagar which is in a corner of the country at the foot of the Himalayas. It is sincerly hoped that these receive the full support from the concerned authorities.

VETERINARY ORGANISATION UNDER THE NEW CONSTITUTION.

Much has been said and done, in recent times in this country to prove the very close and intimate relation existing between the Animal-Wealth and National-Wealth and between the Animal Health and National Health. The various workers in the field, Sir Arthur Olver, C.I.E., Expert Adviser in Animal Husbandry to the Imperial Council of Agricultural Research in India and above all H.E. Lord Linlithgow himself have all laid much stress on these aspects of Live-stock, in their numerous pronouncements and speeches—broadcast and otherwise—quoting facts and figures in a telling manner. Much also has been done, though in a halting manner, to protect the Live-stock Industry against the ravages of some of the preventable and fatal diseases and to improve the Live-stock Industry in general and Cattle Breeding in particular in many provinces in varying degrees. The Imperial Council

of Agricultural Research which came into existence about eight years ago, has been attempting to do some very valuable work in these directions and we have heard of a lot of discussions and deliberations on this important subject of Live-stock Industry in the various periodical meetings of the Council and its committees. Large sums of money have also been spent by that body towards establishment charges, contributions to various provincial schemes of Research and investigation, travelling and other allowances. Besides, many British Indian Provinces and Indian States have also spent large sums in the shape of contributions to the Council and its schemes and travelling allowances to many officers and others who attend the meeting on their behalf. Though much useful work by way of deliberations, laying of programmes and investigation has been done all these eight years and over in the Live-stock section of this Council, still it cannot be said that the tangible work turned out is commensurate with the large sums expended as compared with the rapid and the striking progress made in the Western countries notably in Germany and Russia under the Five and Ten Year Plans in the Live-stock Industry. The chief reason for this slow progress is that the nation as a whole, including the educated section of it and most of the responsible authorities, has not appreciated fully the immense economic value of the flocks and herds in this country nor the very large annual production of fresh wealth derived from them. Still less the diminution of that wealth through wastage from preventable and curable diseases has been realised. It is however hoped that the necessity of improving this wealth and of an attack on Animal diseases on nation-wide scale conducted by a *nationally* organised Veterinary staff which will be the most efficient and the economic method, will be realised at least now by the new autonomous Provincial Governments which have begun to function in the country. These new provincial Governments—either of Congress or Non-Congress party—with their heart set to afford relief to and to improve the lot of the villager will surely find a very great support in H.E. the Viceroy and Sir Arthur Olver, in their attempts at improving the Live-stock Industry and protecting the ryot against huge loss of Animal Wealth. The Provincial Governments have all to recognise as yet

the fundamental fact that the Provincial Veterinary Departments should be reorganised to enable them to include and carry on among their activities, such important functions as the Development of Animal Breeding, safeguarding of Animal Wealth and Health, control of raw materials of animal origin, eradication of animal diseases, control of exports and imports of animals and animal products, control of cattle markets and fairs and protection of human population from diseases transmissible from animals to man through meat and milk and other numerous ways. The work of Veterinary Departments is at once both economic and humanitarian. The Western countries, where the States have recognised the fundamental duties of the Veterinary organisation have all made tremendous progress in all these directions. It is up to the new Provincial Governments in this country to take advantage of the "Live-stock mindedness" created by H. E. the Viceroy ever since he assumed his high office in this country and of the Animal Husbandry section of the Imperial Council of Agricultural Research and develop the various aspects of this industry in the country.

To raise and improve the standard of Veterinary Education in the existing five Indian Veterinary Colleges in order to give the youths in the country the highest Veterinary Education is the first and foremost step in the reorganisation of existing Veterinary Departments. The Madras University has already instituted a Veterinary Faculty and Degree in Veterinary Science. The Madras Veterinary College has already been affiliated to the University. Similarly the Universities at Calcutta, Patna, Lahore and Bombay should organise Veterinary Faculties and institute degrees in Veterinary Science. The Veterinary Colleges in these Cities should be affiliated to their respective Universities. The present Diploma courses in all these five colleges should soon be replaced by a Five Year University Degree course. Veterinary Education and organisation should be entirely under the control and guidance of capable Indians who alone can better understand the needs of the country and shape the education and the organisation with the sole object of serving these needs. The principle of shaping and controlling Veterinary Education and

organisation as in other fields by each Nation to best serve its requirements, has been well emphasised by the Britishers and all other civilised nations. The Indian Colleges should be able to produce a larger number of first rate Veterinary Surgeons every year than at present to enable the Governments to soon give effect to the long accepted but very much hampered programme of providing each taluk or tahsil with at least one Veterinary institution and one Touring Veterinary Assistant Surgeon.

Each District should have at least one District Veterinary Officer to control and to co-ordinate the several activities of the Department. Propaganda work should receive greater attention than now. The available meagre staff at present is fully engaged in combating many contagious diseases among animals. There should therefore be a special staff for propaganda work. The Head of the Department and the District heads should have more time to spend in villages and move among the rural population to study first hand their needs and requirements and to popularise and create confidence in the new and the latest method of treatment. both prophylactic and curative. Each District Veterinary Officer should be provided with a small travelling field laboratory and microscope for investigating and diagnosing obscure diseases and to collect the necessary materials and forward them to the Provincial Laboratory for further study and research. Creation of many intermediary and unnecessary posts is not now-a-days considered as a healthy development in any department. A laboratary in each province for the preparation of various biological products for preventive and curative purposes, is a real desideratum. There should be regulations for the control of movements of cattle and cattle markets to prevent the spread of epizootics. Inoculations and vaccinations against certain fatal contagious diseases have been quite effective and they should be made compulsory. Quarantine methods should be enforced. Veterinary aid should be made available within easy reach of the stock-owner.

These are some of the broad outlines which can be mentioned in these columns but there are many details which have to be

discussed regarding the various activities referred to in the earlier part of this editorial. It is rather unfortunate that at present there is no independent Veterinary Profession as such in the country. There are less than a "handful" of independent Veterinary Practitioners in the whole country. All the available Veterinary Surgeons in the country are now in the service of the State but this is inevitable in a country like India. However the Indian Veterinary profession through its main association—the All-India Veterinary Association—and its numerous branches whose membership is from the rank and file of the Veterinary Departments, in their periodical Conferences and Meetings and this *Journal* which is its official organ, have all voiced from time to time the Veterinary requirements of the country. Some of the Provincial Legislatures in the country have a few medical men as their elected members but unfortunately there is not even a single member from the Veterinary Profession in any of the Legislatures. It should, however, be possible for the New Provincial Governments by nominating to the concerned committees or sub-committees one or two Indian Veterinary Practitioners or Retired Indian Veterinary Officials of proved capacity to get their advice on many of the important problems pertaining to veterinary matters. The necessity for such a step is very great now for obvious reasons. We hope that the much needed expansion and reorganisation of the Veterinary Services in general and of Veterinary Education in particular in the various Provinces, will soon receive the earnest attention of the New Governments in their Nation building efforts.

Anatomical Section

DIPROSOPUS-DISTANS DISTOMUS :

BY

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II. In a Kid : (Plate No. 49). This kid was secured in the slaughter house (Madras Corporation) and was sent over to the college by the Superintendent. As it reached me about 24 hours after it was taken out of the uterus, most of the parts of this kid were found to be putrid. Details of the disposition of the structures at the neck, such as the two sets of cranial nerves and the venous system, other than those that will be described hereunder, could not therefore be studied.

External appearance :—The freak presented two heads, a neck, a trunk and the usual four limbs.

Dissection :—The two skulls were found fused together by their supero-posterior aspects. The upper parts of the two Occipitals and the Parietals and to a small extent even the extreme upper parts of the two Frontals were found to be fused together. A single Foramen Magnum was found formed between the two fused occipitals of the two skulls. The two spinal cords continued the two brains and joined together to form a single spinal cord at the Common Foramen Magnum.

Each head had its own independent component parts :—The mouth, tongue, pharynx, œsophagus, two nasal chambers, larynx, two orbits and two ears.

Each larynx was continued by a trachea. The two tracheal tubes ran down the neck gradually inclining towards each other and united into one at the thoracic inlet. A common trachea thus formed then detached the apical bronchus to the apical lobe of the

(Author's Plate No. 49.)
Diprosopus-Distans Distomus.

(Author's Plate No. 50.)
Dipygus-Bidorsualis.

right lung and divided at the level of the base of the heart into two bronchii.

The two œsophageal tubes also united at the thoracic inlet and the resulting single œsophagus had the usual thoracic course and then terminated in the stomach.

Bracheo-cephalic trunk :—The anterior aorta detached as usual the left axillary artery and the arteria innominata. This latter vessel after detaching the right axillary artery, was continued as the cephalic trunk to about the middle of the neck, instead of dividing as usual into right and left common carotid trunks. This cephalic trunk, in its course up the neck, placed itself directly on the under face of the left trachea and detached at the level of the middle of the neck, the left common carotid trunk which ran up the left jugular furrow and thus reached the left side of the left head. The main vessel (cephalic trunk) after running up the neck for about a quarter of an inch, divided into two equal branches—left and right. The left became the right common carotid trunk and reached the right side of the left head. The right branch became the cephalic trunk of the right head. It divided immediately into two branches which became the right and left common carotid trunks and reached the corresponding sides of the right head.

Note :—The common carotid trunks intended for the left head were much larger than those for the right head.

(2) DIPYGUS—BIDORSUALIS.

III. In a kitten :—(Plate No. 50). This new-born kitten was brought to the hospital by the owner with the idea of selling it and was taken charge of by one of the officers of this college. Information as to whether it was born alive, or dead and how long it was alive if born alive, was wanting.

Appearances :—Showed a single head and neck and two trunks with four limbs each. The head and neck appeared in the normal position. But the two trunks showed a gradual divergence and

faced each other. (By the position of the two fore limbs of each body, it looked as if the two bodies were embracing each other 1.)

Dissection.

Umbilical cords :—There was one for each body. Each was composed of the two usual umbilical arteries with the urachus between and two umbilical veins. Each entered the naval of its body independently. The two veins of each cord united to form a single vein at the naval. The termination of these veins will be referred to while describing the liver.

Abdomen :—The abdominal cavities of the two bodies were continuous with each other and thus formed a single abdominal cavity common to both the bodies. Each body had its usual abdominal roof and lateral walls. A common abdominal floor was formed by the meeting of the right lateral wall of the right body with the left lateral wall of the left body. Similarly a common abdominal roof was formed by the meeting of the left lateral wall of the right body with the right lateral wall of the left body. These two common abdominal floor and roof connected the two diverging trunks. The cavity thus enclosed between the common abdominal roof and common abdominal floor contained on and about its median line, two livers two stomachs, two spleens, single duodenum (with two pancreas), jejunum and most of the ileum. It is therefore to be noted that the organs enumerated were not found in the proper abdominal cavity of either body.

Neck :—On removing the skin on the dorsal and ventral aspects, what appeared before as a single neck, was found to be composed of two distinct necks having their ventral aspects facing each other and running down in a slightly divergent manner. The trachea and œsophagus were found having their course in this inter-cervical space.

Head :—Head was single. It had two orbits, two ears, single mouth, tongue, pharynx and œsophagus. There were two nostrils and two nasal chambers. There were two laryngeal boxes and each larynx was continued by a trachea. The cranium was single and it contained the two usual cerebral hemispheres (single

cerebrum) but the cerebellum, pons and the medulla oblongata were double and these two sets of the three divisions of the brain instead of being placed directly behind the cerebral mass, they looked as if they were placed on either side of the median line enclosing a small intercerebellar space. A certain amount of nervous tissue was found filling this space and connecting the two cerebellar sections. The corpora quadrigemina, instead of being opposed to each other on the median line, were also divergent. The nates were nearer each other but the testes were far apart. Each body had its own spinal cord.

Diaphragm :— Each body had its own proper diaphragm separating its proper thoracic and abdominal cavities. A common diaphragm was found formed by an extension and meeting of the left part of the right proper diaphragm and the right part of the left proper diaphragm. This common diaphragm separated the common thoracic cavity from the common abdominal cavity. It is against the visceral face of this common diaphragm that the organs like livers and stomachs were found applied. The proper diaphragm of each body had only one foramen—*Haitus Aorticus*—in the usual position for its aorta. But this common diaphragm, had on its median line, three apertures arranged from above downwards. The dorsal one was for the passage of the posterior vena cava of the right body, to the heart; the middle one was for the passage of the œsophagus; and the ventral one was for the passsage of the posterior vena cava of the left body to the heart.

Digestive System.

Oesophagus : There was a single œsophagus. It started from the single pharynx, passed backwards in the inter-cervical space placing itself between the two tracheal tubes, entered the common thoracic cavity, passed through the middle aperture of the common diaphragm and dilated itself into two diverticula (each resembling a normal stomach) which again united along their lesser curvatures to the pyloric extremity, thus forming a *common stomach* for both the bodies. The pyloric extremity of this common stomach was continued by a single *duodenum*. There were two *spleens*, each being kept in relation partly with the common dia-

phragm and attached to the left parts of the two cul-de-sacs of the stomach. There were two *pancreas*—left one was a little smaller than the right. The right one was attached to the first convexity of the first part of the duodenum. The left one was attached to the left face of the second convexity of 1st part of the duodenum. Thus, the two pancreas were attached to the single duodenum but to its opposite faces. The left one was placed three quarter of an inch further back.

Liver :—There were two livers and both of them were found in the common abdominal cavity. They may be named by their position as dorsal and ventral livers. The ventral one was placed on the median plane in contact with the common diaphragm in front and common abdominal floor inferiorly.

The left umbilical vein passed along the deep face of the common abdominal floor and reached the umbilical fissure of this liver.

The dorsal liver was also median in position, related to the dorsal part of the common diaphragm and lying under the common abdominal roof.

The right umbilical vein passed along the median line of the deep face of the common abdominal roof and gained the umbilical fissure of this liver.

The single *Duodenum* was continued by a single *Jejunum* which in its turn was continued by a single *Ileum*. But the ileum, divided about two inches in front of its terminal parts, into two —right and left. Each of these divisions was then directed towards the respective proper abdominal cavity and was continued by its own *large intestines* consisting of *caecum*, *colon* and *rectum*.

The *common small intestines* was held in coils which occupied the space across the common abdominal cavity lying mostly in contact with the common abdominal floor.

Urino-genital system :—There were two *kidneys*—right and left, in each *proper abdominal cavity*, in their usual positions.

Their *ureters* showed their usual course and opened into an independent *bladder* in each pelvis.

There were two *testicles*—right and left, in the sublumbar region of each body. Each testicle had its own *vas deferens*. NOTE: the two testicles of the left body were slightly larger than those of the right.

Respiratory system :—The *laryngeal boxes*, as already pointed out, were two in number and each was continued by its own *trachea*. The tracheal tubes ran backwards and downwards in the inter-cervical space having the œsophagus between. Of the two tubes one was dorsal and the other ventral in position. The *ventral one* entered the *common thoracic cavity* divided into *two bronchi*-right and left, of which the left bronchus entered the left lung of the left body while the right bronchus entered the right lung of the right body. The *dorsal trachea* also entered the common thoracic cavity and divided into right and left bronchi of which the right entered the left lung of the right body while the left entered the right lung of the left body.

Note.

Thoracic cavity :—Each body had its own *proper thoracic cavity* and each proper thoracic cavity had its own dorsal and lateral walls. But the inferior part of the right lateral wall of the right body united with the corresponding part of the left lateral wall of the left body and formed the *common thoracic floor*. Similarly, the inferior part of the left lateral wall of the right body united with the corresponding part of the right lateral wall of the left body and formed the *common thoracic roof*. The cavity enclosed between these two common thoracic floor and roof is the common thoracic cavity. The lungs of the respective bodies were contained in their *proper thoracic cavities*. The two tracheal tubes, thoracic part of the œsophagus and the two hearts (to be described hereafter) were contained in the common thoracic cavity.

Circulatory system :—*Two hearts* were found in the median plane of the common thoracic cavity. The one belonging to the

left body was much larger and lower in level and was placed between the right lung of the right body and the left lung of the left body above the common thoracic floor. The *aorta* leaving out of this heart was found supplying the left body.

NOTE:—*Thymus*: They were two in number, moulded on to each heart. The thymus found on the base of the heart of the left body was larger and extended to the thyroid.

The second heart was much smaller and higher in level than the left heart. It was also on the median plane of the common thoracic cavity, below the common thoracic roof. It was included between the left lung of the right body and the right lung of the left body. The aorta arising from this heart was found supplying the right body.

Clinical Articles.

ECLAMPSIA OF NURSING BITCHES OR PARTURIENT ECLAMPSIA

By

H. S. Bawa, M.R.C.V.S.,

Bhimtal, U. P.

While perusing the *Indian Veterinary Journal* I came across two articles "What could it be?" by M. V. Pillai, G.B.V.C., in the April 1935 issue and second, titled "Spinal Meningitis" by A. G. Kaka, G.B.V.C., in the October 1935 issue, in both of which I could not agree with the diagnosis of the authors.

I had a similar case last summer at Simla.

History:—Subject—middle aged Australian bitch, belonging to Lt.-Col. T. . . I received a phone message at 10-15 P.M., on 14th May 1935, to come down at once as bitch was in a very bad way. I reached there at 11-30 P.M. and the owner told me that the bitch had suddenly gone into convulsions after showing slight dullness and refusal to take food previously. She had suckled her young ones in the normal way.

Symptoms:—The temperature was 108°F. The whole body was stiff and eyes had a staring expression. Respiration was short and very rapid. Mouth was open and tongue hanging out.

The bitch was on her side with her legs firm and extended. There was weakness of hind quarters. Clonic convulsions were noticed at intervals.

Treatment:—The uterus was douched with cold water and S. U. P. 36 given intramuscularly to bring the temperature down. The temperature came down to 106°F. One-third grain of Morphine Hydrochloride was given subcutaneously. The animal felt better after this, though the temperature remained at 106°F.

I told the owner to apply cold water pads on the head of the bitch. The Owner subsequently informed me that the bitch died at 8 A.M., on the 5th day. I should think that the cause of death should be exhaustion or apoplexy or asphyxia. This condition commonly occurs in bitches of the small breeds, which are pampered and well nourished. The disease usually appears from 2 to 8 days after parturition and some times as late as 14 to 30 days. It is not usually observed before 48 hours after parturition, nor before whelping. It generally occurs after removal of puppies from the mother or weaning.

Etiology:—The causes of this disease are very little known and may be:—

(1) Cold.

(2) Accumulation of milk in the mammary glands.

(3) Taking away or weaning the puppies too soon.

(4) Mental emotion, *i.e.*, worry. Fretting over the separation of the pups.

(5) Produced by the direct action of toxins from sexual organs or on the motor cells of the anterior horns of the spinal cord.

(6) Reflex irritation of uterine nerve centres.

Symptoms:—The animal suddenly commences to be uneasy and anxious, the eyes are haggard, the respirations very short and quick. In a short time after, the difficulty in respiration is noticed, the animal cannot stand, but falls on the side and lies with limbs extended, due to clonic spasms of the muscles of the body. Clonic spasms extend rapidly over the whole body sometimes there is trismus, with grinding of teeth and shaking of head. White foam is present at the mouth. Consciousness usually remains and animal refuses food and drink. Mammary glands are at first greatly engorged, hot and turgid with milk, which puppies frequently continue to remove as before, but later they become flaccid and empty. The cause of the disease is acute and lasts one or two days, occasionally few hours. Sometimes the attack

is repeated at intervals of few hours. As many as six attacks are noted in the course of a day.

Treatment:—The first thing to do is to remove puppies. Any narcotics for example, Morphine Hydrochloride in 0·3 to 0·6 grain doses may be given hypodermically and repeated after a few hours if necessary. Inhalation of chloroform and ether are also recommended. Warm bath and friction produces relaxation of the tension of muscles. Chloral Hydrate enemata is also useful.

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ON THE USE OF "CAMPHOR" IN THE TREATMENT OF SUSPECTED CASES OF ANTHRAX AND HÆMORRHAGIC SEPTICÆMIA IN THEIR EARLY STAGE

BY

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Introduction:—Both Anthrax and Hæmorrhagic Septicæmia have so far been amenable to no treatment. It is gratifying to note that as far back as 1919, in the course of his tours the then Veterinary Inspector of Silchar Circle Mr. S. Ghose (now Rai Saheb S. Ghose, Superintendent, Civil Veterinary Department, Assam), happened to come across a virulent outbreak of Hæmorrhagic Septicæmia in an interior village and as he had no medicine chest for the treatment of animals, it occurred in his mind to try camphor in such cases. All the cases which underwent Camphor treatment recovered to the surprise of Rai Saheb Ghose. This gave him encouragement for tests and the result was satisfactory. When Camphor gave such a promising result in Hæmorrhagic Septicæmia, he gave this drug a trial in Anthrax too and the result of treatment gave 90 per cent recovery. At the instance of the Rai Saheb I have had the occasion of treating sporadic

cases of such diseases with Camphor and the result was most encouraging.

The mortality in advanced cases of Anthrax or Hæmorrhagic Septicæmia is exceedingly high. Every outbreak of such diseases has to be dealt with after the confirmation of diagnosis by microscopical examination of blood smears. Preventive inoculation by means of serum-alone method has not been found to be of much practical value and in such a state of affairs a recourse to Camphor treatment may save the lives of a large percentage of animals that are attacked with either Anthrax or Hæmorrhagic Septicæmia. In this connection, I give below a brief summary of cases which I treated with Camphor in 1935 and 1936.

History of the outbreak of Anthrax :—I have had the occasion of attending cattle epidemics at Baniachong—one of the biggest villages in the province of Assam, from 3rd to 6th March 1935, in which 60 cattle died within three weeks with the following symptoms:—"Sudden illness, dyspnœa, colicky pains and death within few hours". I hapened to obtain blood smears from a carcase for microscopical examination by the Superintendent, Civil Veterinary Department, Assam, who reported Anthrax.

History:—I happened to attend cattle epidemics in another village named Sikandarpur in the latter part of March 1936. The mortality was cent per cent in this case too with a death roll of 11 cattle up till the date of my visit. The symptoms as described by the owners may be summarised as follows:—"Swelling of throat, neck and tongue; dyspnœa, snoring sound and death within 48 hours or so." In this case too blood smears were obtained for microscopical examination by the Superintendent, Civil Veterinary Department, Assam, and it proved to be a case of Hæmorrhagic Septicæmia. In both the villages preventive inoculation by means of serum alone method was undertaken.

In addition the people were told to try Camphor in both Anthrax and Hæmorrhagic Septicæmia at Baniachong and Sikandarpur respectively. At Baniachong out of 10 cases so treated 8 recovered and at Sikandarpur 2 recovered out of 3 cases.

Thus it showed that the percentage of recovery was 60 and 66·6 per cent respectively. The animals that were treated were in-contact ones and had developed the disease.

In another instance I have had to attend outbreaks of cattle diseases at Baniachong in the first part of February 1936, in which 11 cattle died within 10 days with no recovery, *i.e.*, cent per cent. death. The symptoms as described by the owners may be summarised as follows:— "Sudden illness, signs of colicky pains, shivering, slight tympany and death within few hours or so". It is, so to say, indicative of Anthrax. I was in the locality from 1st to 6th February 1936 and in course of my stay there I came across 12 cases of suspected Anthrax and I personally administered Champhor treatment and to my surprise 11 cases recovered. The percentage of cure here ran up to 91·7. The symptoms which I observed in these cases may briefly be enumerated as follows:— "All of them suddenly fell ill, showing signs of stoppage of rumination, dyspnœa, shivering fits and temperature 104° F to 105·8° F with severe congestion of the visible mucous membrane." In my humble opinion, these were the symptoms suggestive of Anthrax. I did not get the blood smears examined microscopically because in the case of living animals the finding of bacillus Anthrax is remote. However, I sent one specimen from the carcase of an animal which died after the course of Camphor treatment for examination by the Superintendent, Civil Veterinary Department, Assam, who gave a negative report.

From the above it may be said that Camphor is a specific both for Anthrax and Hæmorrhagic Septicæmia at its early stage.

Dosage:—For an adult animal Camphor may be given in half an ounce doses each time with molasses as an Electuary and repeated every two hours till the temperature begins to fall with gradual abatement of symptoms. The dose may be reduced to two drachms gradually according to the circumstances of the case. It is found that four doses generally effect a cure in many cases.

ABSCESS DUE TO FOREIGN BODIES

BY

D. C. KAPILA,

Bihar Veterinary College, Patna.

Subject:—A grey bullock, aged about six years was brought to the Veterinary Hospital Chunar, District Mirzapur, on the 8th April 1937 at 8-15 A.M. The animal belonged to Mannu of Chunar.

The animal had a swelling on the brisket, and when examined it looked like an abscess though it was not pointing. It was decided to open it, and an incision was made. Not a single drop of pus came out but on the contrary the abccess contained barley grains which were swollen and one needle an inch and a half in length. After removing the contents the cavity was washed and the index finger was inserted into it when something sharp was felt. On removing this, it was found to be a hair pin, which was in the wall of the abscess.

While dressing it was noticed that the cavity of the abscess communicated with the rumen through the pectoral muscles. Attempts were made to close the opening without success. The abscess healed, but there is still present a diverticulum left which occasionally discharges a few drops of fluid apparently from the rumen.

A CASE OF VAGINAL TUMOUR IN A BUFFALO

BY

A. S. MURTI, G.V.Sc.,

and

M. R. L. IYENGAR, G.V.Sc.,

Veterinary Assistant Surgeons, On Special Duty,

C.V.D., Agra, U.P.

While camping at village Chenkora, Kiraoli Tahsil, Agra District, to deal with an outbreak of Rinderpest in the month of September 1936, we came across a case of a vaginal tumour in a buffalo which was in an advanced stage of pregnancy.

History:—The animal was shown to us by the owner on 27-9-36, with the history that she had been gored by another buffalo about ten months ago and that the wound showed a tendency to heal which led the owner to believe that the animal would get alright. But after three months he observed that the animal was unable to pass urine in the normal way which made him to look into the part. He was surprised to find a small growth of the size of a big arecanut, which gradually developed into a large tumour of the size of a cocoanut.

Examination:—The animal being restive, it was cast and secured. The tumour was found protruding from the vulva and was so large as to block the whole of the vaginal passage and thereby obstructing the flow of urine. The tumour was highly vascular and was about 7" long and 20" in circumferance at its thickest part. The animal evinced pain on manipulation.

As the buffalo was in an advanced stage of pregnancy, it was thought that the tumour would interfere with parturition, and it was decided to operate without delay. With the consent of the owner, the operation was undertaken on 28-9-36.

Technique:—Prior to the operation it was given a stimulant country arrack. The parts were aseptically treated and a ligature was applied to the base of the growth. The tumour was then excised care being taken not to injure the surrounding tissues. There was profuse bleeding after excision, which was controlled.

After Treatment:—The owner was asked to bring his animal regularly for dressing. The passage was irrigated with a weak solution of Lysol for a week, by which time the wound healed. The flow of urine was normal soon after oblation of the tumour.

Conclusion:—When the village was revisited on 17-10-36, we were told that the animal had an easy delivery and the calf and the mother were found in good condition.

FISTULOUS ANAL ADENITIS

By

J. D. DAVID, G.M.V.C., P.G. (EDIN.)

Veterinary Assistant Surgeon, Coonoor.

Description and occurrence:—This is a disease of the anus in dogs, which are pampered or kept chained.

The normal anal glands in dogs secrete a foul smelling viscid secretion, which lubricates the rectum while expelling its contents. These glands are lodged immediately behind the sphincter ani.

Causes:—Sluggish liver and constipation, undigested splinters of bones especially of chicken or fish, worms and their toxins. This condition is seen more in aged dogs than in young ones.

Treatment:—In early stages no operative measures are adopted as the discharge contains only inflammatary products. The animals are kept on liquid and laxative diet. The glands are squeezed out every morning and evening and 4 oz. of the following lotion syringed into the anus immediately after squeezing out of the glands.

Zinc Oxide.	1	dram
Acid Salicylic	½	„
Acid Boric	1	„
Aqua ad.	1	lb.

This was continued till relieved.

Operative Treatment:—This is done in cases where yellow pus oozes out from the anus with enlargement of the glands. The animal is starved the previous day. An enema is given the previous evening and another one an hour before the operation in the morning. A local anæsthetic is injected into the external rim of the anal ring, around the enlarged glands. An anal speculam is used to dilate the anus. With this instrument in position, if pressure is exerted on the glands, pus oozes out from their normal openings. A probe is passed through the hole and the fistula opened on the outside. The tubular dark capsule seen is dissected out and any dead portions of the gland is removed and the wound outside sutured with catgut or silk. The patient is dressed with acriflavine solution twice daily, and if the dog is prevented from licking or biting the wound, it heals rapidly. The diet should be sloppy.

I wish to state that I have operated eight dogs in Coonoor hospital with success and all operated cases have not had any recurrence of the trouble, These operations are performed on at least 2 dogs daily in Edinburgh by Prof. Mitchell at the Royal (Dick) Veterinary College.

INJECTIONS OF MILK AND SALINE IN EYE CASES

By

M. V. KRISHNA RAO, G.M.V.C.,

Veterinary Assistant Surgeon, B. M. P. Falam, Burma.

I have tried milk and saline injections in corneal opacity or ulcers in a number of canines and equines for the last two years and the results are noted below:—

Saline Injections in Corneal Opacity.

Case No. 1. Dog. 'Tramp' belonging to Major A. C. Moore, I.A.

This dog had some longstanding opaque spots in both eyes caused by Trachomatous eyelids. I gave three injections of 2 per cent saline once a week into both the eyes, subconjunctivally along with the usual application of yellow ointment, etc.

Case No. 2. Two Ponies. Nos. 21 and 30 belonging to the Chin Hills Battalion, Burma Military Police.

They received six and five injections respectively once in four days, of 2 per cent saline subconjunctivally.

All the above cases were cured completely. The saline used was a solution of pure Sodii Chloridum in Aqua Destillata, the usual steps for Asepsis being taken.

Milk Injections in Corneal Ulcers, Hypopyon, etc.

Case No. 1. Dog. 'Lupy' belonging to Major A. C. Moore, I.A.

This dog had warts all round the right eye some of them being at the border of the lid. Probably due to the irritation, the

dog rubbed his eye on the ground. Consequently the warts and small stones on the ground caused many bad ulcers on the cornea. When I examined the eye two days later, the whole cornea was opaque and the ulcers were showing vascularity and hypopyon. The animal was unable to open the eye and it was swollen.

Treatment:—The warts were removed and an injection of 2 c.c. of sterilized and filtered milk intramuscularly. Thymol Iodine was used for dusting into the eye after fomenting it.

Three days after the first injection of milk, the watering of the eye stopped and the dog was able to open the lids slightly.

Three more injections of milk 3 c.c., 5 c.c. and 7 c.c. respectively were then given at the intervals of 4 or 5 days, at the same time dressing the lids with golden ointment and dusting Thymol Iodine after fomentation.

After second injection the opacity began clearing up and after the fourth injection the hypopyon was absorbed completely and the ulcers healed up. The cornea was as clear as before.

Case No. 2. Mule No. 108, belonging to the Chin Hills Battalion, Burma Military Police, Falam.

This mule had a calcareous growth on the internal aspect of the lower eyelid. Due to the pressure and rubbing over the cornea, it began to develop opacity.

Treatment:—The growth was removed under local anæsthesia. After a few months the animal again developed opacity of the cornea with a discharge from the eye.

When the eye was examined the growth was seen in place of the one oblated. This time the growth was cauterised with Argenti Nitras Induratus and later injections of milk 5 c.c., 10 c.c., 15 c.c., and 15 c.c., respectively were given at long intervals. The eye cleared up, but the lower portion of the eyelid became adherent to the lower portion of the Sclerotic. The vision of the animal however is not interfered with by this.

VARIOLA IN BUFFALOES

BY

K. G. WARIYAR, G.M.V.C.,

Veterinary Surgeon, i/c Wadakanchery Hospital, Cochin State.

In March 1937, some buffaloes were brought to the Wadakanchery Veterinary Hospital, Cochin, with ulcers on and inside the ears. In most cases these ulcers were fly blown and there was present a foul smelling discharge from the ears. These cases were regarded as ordinary ear affections and treatment with simple antiseptics gave good results. When many cases of similar nature were brought from one and the same village and also from villages adjoining, suspicion arose as to the cause of the disease. So, cases were watched from the earliest stages. It is interesting to note here that human-beings also got infected in whom the disease was diagnosed as Variola.

Symptoms observed in buffaloes:—Eruptions were observed on the outer and inner sides of ears. These formed vesicles and pustules with the characteristics of small—pox. These pustules burst quickly and were infested with maggots in majority of cases.

Vesicles were found around the eyes and sometimes on the conjunctival mucous membrane.

Ulcers were found rarely on the cornea.

Opacity of the cornea was a frequent complication.

There was no loss of appetite. The animals appeared healthy but for the discomfort caused by the localised pustules. They did their normal amount of work when put to it.

Animals affected:—Only buffaloes were affected and the infection spread fairly rapidly in them and in some villages almost all the buffaloes were infected. Very rarely cows and bullocks were found infected.

Infection of human-beings:—Many who were attending on sick animals contracted the disease presenting characteristic "Jenner's pustules" with painful swollen glands and high fever.

Treatment:—Simple antiseptics were all that were necessary. Even opacity of the cornea cleared up quickly by the application of weak antiseptic lotions. No deaths occurred among the infected ones.

Note:—The infection only to buffaloes and she buffaloes and the formation of vesicles only on ears and eyes, almost uniformly, were rather peculiar.

[A similar condition was noted in Northern Circars..... some time ago and the disease went undiagnosed. In such outbreaks opportunity should be taken to send the scabs either to Muktesar or King Institute, Guindy, to confirm the diagnosis for Variola.—*Ed. I.V.J.*].

A CASE OF EPITHELIOMA OF PENIS IN A BREEDING BULL

BY

S. SESHADRI IYENGAR, G.M.V.C.,
Veterinary Assistant Surgeon, Mayavaram.

Subject:—A breeding bull, aged eight years, in fair condition, Tanjore breed.

History:—The animal was serving alright and a contused swelling was noticed by the owner and he thought that the swelling may have been caused during a fight with another breeding bull in the same herd. Treatment was given by the owner himself for a fortnight or so and no improvement was found, the bull was brought to the dispensary for treatment.

On examination the whole region of the sheath was found thickened and a purulent discharge came out of the opening when pressed. Small ulcerated patches were observed on prepuce. The penis could not be drawn out.

Treatment:—The sheath was irrigated with Pot. Permanganate lotion and externally unguentum Iodine was applied for some days. The swelling of the sheath subsided and the penis of the animal was pushed out for examination. On the tip of the penis were found growths and epithelioma was suspected. The growths were removed and were reported upon as Epithelioma, by the Principal, Madras Veterinary College. The bull was castrated as it was found unfit for service.

This is the first case of Epithelioma of penis in a bovine met with by me.

Dark Ulcerated Patches.
Epithelioma of Penis in a bullock.

Epithelioma of Penies in a bullock.

THE INDIAN VETERINARY JOURNAL.

Statement of Receipts and Disbursements for the year ending 30th June 1937.

(VOLUME XIII).

		Rs.	A.	P.
To balance on 1-7-36	...	1,465	6	4
„ Subscriptions	...	4,640	0	8
„ Advertisements	...	598	1	0
„ Reprints	...	113	6	0
„ Interest	...	20	11	6
Total	..	6,837	9	6

		Rs.	A.	P.
By Establishment:—				
Rent Rs. 480 / Salaries Rs. 480	...	960	0	0
„ Honorarium	...	1,000	0	0
„ Printing (Journal)	...	1,577	11	3
„ Cost of blocks	...	140	10	0
„ Travelling allowances (for Conference)	...	50	0	0
„ Railway freight	...	42	8	0
„ Binding books	...	13	0	0
„ Repairs to Typewriter (G. S.)	...	10	4	0
„ Purchase of books	...	2	14	0
„ Bank commission on cheques	...	2	8	0
„ Postage	...	1,078	12	3
„ Printing and Stationery	...	42	2	6
„ Audit fee	...	25	0	0
		4,945	6	0
„ Balance on 30-6-37	...	1,892	3	6
Total	...	6,837	9	6

Examined and found correct.

5, ERRABALU CHETTY STREET,
MADRAS,
31st August 1937.

K. GOPALAKRISHNA RAO,
Registered Accountant and Auditor.

Notes & News.

We like to draw the attention of our readers to the proceedings of the 80th birthday celebration of Rao Sahib V. P. Subramanya Mudaliar, retired Deputy Superintendent, C.V.D., Madras, who is a great Tamil scholar and a poet. It is really a matter for congratulation that even in this advanced age he should be taking so much interest in Tamil literature. We wish him many more such birthdays.

* * * *

Presentation of the Gold Medal awarded to Ch. Mushtaq Ahmed, P.V.S., Hospital Surgeon and Radiologist at the Veterinary College, Lahore, by the A.I.V.A. for invention of Veterinary Appliances, was made by Mr. T. F. Quirke, Director of Veterinary Services, Punjab, in the presence of Captain U. W. F. Walker the principal, members of the staff and students of the Punjab Veterinary College on 8th June 1937.

* * * *

Mr. J. H. G. Jerrom, M.R.C.V.S., I.V.S., Director of Veterinary Services, Sind and Mr. Abdul Majid N. Siddiqui, G.P.V.C., Veterinary Inspector, C.V.D., Sind, were awarded His Majesty the King George VI's Coronation Medals at the hands of His Excellency Sir Lancelot Grame, K.C.S.I., K.C.I.E., I.C.S., Governor of Sind.

* * * *

Glad to note that Mr. R. S. Narayanan, G.M.V.C., Veterinary Inspector, Alor State, Kedah, has been deputed by the Malay Government to undergo Post-graduate course in Tropical Veterinary Medicine in Edinburgh. He is the first Indian Veterinary graduate to be sent by the Malay States for Post-graduate course.

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We would like to draw the attention of our readers to Rules for Admission of Indians to Commissioned rank in the Indian and Army Corps, extracted elsewhere in this issue.

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Group Photograph of Veterinary Students Studying at Edinburgh, 1936-37.

Left to right :— 1. K. L. Dewan, 1st Year Royal (Dick) Veterinary College. 2. K. G. Rangappa, B.Sc. (Mys.), 2nd Year Royal (Dick) Veterinary College. 3. G. Osman Khan, G.M.V.C., D.T.V.M. Course, Edinburgh University. 4. K. A Mannan, B.Sc. (Punj.), 2nd Year Royal (Dick) Veterinary College. 5. P. D. Saksena, B.Sc., 2nd Year Royal (Dick) Veterinary College. 6 G. K. Urs, G.B.V.C., D.T.V.M. Course, Edinburgh University. 7. C. V. G. Choudary B.Sc., 2nd Year Royal (Dick) Veterinary College.

Plate No. 21.

R. S. NARAYANAN, G.M.V.C.,
Veterinary Inspector, Kedah Government, (Malaya.),
who has proceeded to Edinburgh for Post-Graduate
Course in Tropical Veterinary Medicine.

Plate No. 20.

Mrs. C. J. FERNANDES
(Wife of Dr. C. J. Fernandes, Director,
Animal Husbandry Department,
Government of Jodhpur),
President, The Sanatan Gaushala of Mandor, Jodhpur.

Speech delivered by Mrs. C. J. Fernandes on her Election as President of the Sanatan Gaushala of Mandor, Jodhpur, on the 11th October, 1936.

GENTLEMEN,

I deem it a great privilege to have this opportunity of presiding over the deliberations of a society the aims of which have ever been so close to my heart—the preservation of mothor Cow in her week old age. It should not be the monopoly of any particular religion to defend and protect this divine animal. She is really the incarnation of Indian prosperity. In her well-being is the good of the entire country. This our country of fields and pastures with 90 per cent of her population depending for its daily bread on the cow, can never repay her adequately in any way, what contributions she makes to Indian prosperity. I will not take time to recount all the good that accrues from her—the Ox, the milk, the dung, etc., so well-known to you all. May I only mention that it was not for nothing that in this land of the tillers of soil, Lord God incarnated Himself in the person of a cowherd—I mean Lord Krishna—the great defender of Mothor Cow known as "Gao Charryya and Gao Pal."

The heart feels grateful and offers a flower as an humble tribute to the goodness of God. It might be a very insignificant act, but it lifts man from mere dust to a divine plane. Similarly, our efforts to save this aged mother may be of little importance, but it has a spiritual significance. It makes us real human beings.

Gentlemen, your Gau Shala is a great institution testifying to the chivalrous spirit, which is the birth-right of every Marwari. Indeed, it is this noble chivalry which has, through pages of history, won an external place for its people.

When my husband embarked upon his mission of forming a new Department of Animal Husbandry, calculated to improve the economic condition of the peasants of this land, and we started for Jodhpur, there arose before me a vision of the ancient greatness of this famous principality. All through the way, I dreamt of the mighty swords of the Rathors. I dreamt of the conqueror of Kabul, the late Maharaja Sri Jaswant Singhiji Sahib Bahadur;

and of him who made and unmade kings at Delhi, I mean, Maharaja Sri Ajit Singhji Sahib. And when in the early hours of the morning, within sight of the Jodhpur Station, I saw the flag freely flying at the fort, standing for centuries as a mute witness to all the glory of your people, my heart was thrilled with joy to feel that henceforth I shall be living amidst such brave people and may be of some service to them in my own humble way. The innate instinct of chivalry once acquired or inherited, can never be destroyed. It only changes form. The chivalry of the sword has in these days of collective security assumed a spiritual significance —the defence of the weak. Man, who was made by God after His Own image, *i. e.*, with a divine element, is above the animal only when his mighty hand rises in support of the weak and the dumb, when for the good he receives, his heart throbs with feelings of gratitude.

I am sure, Gentlemen, this humane institution, which you have been fostering for so many years, is a real translation of the divinity of man. It is an earnest worship of God and a most effective way of serving the poor millions of our mother-land. Here you protect, and give shelter to this motber of India's health and happiness, whose milk we and our children drink—the very nectar to human beings. Here in giving " Ashram " to this aged parent, you have made the philosophy of religion the principle of acted life, in which the sympathy for the poor has found a living expression. May God bless your intentions with fruitfulness!

Thank you once again for this honour.

Speech delivered by Dr. C. J. Fernandes, Director, Animal Husbandry Department and the President, Fair Committee, at the Prize Distribution Ceremony held on April 14, 1937, at the Tilwara Fair under the Chairmanship of Thakur Madho Singhji Sahib, Acting Chief Minister, Government of Jodhpur.

RESPECTED HOME MINISTER SAHIB,

I shall ever regard it as the proudest privilege of my life to have this opportunity of respectfully welcoming you, to this

well-known Chaitri Fair, on behalf of all gentlemen present. When the story of the Marwar Cattle Fairs comes to be recorded in the annals of the State as a great movement towards improvement of the rual ryot of His Highness the Maharaja Sahib Bahadur, I am sure this day, the 14th of April, 1937, shall be written in letters of gold and shall ever be regarded as the day of days for the cattle and the peasants. It augurs a new era and heralds the dawn of a new life's morning. It has made history in many ways. Firstly, it sums up the story of the first attempt of the newly established Animal Husbandry Department, to organize this Fair on truly modern lines. However sincere the efforts may be, the fact remains that these are after all attempts and much may be left to desire and to make up in future. In the second place this day also represents a sum total of many a hopes of those who for full one year prepared for winning the rewards and distinctions in the Fair, and shall shortly be receiving the Olive branch and the Blue Ribbon. This day has the proud distinction of having its golden ceremony presided over by a renowned personage, whose love of cultivators, whose interests in the welfare of cattle and horses, practically expressed in winning first class rewards at various Fairs is beyond the possibility of doubt, I mean, our most worthy President, the Thakur Sahib of Sankhwas. This day has the much coveted privilege of having at the head of its ceremonies, the premier citizen of the State, the Chief Minister of His Highness' Government. Long shall this day be remembered and gold shall be its lot in the pages of history.

Sir, in organizing this Fair, an effort has been made to make it not merely a market for the buying and selling of cattle, camels, and horses but to turn it into a living centre of rural education, an instrument to disseminate information regarding improved methods for the benefit of the peasant. The Animal Husbandry Propaganda Stall intended to popularize Veterinary Science and the utility of pedigree bulls, etc., the Red Cross activities and the Agricultural Exhibition, all draw attention of the rural population to what is being done for them by Science and the State. Here are gathered together men from distant corners of this vast State, men having community of interest,

leading the same kind of natural life, believing in the same simple ideals—these men have come to this Fair and shall be shortly returning to their distant homes, taking with them a vast hoard of knowledge and experience which will ever guide their foot-prints towards a healthier, better and a sweeter life. If this is realized even to a small extent then, may I humbly state, that the Animal Husbandry Department shall regard itself amply rewarded for its efforts in the organization of this Fair.

I shall now request you, Sir, kindly to give away the prizes and accept as an humble tribute of the President of the Fair, your humble servant, this garland as a token of my respectful regards and grateful acknowledgment of the trouble you have taken in coming over to this place to grace the occasion.

Proceedings of a lecture on Rural Reconstruction in India, delivered by Professor K. P. Bhatnagar and presided over by Mrs. C. J. Fernandes.

The Second extension lecture of the Agra University on "Rural Reconstruction in India" was delivered on 26-1-37 by Professor K. P. Bhatnagar of the D. A. V. College, Cawnpur, under the Presidentship of Mrs. C. J. Fernandes, wife of Dr. C. J. Fernandes, Director, Animal Husbandry Department, Jodhpur.

The President humorously remarked that for this honour her thanks were equally divided between Principal Sahani and her husband who submissively resigned the chair in her favour. It was due to a domestic arrangement that when she chose to speak, Dr. C. J. Fernandes remains quiet, that she was there instead of him. (Laughter).

Professor Bhatnagar dwelt at large on the various aspects of rural deficiencies and suggested means whereby to bring about improvement in the lot of the Peasant. Sanitation, Co-operative movement, education, better relations among Zamindars, Peasants and the Government all came in their way.

Concluding the evening's proceedings, Mrs. Fernandes thanked the lecturer for his brilliant discourse and remarks that if all the

deficiencies in rural life were made up and improvements suggested brought about, it would convert all dwellers of villages into angels of a human Paradise (applause). But her main difficulty in understanding the question was "How to bring it about in the face of much poverty and illiteracy." In her opinion, cattle improvement was not merely one of the many factors in Rural Reconstruction. She said "Better education, a higher standard of life, in fact, all those amenities of life and other conditions which form the structure of Indian prosperity really rest on the Patient 'Backs of the Working Bull and the Milking Cow'." She dwelt at large on the special conditions obtaining in Marwar which was more pastoral than agricultural. By the side of the academic point of view beautifully expressed by the lecturer, she took the liberty of placing the practical point of view of the matter. "Our rural problems here are really concerned with the improvement of live-stock, control of diseases, disease investigation, dairying, making and stacking of hay, conservation of fodder, improvement of grasses, in fact, all that can be summarised in one word "Animal Husbandry".

"Ever vigilant to assimilate in his dominions, any ideas calculated to benefit his subjects, His Highness the Maharaja Sahib Bahadur, has hailed the Viceregal message of rural uplift and cattle improvement in a spirit of paternal love for his subjects. The establishment of the new department of Animal Husbandry is a practical proof, that the spirit of rural reconstruction in its economic aspect as described by the Professor, is being translated into a reality duly domiciled in the land, and for which, His Highness the Maharajah Sahib Bahadur and the Chief Minister are sincerely and loyally to be congratulated."

Before the conclusion, Principal Sahani in thanking the lecturer and the President remarked that she had very nicely put the real practical point of view, and hoped that the new Animal Husbandry Department would be of real benefit to the people.

Speech delivered by Dr. C. J. Fernandes, Director, Animal Husbandry Department and President, Fair Committee Prize Distribution Ceremony, held on September 1, 1937, at the Tejaji's Fair, Parbatsar.

Sir Donald Field, Thakur Saheb of Sankhwas and Gentlemen,

The Day's business is coming to a conclusion. This vast multitude arrayed before your Honour is greedily eyeing the multi-coloured, glittering table, crown of success and the glory of honest failure, silently, eagerly watching the dispensing hand of the Illustrious Guest of this evening. Our thoughts instinctively wander to the days gone by, when that fearless warrior took upon him the task of rescuing the old woman's cattle from the enemies' clutches somewhere about the 13th century. There could not have been a more appropriate idea to perpetuate the memory of that illustrious hero Shree Tejaji who martyred his life and all in the defence of the widow's cattle than by the celebration of a Cattle Fair at Parbatsar. It is a real recognition of the services of the cattle, whose patient backs maintain and support the entire texture of the Indian Agriculture. Started much earlier, it was not before 1924, that an attempt was made to organize this Fair and not to leave it as a mere slip-shod gathering of cattle-breeders. It, however, continued to be primarily a good marketing centre of the Marwar cattle, especially the bullock whose fame had long spread far and wide. With the transfer of Cattle Fairs to the Animal Husbandry Department, the duty of improving, reorganizing, and re-interpreting the fairs has devolved on this new organization.

The organization of the Animal Husbandry Department first saw the light of the day in August 1936. Originally the idea of forming such an organization in Jodhpur was conceived as far back as March 1933, in an incidental talk over the proposed Veterinary Department, between Sir Arthur Olver, Animal Husbandry Expert to the Government of India and the late Mr. J. W. Young, the Vice-President of the State Council, but his untimely and much lamented death put a sudden brake to all

activities in general. It was again in July, 1935, that the star of the peasant's lot shone brighter once more and the present Chief Minister, Sir Donald Field, gave to the dreams of his worthy predecessor, a habitation and a form. How uniquely fortunate do I deem myself that this day's cradling attempt of the Animal Husbandry Department, has been blessed by the presence of its own progenitor. If Sir Arthur Olver is the greatest missionary of the Cow in India, believe me, gentlemen, Sir Donald Field is the very incarnation of that spirit in Marwar.

The Gospel of Rural Uplift which came to India with the ship that brought His Excellency the Viceroy to Indian shores, has touched a unique chord of Indian life and has sent right through the expanse of this sub-continent a wave vibrating with a melody which is proving the panacea for all the ills of the Indian farmer. His Highness the Maharaja Sahib Bahadur of Jodhpur, in whom, harbingers of prosperity and happiness to his ryot have ever found a most hospitable host, hailed the Viceregal message in that spirit of paternal love peculiarly characteristic of him, and with the help of Sir Donald, paved the first stone for the return of Lord Krishna's age, celebrated in the annals of our country as the age of Milk and Butter, and this neglected Cinderella of Animal Husbandry, this lost angel of a ruined paradise has now for once come to assume the importance it deserves by virtue of its contribution to the economic prosperity of the Indian peasant and is building a new heaven for itself. In this era of "forceful agricultural development in India," rural sanitation, co-operative movement, rural education, agricultural farms, and numerous other allied activities hold the attention of the reformers. But better education, co operation and a higher standard of life, in fact, all those amenities and other conditions which are the source of Indian prosperity really rest on the foundation rock of the working bull's back. Efforts in this direction are of special significance in Marwar as the predominantly pastoral nature of the country makes cattle the "be all" of a peasant's life. To improve his cattle which form his real wealth is to enhance the value of his possessions, is to effect the greatest improvement in his lot, and to insure him against famine and starvation.

These Cattle Fairs which occasion vast gatherings of the agriculturists and the peasants from far and near, who are so much interested in the welfare of their cattle, are, naturally, the most vital component of the activities of the Animal Husbandry Department. Demonstration of the work of the animal disease control, of the untold benefits of the clean unadulterated milk, of the improvement of breed through pedigreed bulls, dissemination of such information through free cinema show, through distribution of leaflets, etc., are efficient factors contributing in no small measure towards the right education of the rural people. Knowledge shall spread from this Fair-ground in all directions like the ethereal waves pervading the entire atmosphere. Old men will carry from here, tales of the wonderful methods for making their patient "Plough Toilers" stronger, better and more efficient and by the hearth at evening fall, relate them to their children and grand-children, the future rural citizens of Marwar. Young boys and young girls will retain in their memory a remembrance of what they have seen, and pass on to their less fortunate companions who had lingered at home, while intelligent strong youths will practise from to-morrow what they have learnt to-day. These Fairs, therefore, Sir, are the fountain source of a peasant's knowledge, happiness and assurance against financial bankruptcy. I hope as time goes on, and experience brings to light loop-holes and deficiencies in our efforts, the Fair will be getting more perfect, more near the ideal, and, therefore, more serviceable to our beloved Ruler's grateful subjects.

Sir, I hope, you will pardon me for taking so much time, but I thought it would be in the fitness of things if I attempted to place before you the ideals that guide us in organizing these Fairs, and our motives by which the success of our measures should be judged.

All glory be to the Divine hero, Shree Tejaji, in celebrating whose heroic exploits, we give expression to our humble appreciation and acknowledgment of the great worth of the service of the cattle, our grateful thanks be to His Highness the Maharaja Sahib Bahadur of Jodhpur, whose solicitude for his ryot has ever been

assuming such practical shapes, and our humble thanks-giving be to the Almighty, for He has given to a great Ruler as his adviser a truely great minister.

As the President of Shree Tejaji's Cattle Fair, on behalf of all the people who have gathered together here, I beg to convey, Sir, my sense of gratefulness to you for the honour you have conferred upon us all by gracing the occasion with your presence. We take it as an expression of encouragement for our activities and an indication of patronage which has given us added strength and zeal for future. May I also take this opportunity of expressing my sincere thanks to all the honoured guests who at great personal inconvenience have come to Parbatsar, to appreciate our labours, and to assure the ryot that the mighty dignitories of His Highness' Government are not aliens, but denizens of that world of dreams, that Paradise of a farmer's life and the destination of the efforts of the Animal Husbandry Department.

Sir, I now request you to honour the worthy winners by giving them their well-deserved rewards.

Correspondence.

AUSTRALIAN GRADUATES AND THE ROYAL COLLEGE. *

14, Clifton Gardens,
Maida Vale, London, W. 9,
20th November, 1934.

The Registrar,
THE ROYAL COLLEGE OF VETERINARY SURGEONS,
Red Lion Square, W.C. 1.

Dear Sir,

Since my arrival in England, I have been asked to ascertain the exact position and attitude adopted by the Royal College of Veterinary Surgeons to graduates in Veterinary Science from Australian Universities making application for registration as colonial practitioners in the register of the Royal College.

* The Australian Veterinary Journal, Vol. XI, No. 4, August 1935.

I understand that previous inquiries were made by Professor H. A. Woodruff when he was Dean of the Faculty of Veterinary Science in the University of Melbourne, but at that time the Council of the Royal College was unable to grant recognition to Australian Graduates. I have no personal knowledge of tne exact nature of the application made by Professor Woodruff nor of the exact position taken up by the Royal College.

I have no personal interest in the matter of the recognition of Australian Graduates by the Royal College, but, on behalf of the graduates and the Australian Veterinary Association, I make those inquiries, and should be pleased to do what I can to remove any misunderstandings, if such exist, and to help in a closer union between the profession in Great Britain and Australia.

The matter is mainly one of reciprocity between educational institutions throughout the Empire, as well as reciprocity between members of a great profession. It goes further, however, as it concerns a very definite limitation experienced by Australian Graduates in the restriction of their sphere of action and opportunity of gaining wider experience. I refer particularly to the fact that in some of the British Colonies the diploma of the Royal College is the only veterinary qualification at present recognized, while in other colonies Australian graduates have been accepted and have proved themselves competent.

I realize that the Royal College is not directly responsible for this position. Throughout the Dominions and Colonies the M.R.C.V.S. was naturally the pioneer of veterinary science, and has himself often been responsible for the establishment of veterinary legislation on the one hand and of teaching institutions on the other. It is only natural that some of the colonies should have laid it down that only members of the Royal College are eligible for service in these colonies. This may not be taken to mean that none but a member of the Royal College is in possession of the requisite knowledge and skill to hold a veterinary appointment in the service. This position does prevent an Australian Graduate from obtaining experience in tropical veterinary science in many of these countries where such experience can only be obtained.

There appear to be two ways of removing this disability: one by negotiation with such colonies and the other through the Royal College. In the one case this would mean short-circuiting the Royal College, which may cause a certain loss of prestige by the Royal College. The Royal College may not desire this and, if so, we should be cognizant of the fact and should avoid taking such action if another way can be found.

There is yet another disability inflicted on the Australian graduate. Should he desire to seek a higher degree or diploma, such as the D. V. S. M., in England, he is precluded from so doing by the regulation which demands that he must first obtain membership of the Royal College.

I understand that the Royal College has accepted under-graduates from Australian Universites, and has allowed them to proceed with their studies, giving them credit for examinations already passed. This same privilege has not been extended to graduates who have been required to attend lectures and demonstrations in the last year and submit themselves to examination at the end of this time. This suggests that an Australian graduate of any length of standing is in no better position than an under-graduate in the penultimate year of his course.

It is recognized that only very exceptionally would an Australian graduate desire to practise in the United Kingdom. It is not the right to practise in the United Kingdom that the Australian graduate would seek, but the right to proceed to such a diploma as the D. V. S. M. or the right to appointment in the Colonial Service. Under present circumstances, he can do both these things if he be granted permission to attend the last year of the M. R. C. V. S. Course, plus any other subject that the council may decide, and pass the graduating examination at the end of this time. Having obtained the M. R. C. V. S. diploma, he may be permitted to proceed in further studies for the D. V. S. M. These conditions would stop most graduates from attempting to qualify for appointment in the Colonial Service. A graduate may be of ten or more years' standing, and may have taken up such branches of veterinary science as pathology and bacteriology or State veterinary medicine. He may have occupied administrative positions and be desirous of obtaining further experience in tropical countries. It would seem to some people unreasonable to ask such graduates to go back to college and undertake work in veterinary medicine and surgery.

Under the Veterinary Surgeons Act, 1881, Section 13, a 'Colonial' graduate may apply for registration as a colonial practitioner, but before this can be granted his diploma or degree must be one that is recognized. At present it would appear that no such diplomas or degrees have been recognized by the Royal College. It would appear from the wording of the Act that Parliament had intended to provide for the recognition of colonial and foreign degrees. I take it that the Royal College does not desire to exercise these powers given under the Act. It would be helpful to us to know if the Royal College still regards Australian graduates as unqualified to be registered as colonial practitioners, and, if so, what are the reasons.

It seems possible that the position has changed somewhat since Professor Woodruff made his approach to the Royal College. In any case, the profession as a whole in Australia is ignorant of the position, and it should be informed before it takes any definite action to relieve the present disabilities.

My own personal view is that no colonial or foreign graduate should receive the diploma of the Royal College (M.R.C.V.S.) except after examination. This does not apply to honorary diplomas. If the right to practise in the United Kingdom cannot be obtained except by obtaining, after examination, the M.R.C.V.S. diploma, the Royal College must accept like treatment in the foreign countries and Dominions of the British Empire. I think I am justified in saying, however, that no Australian

Government, Commonwealth or State, would tolerate for a moment a suggestion that graduates from the Royal College should obtain an Australian degree before being granted the right to practise in Australia.

If the Royal College is to exercise any influence in the British Empire outside of the United Kingdom, and it seems to me desirable that it should, one step that could be taken would be to open the doors to graduates from the Dominions to obtain special diplomas, such as the D.V.S.M., and that of Tropical Veterinary Medicine, when such a diploma is available. At present the by-laws state that only members of the Royal College can proceed to the D.V.S.M. It is desirable that graduates from overseas should be attracted to come to Great Britain to obtain such diplomas. Unless the Royal College sees some other solution the only thing that remains for the Dominion graduates to do is to make satisfactory arrangements with the various Colonies to accept Dominion Graduates for Colonial Service.

May I conclude by expressing my gratitude for the courtesy extended to me by the Royal College in inviting me to be present at the Annual Dinner and for the courtesy shown by all members of the Royal College with whom I have come in contact. I trust that in their wisdom the Royal College will do such things that may be calculated to unite the veterinary profession throughout the British Empire, just as the sister profession of medicine has been united.

I remain, Dear Sir,
Yours faithfully,
LIONEL B. BULL.

ROYAL COLLEGE OF VETERINARY SURGEONS,
10, Red Lion Square, London, W.C. 1,
12th February 1935.

L. B. BULL, D.V.Sc.,
14, Clifton Gardens,
Maida Vale, W. 9.

Dear Dr. Bull,

Your letter of the 20th November was considered by the Examination Committee of the Council at a meeting held on the 10th January. The Committee has taken careful note of your letter, but instructs me to say that it sees no reason to depart from its established practice of dealing with every application for registration by holders of Colonial Veterinary Diplomas on the merits of each particular case, under the powers set out in Section 13 of the Veterinary Surgeons Act, 1881.

With regard to your final question, the Council is not prepared to admit to the examination for the D. V. S. M. persons who are not already members of the Royal College. The D. V. S. M. examinations are very specially designed to test the knowledge of candidates regarding the diseases of animals in this country, particularly in respect of public health administration, and it is scarcely conceivable that the necessary experience in connection with these matters could be obtained in any other country.

Yours faithfully,
FRED. BULLOCK,
Secretary.

14, Clifton Gardens,
Maida Vale, London, W. 9,
9th March 1935.

Dear Dr. Bullock,

Thank you for your letter of 12th February conveying to me the answer of the Examination Committee of the Council to my letter of 20th November.

I must admit that I was surprised to learn that the Committee takes strong objection to graduates in veterinary science other than members of the Royal College proceeding to post-graduate study in Great Britain. If the D.V.S.M. is specially designed to test the knowledge of candidates regarding the diseases of animals and their control in the United Kingdom, it may have largely a local interest. This surely cannot be claimed of the Diploma of Tropical Medicine. But even if the D. V. S. M. is so specially designed, it might be instructive to others to come to this country and acquire some of this very special knowledge. There was no suggestion in my letter that the knowledge could be obtained in any other country. My request was that an Australian Graduate might be permitted to come to this country for the purpose of acquiring this knowledge by post-graduate work, and that he might be admitted to the examinations after having undertaken the special study laid down by the Council without having in addition to acquire the M.R.C.V.S. by putting in a year's work at an approved college.

If ihe profession in Great Britain has no educative interest except in purely local veterinary matters, it will not become a centre of veterinary education in the British Empire, as has happened in other professions and science generally. This means that Dominion Graduates will have to look elsewhere for help and encouragement.

I personally can only feel a deep regret that this should be so, and from what I have learned I feel no encouragement to hope that in the near future the position will be changed.

I trust that the Council will have no objection to my handing your letter of 12th February to the Editor of the Australian Veterinary Journal for publication in order that the profession in Australia may be informed of the decision of the Council.

Yours faithfully,
LIONEL B. BULL.

Extracts.

LIVE-STOCK STATISTICS FOR INDIA.

Madras Leads in Ovine Animals.

SIMLA, *June 4.*

Some idea of the importance of cattle to Indian economy may be had from a recent estimate of the live-stock wealth of India. This estimate is for 1934-35 which is the latest year for which figures are available. It places the number of bovine animals comprising oxen and buffaloes for British India at 159,935,000, and the total number of ovine animals comprising sheep and goats at 61,157,000, and that of other animals comprising horses and ponies, mules, donkeys and camels at 3,801,000.

The total number of ploughs, it has been estimated, is 25,576,000, and that of carts 6,876,000.

Amongst the Provinces, the United Provinces has the largest number of bovine animals namely, 32,470,000. Bengal comes next with 25,287,000; Madras is third with 24,607,000. Some of the other important provincial figures are as follows :—

Bihar and Orissa	
Punjab	... 21,308,000
Central Provinces and Berar	... 15,340,000
Bombay	... 13,844,000
	... 12,596,000

The largest number of ovine animals is in Madras, namely, 18,701,000, the United Provinces being second with 10,002,000.

The United Provinces has the largest number of ploughs, namely, 5,196,000, the second largest figure being in Bengal, namely, 4,592,000.

Madras has the largest number of carts, namely, 1,194,000, the Central Provinces and Berar being second with 1,147,000.

The number of live-stock of the bovine class (cattle proper) per 100 acres of sown area and per 100 of the population in each Province is as follows :—

	Number of cattle. Per 100 acres of sown area.	Per 100 of population.
Ajmer Merwara	134	86
Assam	100	69
Bengal	108	52
Bihar and Orissa	88	57
Bombay	38	60
Burma	34	42
Central Provinces and Berar	56	89
Coorg	100	84
Delhi	75	24
Madras	75	53
North-West Frontier Province	50	44
Punjab	60	67
United Provinces	91	67

Hindu, June 4th.

IMPROVEMENT OF LIVE-STOCK.

Travancore Government Scheme.

TRIVANDRUM, *June 4th.*

To inaugurate the scheme recently sanctioned by the Government for the improvement of cattle in Travancore, a public meeting was held last evening at the Victoria Jubilee Town Hall. Dewan Bahadur V. S. Subramania Aiyar presided.

Mr. K. S. Narayana Aiyar, Director of Agriculture and Fisheries, in his welcome speech, said that they had to deal with the problem of improvement of the milk yield of individual cows and the production of animals for speed and capacity. The scheme that they were initiating was intended to improve the local breeds with the object primarily of increasing their capacity for milk production. The Head of the Administration had already drawn pointed attention to the importance of good physique amongst the people of Travancore, especially in view of the great industrial programme to be launched. For making themselves more strong and vigorous and for building up a future race of strong and hardy people the importance of including milk in the daily diet of people could not be over-stressed. It was well known that cattle in Travancore, for that matter in the whole of Malabar, when compared to the rest of India, were very much smaller in build and far poorer milkers. To a certain extent that had been due to the unfavourable rainfall and climatic conditions prevailing here. But promiscuous mating and

improper and insufficient feeding was largely responsible for their degeneration which had unfortunately gone to such an extent that there was no specific breed of cattle at all in the State. Under these circumstances, the methods adopted by the Department to improve the cattle in the State had been the introduction of suitable breeds of Indian cattle from outside the State and the selection and grading up of satisfactory cows now existing in the country with bulls of superior types. As a result of the experience gained so far by the Department it was found that of all the breeds of cattle tried in the State, the Sindhi cattle fared best, withstanding climatic conditions to a fair extent. The cows of this breed had been found to be regular breeders and heavy milkers. Efforts had therefore been made by the Department to popularise Sindhi cows, but these could not be expected to completely re-stock the whole country. More extensive results had to be obtained quickly and at less cost by grading up the local cows with bulls of that type. The Sindhi bulls were found to be so pre-potent that they could stamp all their good qualities on their progeny. It was on account of that fact that the Government had been pleased to sanction the scheme to be inaugurated that day.

Details of the Scheme.

Under this scheme, he continued, the Department would maintain five good Sindhi bulls at five different centres situated within the Municipal limits, one bull each at Pojappura, in the Police Outpost premises, Puthenchantha near the Municipal slaughter house, the Agricultural Inspector's Office, near the Observatory, the Veterinary Hospital at Pettai and in the poramboke land outside the West Fort Gate. Each bull would be under the charge of a bull-keeper to be appointed by the Department. The bulls would be mated only with selected cows of prime condition, of well-built body and free from any chronic or infectious disease. The Agricultural Inspector, Trivandrum, who would be in immediate charge of the scheme, would select and register such of the cows as could be mated with the bulls and issue certificates of registration to the owners of cows that come up to the standard. The Inspector would also inspect the cows once every month, advise the owners about their proper milk yield, etc., in a special register to be maintained for the purpose. Although a fee of 8 annas would be levied by the Department for covering a cow, no fee of any kind of registration or for periodical inspections of the cows would be charged. A history of the calves born to the registered cows would also be maintained and the cow calves when they attained their maturity would also be brought under the scheme. The success of the working of the scheme depended entirely on the support of the public of Trivandrum and he took that opportunity to request them to extend to the Department their hearty co-operation in that endeavour.

Proceeding, he said: One serious obstacle that may stand in our way in the progress of the scheme is the danger of contamination by scrub bulls. Every effort should, therefore, be made to eliminate them from the scene of operation; if this is not done, quick dissipation of any good result achieved would follow. The male progeny of the bull under the scheme are not good for mating with the female progeny and they should not be used to replace their pure bred sires at any time for the purposes of our scheme.

Proper Feeding of Cattle.

No work of cattle improvement by breeding alone may be expected to progress satisfactorily, unless the equally important question of good and adequate feeding is simultaneously attended to. The average ryot in our country seldom feeds his cattle regularly or properly. In rural areas cattle are generally let loose during the day to pick up whatever they can get. The lands reserved in certain places for purposes of grazing require to be improved considerably by the provision of better facilities for good grass growth. A regulated system of controlled grading should also be introduced in these places.

In urban areas, the question of stall feeding and the problems connected with the cultivation and storage of fodder grasses arise. The system of raising crops to be cut as fodder was unknown among our ryots. As a result of propaganda which the Department has been carrying on for several years past many of the ryots have taken to the cultivation of guinea and papier grasses at least on a small scale. This has, of course, to be considerably extended. People in rural areas must cultivate fodder wherever possible and supply it to towns and the cattle owners in towns should return the manures to the villagers instead.

The President said that with the splendid specimen of cattle exhibited before them it would be possible probably within ten years to produce a very good breed of cows and bulls. As far back as three years ago, the Maharaja and Maharani of Travancore had appreciated the aspect of maintaining good cattle and in the Palace Farm a very good breed was maintained. There were good cows and calves which could be bought at reasonable prices from the Palace Farms. He suggested to the Department to grow good grass and fodder in order to sell them to the people who possessed good cows. The co-operative societies would do a great deal in this direction. He had no doubt whatever that puplic co-operation would be forthcoming in an abundant measure and the success of the scheme was a foregone conclusion.

The President later read the Dewan's message (which has already appeared in these columns).

Mr. T. K. Velu Pillai also addressed the meeting.—*Hindu* 28-6-37.

TAMIL SCHOLAR HONOURED.

Public Meeting at Tinnevelly.

TINNEVELLY, *Aug.* 1.

A large and distinguished gathering of Tamil scholars and lovers of Tamil assembled this evening at the Hindu College Hall to participate in the celebration of the 80th birthday of Rao Sahib V. P. Subramania Mudaliar, the well-known Tamil poet and scholar.

Mr. T. K. Chidambaranatha Mudaliar proposed Mahamahopadhyaya Dr. V. Swaminatha Aiyar to the chair and Rao Sahib P. Avudiappa Pillai, Public Prosecutor, seconded the motion, which was carried.

A prayer song was sung by Mr. T. C. Thitharappan.

Dr. V. Swaminatha Aiyar, in his opening speech, said that his distinguished friend, Mr. V. P. Subramania Mudaliar had grown grey in the cause of rivival of Tamil learning and culture. Mr. Mudaliar was a scholar of rare merit and a poet of no mean order.

The Katalai Thambiran of the Thiruvadudurai Mutt, who represented His Holiness the Pandarasannadhi, honoured Mr. Mudaliar by presenting him with a gorgeous shawl and also handed over a sum of Rs. 300 to the Celebration Committee.

Addresses were then presented to Mr. Mudaliar. The Reception Committee's address was read by its Secretary, Mr. P. Audiappa Pillai, and was enclosed in an ornamental silver casket. Other addresses presented were on behalf of the Tamil Literary Society, Vannarpet, Kamban Kazhagam, Tuticorin, the Students' Association of the Hindu College, and the South India Tamil Sangam.

Vidwan P. K. Arunachala Gounder then read a large number of messages and congratulatory poems from several scholars and associations from all over the Tamil Nad and the 'Indian Veterinary Journal.' The Hon. Mr. C. Ralagopalachari, Prime Minister, had also sent a message.

Brahmasri Abinava Kalamegam Ananthakrishna Iyengar, a Tamil poet of Thenthirupperai, read some verses which he had composed for the occasion.

Sir S. Kumaraswami Reddiar, addressing the gathering, said that the most distinguishing feature about Mr. Subramania Mudaliar was his life-long devotion to Tamil studies and his unbounded enthusiasm in the cause of Tamil learning. His life was one of dedication to the cause of Tamil and had lessons which every Tamilian should study. The speaker pointed out that though Mr. Mudaliar had been sufficiently honoured by the public, yet there was a feeling that the Madras University should confer on him some mark of distinction in honour of this occasion. The speaker had no doubt that the University authorities would suitably recognise Mr. Mudaliar's services to Tamil learning.

Messrs. Sadhu Ganapati Pantulu, A. C. Paul Nadar of Tuticorin, V. V. Srinivasachari, Prof. A. Srinivasa Raghavan, Mr. R. P. Sethu Pillai and V. S. Nataraja Aiyar spoke referring to the various aspects of Mr. Mudaliar's greatness and achievements as a scholar.

Mr. V. P. Subramania Mudaliar, replying, said that he was overwhelmed by the honour and kidness shown to him. The real truth was that Tamil studies gave him pleasure and he had pursued them all through life. He expresed his gratitude to Dr. Swaminatha Aiyar for having come to priside over the function. His presence on the chair was the greatest honour that could be paid to him (the speaker).

The President, winding up the proceedings, again paid a tribute to the literary eminence of Mr. Mudaliar. He said that he was glad that the time, when the people connected with Tamil studies and learning were looked down upon was passing and Tamilians were now beginning to feel proud of their mother tongue,

Mr. J. Chakrapani Nambiar proposed a vote of thanks.

CATTLE POPULATION OF INDIA.

Alarming Rumours Refuted.

SIMLA, *Aug.* 12.

The following is a press note issued by the Education, Health and Lands Department through the Director of Public Information :—

What is the present position about the cattle population of India? There are some who think that the total number of bovine cattle in India is decreasing, and feel alarmed at what they consider to be a rapid decline in the live-stock wealth of India. That this alarm is entirely groundless is proved by certain cattle statistics recently collected, which show that the number of cattle in British India actually increased from 146 millions in 1920 to 154 millions in 1930. According to the Live-stock Statistics of 1935 for British India (excluding Bengal, Bihar and Orissa), the number of cattle in 1935 was 52 lakhs more than that in 1930—an increase of 4'9 per cent in five years. The situation is, therefore, far from alarming. It may be noted, however, in this connection that the Royal Commission on Agriculture felt that what was needed was an improvement in the quality of cattle rather than an increase in their number.

Though the actual statistics completely demolish the case of those who argue that the uumber of cattle in India is decreasing, it is worth while to expose the fallacies in some of the arguments on which they rely in support of their contention. One of these arguments is that at the "lowest estimate", 35,000 cows are slaughtered every day for supplying beef to the Army. Another is that "one cow per minute" is being exported from India; in other words, that the total number of cows exported is 5,25,600 per annum. None of the arguments, however, stand scrutiny.

DECLINE IN EXPORT OF CATTLE.

Thus, the statistics show that even taking, at a conservative estimate, 200 lbs. as the average dressed weight of an animal, the number slaughtered daily to feed the Army comes to only 249. The statement made in certain quarters that 35,000 cows are slaughtered daily to supply beef to the British soldiers means, in effect, that each soldier consumes three-quarters of a cow a day—surely a fantastic estimate! Moreover, cows are not slaughtered for beef for the Army; the animals used are all oxen. The suggestion sometimes made that mutton may be supplied to the Army instead of beef once a week, is hardly worth considering, as the number of animals slaughtered forms but an infinitesimal part of the total, and the increased cost of such a change from beef to mutton is estimated by the Defence Department to be about Rs. 3 lakhs. As for the export of cattle from India, nothing

shows up the exaggeration better than the Annual Statement of the Seaborne Trade of British India, according to which the number of cattle exported has been steadily declining since 1927-28. The following are the figures of the cattle exported from British India :—

1927-28	...	...	1,8354
1928-29	...	...	8,706
1929-30	...	...	2,226
1930-31	...	...	1,939
1931-32	...	...	756
1932-33	...	...	946
1933-34	...	...	779
1934-35	...	...	778
1935-36	...	...	407

It is difficult to imagine where the statement regarding the export of 'one cow a minute' can have originated.

It is also sometimes suggested that the export trade in dry meat is one of the causes of the decrease. Actually, however, the average annual export of dry meat between 1919-26 and 1928-29 is equivalent to only 81,771 animals; or '07 per cent of the total number of animals.

It is no doubt true that the number of cattle in British India per 100 of the population is only 61, while the number is higher in several other countries, But for purposes of comparison, it is much better not to take into account new and sparsely populated countries like Australia and New Zealand, where extensive pasture lands are available and cattle breeding is an industry in itself and conditions of comparison are not therefore the same. Compared to the old countries of the world, however, India appears to be better off than Germany, Italy, France and U.S.A.

The number of live-stock of the bovine class (cattle proper) per 100 acres of sown area and per 100 of the population in each Province is as follows :—

	Number of Cattle.	
	Per 100 acres of sown area.	Per 100 of population.
Ajmer-Merwara	134	86
Assam	100	69
Bengal	108	52
Bihar and Orissa	88	57
Bombay	38	60
Burma	34	42
Central Provinces and Berar	56	89
Coorg	100	84
Delhi	75	24
Madras	75	53
North-West Frontier Province	50	44
Punjab	60	67
United Provinces	91	67

Hindu, 19-8-37.

INDIA'S LIVE-STOCK.

The report of Dr. Wright on the development of the cattle and dairy industries of India, just published, is a valuable document. It embodies the results of what is perhaps the first comprehensive enquiry into our live-stock resources conducted by two experts. The investigation has served to underline what was quite familiar to many observers. It has shown that in her live-stock India owns a source of wealth as important as agriculture. Dr. Wright estimates that the dairy products of this country are worth annually about Rs. 300 crores—which is equal to the value of our total annual rice production. To this must be added the return from draught cattle and cattle manure. On the whole, Dr. Wright places the total value of animal products of all kinds in the region of Rs. 1,000 crores a year. That in spite of these vast resources, our per capita consumption of dairy products is lower than that of many other countries is another fact brought home to us by the present enquiry. It is well known that milk consumption in this country is much below the minimum amount necessary for physical development and maintenance of health. Dr. Wright insists that there is immediate need for increasing milk production to at least twice the present output. He makes detailed suggestions for bringing about this increase, including the establishment of Departments of Animal Husbandry in the Provinces and the setting up of a Central Dairy Institute. Dr. Wright's proposals are intended to solve two basic problems : the improvement of live-stock and the better organisation of the dairy industry. The first, it is obvious, is the more urgent problem. For its successful solution a variety of questions have to be tackled, Indian cattle, like the Indian people, are generally underfed. Veterinary aid is anything but adequate and the improvement of breeds is only just beginning to receive attention. It may be seen, therefore, that the task confronting the authorities is a stupendous one. The existence of Congress Governments in many provinces inspires the hope that the task will be courageously discharged, We commend Dr. Wright's proposals to the earnest consideration of Provincial Governments throughout the country. There is a great duty before them ; but tne reward of its fulfilment will be no less great.

Hindu Editorial, September 22.

IMPROVING INDIAN CATTLE.

All-India Institute Recommended.

THE WRIGHT REPORT

SIMLA, *Sep. 21.*

The report of Dr. N. C. Wright, who was appointed with Sir John Russell to make a survey of the activities of the Imperial Council of Agricultural Research has been published. Both these experts toured extensively throughout the country from November to the end of March and were accompanied in their tours by their Secretary Advisers, Rai Bahadur R. L. Sethi, I. A. S. and Captain A. C. Aggarwala. The report

is of very great importance and surveys the entire field of Indian animal husbandry.

The report of Dr. Wright, who is the Director of the Hannah Dairy Research Institute, is of particular significance at the present moment, a great deal of interest having been aroused in the subject of animal husbandry as a result of His Excellency the Viceroy's drive to improve the standard of Indian cattle and to increase supplies of wholesome milk in the country. There can be no two opinions as to the importance of this campaign in the interest of national health and prosperity. Dr. Wright draws pointed attention to the need for extensive research work from the point of view of the cultivator, who is still the principal producer of milk and milk products. It is a matter of gratification that his conclusions coincide with proposals which have been advocated and adopted from time to time by the Imperial Council of Agricultural Research.

For the development of dairying in particular he recommends a properly staffed and equipped Central Dairy Institute. The urgent need for this has long been recognised and schemes have been submitted to locate such an Institute in a dairy tract within reasonable distance of Delhi, but owing to financial stringency there has been little prospect up to the present of obtaining the necessary funds. In justification of the considerable allotment of funds which will be necessary for this, Dr. Wright mentions that the dairy products of India are worth appoximately Rs. 300 crores a year, which is as much as the value of India's total output of rice, or three to four times the output of wheat, hides and skins valued at Rs. 40 crores and which exceeds the total value of Indian sugar. He draws attention to the estimated value of cattle labour, namely, from Rs. 300 to 500 crores a year, and to the great value of cattle manure, which is placed at about Rs. 270 crores. This brings the value of animal products of all kinds to total of over Rs. 1,000 crores a year, excluding poultry, for which no figures are available.

Need for Increasing Milk Production.

These estimates appear to be on the conservative side. For example, taking Dr. Wright's estimate that the total output of milk in India is between 700 and 800 million maunds a year, or his estimate of a daily consumption of milk and dairy products amounting to the equivalent of between 7 and 8 oz. liquid milk per head, the value of the total output at an average price of 1 anna per lb. for all India, would be much nearer Rs. 400 than Rs. 300 crores a year. He points out that this output is four times the output of Great Britain and five times that of Denmark, but amounts to a consumption of only 7 to 8 oz. of liquid milk per head per day, while medical opinion is unanimous that at least double that amount is necessary for proper development and maintenance of health, particularly among people whose diet is otherwise largely vegetarian.

The first section of this report, therefore, emphasises the need for increasing milk production to at least twice the present output.

Regarding general development of the dairy industry, the report says that any such plans should cater for the existing taste and dietary

habits of the population. Since climatic and other conditions in India differ very widely from those in the West, development should not be on Western lines. A new technique was needed, designed to solve the special problems of India. The majority of the population in India was rural, living on small holdings, while 98½ per cent of the total milk produced in India was consumed as liquid milk or as ghee, dahi, khoa and other indigenous products, only 1½ per cent being ultilised for producing Western products such as creamery, butter and cheese.

Dr. Wright, therefore, recommends that attention should be concentrated first on the production of indigenous products, and on the organisation of producers on a village industry basis as distinguished from a factory basis.

Distribution and Handling of Milk.

With regard to handling and distribution, he considers that new and cheap methods suitable to Indian conditions should be investigated and devised. For example, some sort of heat treatment of milk might be more suitable for improving keeping-qualities than refrigeration, which could be applied only in the case of supplies of milk to Indian cities. In view of the fact that only three per cent of the population live in cities, or 100,000 or more inhabitants, the latter was relatively a small problem.

He recommends that standards should be laid down for all indigenous products and that the administration of laws relating to adulteration should be made rigid.

The present average yield of milk in India is only 600 lb. per cow per year. The first necessity in increasing output and cheapening cost of production is, therefore, to increase the average milk yield. For this purpose he is in full agreement with the system now being generally applied, under which intensive breeding control is carried on in selected areas.

He draws attention to the fact that the number of approved bulls at present in service is only one per cent of actual requirements and considers that the number should be greatly increased, while the purchase of good bulls from selected breeders should be extended wherevr possible, as a stimulus to breed good cattle. In intensive breeding areas the present system of castration at early age needs to be carried out on a much wider scale, and selected stock systematically registered and inoculated against rinderpest. He approves of the proposals which are now being implemented to train stockmen for such work. He is also in entire agreement with the arrangement now being made to establish herd books and milk records and recommends that this should be proceeded with as soon as possible.

Dr. Wright supports the emphasis which has been laid an continuity in breeding policy and points out that much time is required for any breeding policy to show results. He is convinced that the best general breeding policy for India is that which has been strongly advocated throughout by the Imperial Council of Agricultural Research, viz., the

systematic improvement of indigenous strains and not cross-breeding with foreign cattle, as results already obtained have shown that systematically-selected and properly-managed Indian cattle can compare favourably with the cattle of other countries in efficiency of production under tropical conditions. Moreover, there was clear evidence that Indian cattle were less susceptible to contagious diseases, besides being much easier to rear and maintain under Indian village conditions than European cattle or cross-breds with European breeds.

He points out that Indian cattle are generally underfed and that the supply of fodder should be considerably increased, while a system of rationing suitable for the cattle of India needed to be further investigated. He agrees also that the evidence recently obtained by Veterinary Investigation Officers of deficiency diseases over wide tracts of country needed thorough investigation so that means of overcoming them might be revised.

Well Equipped Dairy Institute Needed.

To solve the many problems confronting the Indian Dairy Industry, Dr. Wright considers that the greatest present necessity is for a staffed and equipped Dairy Institute at a more central place than Bangalore, where investigations of an all India nature could be carried on. Such an institute should be divided into four sections, viz., Dairy Bacteriology, Dairy Chemistry, Dairy Technology and Dairy Husbandry, and could undertake much of the research which was to be carried out at the proposed experimental creamery at Anand, which could come at a later stage. This is in accordance with the attempts which were made by the Imperial Council of Agricultural Research as long ago as 1931 to secure a suitable all-India Dairy Institute. He further considers that arrangements should be made in Provincial Agricultural Colleges to study problems of a local nature.

He agrees with the present arrangement that dairy training should be carried on in Provinces, and recommends that every Veterinary College should maintain a small dairy herd, taking the view that the Central Institute should provide only for advanced post-graduate training.

He suggests that each Province should establish an advisory service for the dairy industry and that as a first step Dairy Development Officers should be appointed. To secure co-ordination with the Centre, the Director of the Central Institute should act as a part-time Dairy Expert of the Imperial Council of Agricultural Research.

In connection with breeding Dr. Wright strongly supports the proposal to appoint a geneticist for investigating problems relating to the physiology of reproduction, the effect of management on constitution and a variety of other matters connected with Live-stock Improvement. He also considers that the number of cattle-breeding agencies should be increased, and should include the Military Dairy Farms, Districts and Demonstration Farms, Cowshalas and Pinjrapoles.

Finally, Dr. Wright concludes that, in the interests of efficiency and economy, live-stock improvement and veterinary work should in every Province and State, be unified under one Department of Animal Husbandry and that more funds should be allotted for the systematic development of live-stock and the live-stock industry.

Hindu, September 22.

PROPER FEEDING OF LIVE-STOCK.

Some Economic Aspects.

Col. Sir Arthur Olver, Animal Husbandry Expert of the Imperial Council of Agricultural Research, in the course of a broadcast talk from Delhi on September 19 observed that the lot of the people of India could be greatly improved if their cattle were reasonably well-fed and maintained on cultivated land, instead of being kept in a state of semi-starvation on uncultivated and over-grazed village grazing areas.

If suitable fodder crops were grown and consumed on the holding, Sir Arthur Olver said, better cattle and more milk, as well as greatly increased yields of the cereals, which were required for human consumption could easily be obtained. That this was a far sounder system of agriculture than constant cropping with cash crops was well recognised in successful agricultural countries of long standing. In progressive agricultural countries, live-stock were now-a-days systematically employed to consume on the land a very high proportion of the crops produced from it.

It had been found that the value of the land and the income derived from it could be very greatly increased, Sir Arthur Olver continuing said, owing to the increase in fertility brought about by properly managed live-stock. Present-day knowledge, however, of improved methods of saving and conserving grass and fodder crops at their most nutritious stage and of the systematic utilisation of stock to consume crops on the land, had in recent years enabled astonishingly improved results to be obtained without heavy expenditure on fertilizers. There seemed to be no reason why, by suitable mixed farming, greatly improved results should not be obtained in India.

Sir Arthur Olver believed that the above methods were even more important from the point of view of the proper nutrition of the people. It had been shown, that the predominantly vegetarian diet of a large proportion of Indians was very deficient in first-class proteins and the mineral salts which were essential to proper nutrition. Controlled experimentation had shown that these proteins and salts could satisfactorily be obtained only from foods of animal origin and that milk was the best and cheapest of these.

Sir Arthur urged in conclusion that no stone should be left unturned, by Government Departments or by philanthropists, to educate the ryot as to the great economic and social benefit to be derived from the adoption of a sounder system of agriculture; based on the proper

maintenance, on the cultivated area, of such numbers of live-stock as were needed to produce an adequate supply of milk as well as working bullocks. Moreover, there seemed to be little doubt that if more silage were made, during and after the monsoon, from grass or fodder crops cut young while at their most nutritious stage, the increased supply of milk which was required could be produced without materially, if at all, reducing the output of grain for the feeding of the people.

Hindu, September 22.

RULES FOR ADMISSION OF INDIANS TO COMMISSIONED RANK IN THE INDIAN ARMY VETERINARY CORPS.

SECTION I.

CANDIDATES FOR COMMISSIONS—QUALIFICATIONS.

1. Candidates for commissions must be over 21 and under 28 years of age. They will not be accepted unless, in the opinion of His Excellency the Commander-in-Chief, they are in all respects suitable to hold commissions in the Army.

2. Every candidate must be either—

(*a*) a British subject, or

(*b*) a subject of any State in India, in respect of whom the Governor General in Council has made a Declaration under Section 96-A of the Government of India Act.

3. The candidates must obtain a certificate of age and nationality, as prescribed for candidates for the Indian Medical Service in Gazette of India, A. D. Notification No. 864, dated the 16th June 1928, signed, should he be a resident in British India, by the Secretary to the Government of the Province, or the Commissioner of the Division within which his family resides; or, should he reside in an Indian State, by the highest Political Officer accredited to the State in which his family resides.

4. Every candidate must be a member of the Royal College of Veterinary Surgeons.

5. Applications to compete in the entrance examination referred to in paragraph 7 must be made out in the form prescribed in appendix I and addressed to the Quartermaster-General in India, Army Headquarters, Simla. A personal interview with the Director of Veterinary Services in India will subsequently be necessary, and will be arranged by that officer.

6. The responsible Head of the Veterinary College from which the candidate graduated will be asked by the Director of Veterinary Services in India, for a confidential report as to the candidate's professional ability and fitness to hold a commission in the Indian Army Veterinary Corps.

7. When the application referred to in paragraph 5 has been received, the D. V. S. will decide if the candidate may be allowed to compete in the entrance examination (details of which are given in Seciion II) for a commission in the Indian Army Veterinary Corps. No candidate will be permitted to compete more than twice.

8. If approved, a candidate will be examined as to his physical fitness by a board of medical officers under arrangements to be made by the district or independent brigade area commander concerned on a requisition by the Quartermaster-General in India.

The standard of physical fitness required will be the same as that for officers of all combatant units.

9. Successful candidates will be granted commission as Indian commissioned officers in His Majesty's Indian Land Forces and will be appointed Lieutenants on probation according to the order of merit in which they pass.

10. All Indian Commissioned Officers of the Indian Army Veterinary Corps are exempted from passing the prescribed language test, *viz.*, Higher Standard Urdu. They will not be eligible to sit for the Lower and Higher Standard Examinations in Urdu.

As an exception to this ruling, the names of any Indian Commissioned Officers of the Indian Army Veterinary Corps who are not sufficiently acquainted with Urdu to enable them to carry out their duties efficiently shall be reported to the Quartermaster-General in India, Army Head-quarters (through the usual channels) during the officer's first year of service in the Indian Army Veterinary Corps. Such officers will be required to pass the Lower and Higher Standard Examinations in Urdu within three years from their date of appointment to the Indian Army Veterinary Corps, for which they will draw the rewards admissible under the regulations.

If an officer fails to pass the prescribed tests, *viz.*, Lower and Higher Standard in Urdu within three years from the date of his appointment to the Indian Army Veterinary Corps, he will be permitted to resign and, if he declines to do so, will be gazetted out of the service and will cease to hold a commission. An extension of the term can only be justified on special grounds beyond the officer's control, and an application for extension must be submitted six months before the period expires.

SECTION II.

EXAMINATIONS.

Subjects for the entrance examination.

1. Candidates will be examined in the following subjects by a board of veterinary officers convened by the Director of Veterinary Services in India:—

A.—*Written.*			*Maximum Marks.*
Veterinary, Medicine (2 hours)	...	...	2,000
Veterinary, Surgery (2 hours)	...	...	2,000
Veterinary, Hygiene (2 hours)	...	...	2,000

(General papers referring to both horses and cattle and embracing Pathology in all its branches, Surgical Anatomy and General and Special Hygiene.

To qualify—50 per cent. of the maximum marks in each subject will be required.

B.—*Oral.*				*Maximum Marks.*
(*a*) Examination of horses as to soundness, conformation and suitability for different kinds of work	...	...	...	2,000
(*b*) Clinical diagnosis and the treatment of sick animals	...	...	...	2,000
(*c*) Practical Surgery, Surgical Anatomy and Practical Pathology	...	...		2,000

To qualify—50 per cent. of the maximum marks in each subject with an aggregate of 60 per cent. in all subjects combined will be required.

2. A candidate on appointment as Lieutenant on probation will be required to undergo such courses of Instruction as His Excellency the Commander-in-Chief may direct and will be examined approximately six months after appointment in the subjects taught. After he has passed these examinations and has satisfied the Director of Veterinary Services in India that he is suitable for permanent appointment to the Indian Army Veterinary Corps, his commission as Lieutenant will be confirmed and will bear the date of his appointment on probation.

SECTION III.

PROMOTION.

1. Subject to the conditions which may be prescribed from time to time in the Regulations for the Army in India, a Lieutenant after 3½ years' commissioned service may be promoted to the rank of Captain. A Captain may be promoted to the rank of Major after having served 8½ years in that rank, provided he has passed a post-graduate course in or *ex* India.

2. Promotin to the rank of Lieutenant-Colonel will be made by selection from Majors of the corps of not less than 20 years' service, who have previously qualified as prescribed by the regulations in force at the time.

3. Promotion to the rank of Colonel will be made by selection from Lieutenant-Colonels of the Corps.

SECTION IV.

PAY AND ALLOWANCES.

1. The rates of pay for the Indian Commissioned Officers in the Indian Army Veterinary Corps up to the rank of Captain shall be as follows :—

		per mensem.
Lieutenant	...	440
Captain.	...	495
Captain after 2 years' service as such	...	550
„ „ 4 „ „ „ „	...	605
„ „ 6 „ „ „ „	...	660
„ „ 8 „ „ „ „	...	715

2. To rates of pay for Majors and senior ranks of the Indian Army Veterinary Corps will be published later.

SECTION V.

RETIREMENT.

1. An Officer may be permitted to resign or retire voluntarily with the approval of His Excellency the Commander-in-Chief.

2. The retirement of officers is compulsory as follows :—

(*a*) Colonels and Brevet Colonels on attaining the age of 57 years.

(*b*) Lieutenant-Colonels at the age 55 years and Majors at the age of 55 years or after 28 years' service, if they have previously been passed over for promotion to Lieutenant-Colonel, or as soon after completing 28 years' service as they are so passed over, provided that in no case shall they serve beyond the oge of 55 years.

3. The rates of retired pay and gratuities on retirement will be published later in Pension Regulations, India.

SECTION VI.

LEAVE.

Leave will be admissible in accordance with the rules prescribed in the Military leave rules, India.

These Rules have been sanctioned by the Secretary of State for India.

APPENDIX I.

Full name (in capitals).

Usual signature, and date.

Address. (Any alteration should at once be communicated)

Date of birth.

Place of birth.

Religion.

Caste and Tribe.

Father's name.

Residence.

Profession, etc.

If deceased, give the last residence, profession, etc.

Military service of family, if any.

Name, occupation and address of guardian or male next of kin in the event of father not being alive.

School, College or other place of education of the candidate. (Mention all those at which you were educated in their proper order).

1.

Form	19	to 19

2.

From	19	to 19

3.

From	19	to 19

If you have been at any place of education since leaving school (other than those mentioned above) name it, and state the length of stay in it.

Give the names, professions and present addresses of two referees. They should not be your school masters, tutors, relatives or near connections, but responsible persons of mature age and of standing in their own districts who have been well acquainted with you in private life during the four years immediately preceding your application.

1.

2.

If you have had any occupation of any kind since leaving school or college, give particulars.

Are you or have you been a member of a University Training Corps unit. If so, name your unit, and the period during which you served in it.

Have you been vaccinated successfully (or twice unsuccessfully) within the last five years? (Medical certificate to this effect should be pinned to this page.)

I declare, on my honour, that the foregoing is, to the best of my belief, complete and correct.

Signature of candidate.

Reviews.

Annual Report of the Imperial Council of Agricultural Research, for 1935-36.

This is the sixth annual report on the Council's work. The first Vice-Chairman Dewan Bahadur Sir T. Vijayaragavacharya retired on the 26th October 1935, after six years work. He was appointed as a member of the Governing Body and his valuable experience will therefore still be available to the Council. His place was taken by Sir Bryce Burt. In the latter's place Dr. F. J. F. Shaw was appointed Agricultural Expert. Col. Olver was on leave for four months during the year and Mr. Ware acted during the period. The Kashmir State became a constituent member of the Council with a representation on the Governing Body and Advisory Board. Hyderabad, Mysore, Baroda, Travancore, Cochin, Bhopol and Kashmir were the members of the Council during the year. The sphere of the Council's activities thus extended during the year. There were two meetings of the Advisory Board, one of the Governing Body and the Annual General Meeting. Total receipts were Rs. 17,18,383-5-1 and total payments were Rs. 16,01,629-15-7. Details under both the heads are furnished in the report. The Council's work since its inception over six years ago required a survey by experts to ascertain the progress, the lacunae still left in its programme and to fix up the most profitable line to work both in Agriculture proper and Animal Husbandry since large sums of money were already spent by the Council. To conduct the scientific survey it was decided to requisition the services of two eminent Scientists from England, one with special knowledge of Dairy Science and the other with the special knowledge of latest developments in the science of crop production. It was also decided that these two experts should be given the assistance of two Indian Officers as advisers and technical secretaries.

An outline of the Council's activities on Animal Health and Animal Husbandry is reproduced below from the report and this shows again considerable expansion of activities :—

"(i) *Animal Nutrition Research Institute, Izatnagar*:—Government of India's sanction was obtained, at the instance of the Imperial Council of Agricultural Research, for the establishment of an enlarged Animal Nutrition Research Institute at Izatnagar to work in collaboration with Provincial Institutions, engaged in similar work, and with the Imperial Institute of Veterinary Research, Muktesar, in carrying out a systematic study of the feeding values of Indian food stuffs and of the effects of diet on the health and development of Live-stock of all kinds in India. The establishment of this Central Institute, for Animal Nutrition Research, should prove an important step in providing for the better care and management of live-stock throughout India.

(ii) *Poultry Research Institute*:—Sanction was given for a grant from the Imperial Council of Agricultural Research, for systematic

research on poultry diseases, also at Izatnagar, which is a sub-station of the Imperial Institute of Veterinary Research, located on the outskirts of Bareilly. Government of India's sanction was also obtained for a separate grant for the establishment of a Poultry Research Institute at the same station ; for research on the production and commercial exploitation of poultry and poultry products of all kinds and to provide healthy birds for the purposes of the poultry diseases Research Workers. The want of research on poultry in health as well as in disease is very much felt by poultry-men throughout India and the lack of it is at present a very serious deterrent to the taking up of poultry farming on modern lines. In present circumstances the work of years is constantly liable to be lost through fatal outbreaks of epizootic disease.

(iii) *Experimental Creamery at Anand*:—Arrangements were completed during the year for the formation of a separate section, to work immediately under the Education. Health and Lands Department, and sanction was obtained for a special Government of India grant, of Rs. 6 lakhs, to provide for an Experimental Creamery at Anand and for the enlargement of facilities for dairy instruction and research at Bangalore. The provision of such facilities is very urgently needed to enable the Dairy department to undertake systematic research on the processing and handling of milk and milk products under Indian conditions and on the manufacture of by-products which is essential for the proper development of Dairying on scientific lines.

(iv) *A scheme for the official definition of breed characteristics*:—In this connection another scheme may be mentioned for which an Imperial Council of Agricultural Research grant was sanctioned during the year, *viz.*, a scheme for the official definition of breed characteristics of seven of the most important dairy cattle and for the registration by the Animal Husbandry Bureau of approved stock of these breeds, with a view to their systematic development on the lines which have proved successful on certain Government Farms and in the Military Dairy Farms Department.

The publication by the Council of data concerning the marked improvement which has been effected at such farms, by the scientific breeding and management of indigenous dairy stock, has shown that in a comparatively few years high-yielding strains of certain indigenous Indian breeds have been evolved which are already able to hold their own, with the best imported cattle of European origin, in the economical production of standard milk and butter-fat under Indian conditions.

If systematically followed up by properly organised Animal Husbandry Departments in Provinces and States, work along these lines should prove of the greatest economic and social importance to the country.

Under schemes financed by grants from the Council, the following matters were dealt with during the year :—

(v) *Animal Disease*:—(a) *Veterinary investigation in Provinces and States*:—Disease investigation officers continued to carry on systematic

investigation of stock diseases in all major provinces and some Indian States and further valuable results were obtained. Probably the most important matter dealt with during the year was the systematic testing in the field of Rinderpest control by means of goat virus which was mentioned in the last year's report. These ivestigations have everywhere shown that control by the use of a tissue-vaccine, prepared from goats inoculated with the attenuated goat virus which has resulted from research at the Muktesar Institute, is a great advance in efficiency and economy over any methods of Rinderpest control previously available in this country.

Many lakhs of cattle, including large numbers of buffaloes, were vaccinated during the year, either with goat tissue-vaccine or with blood virus drawn from goats similarly infected, and the results have uniformly successful, in controlling natural outbreaks and in conferring lasting immunity on cattle which had not been exposed to infection. The mortality following such vaccination, including already infected animals inoculated in the face of the outbreaks, has amounted in the last two years to approximately 47 per 10,000 in the case of tissue, and 4 per 10,000 in the case of blood virus inoculations. Moreover the extremely low cost of this tissue-vaccine may be gauged from the fact that as many as 2,500 doses can be obtained from a single goat while similarly 500 doses of blood virus can be obtained from a goat. Indeed the position has now been reached that, given the necessary subordinate staff to carry out systematic inoculation all over the country, Rinderpest could be controlled and the enormous losses which at present occur from this disease could almost entirely be obviated at relatively small expense.

The *ad hoc* committee which dealt with the reports of the Disease Investigation Officers, after reviewing the year's work, drew up an agreed schedule of the particular diseases each Disease Investigation Officer should concentrate upon and it was agreed that it would be advisable that, after completing 4 years, each should prepare a comprehensive survey of the work done during the whole period.

During the year a Disease Investigation Officer was appointed for work in the North-West Frontier Province and a scheme was approved for providing one for Sind.

(b) *Inoculation of cattle in the Central Provinces*:—In addition to similar work done in other provinces, large numbers of cattle, including buffaloes, have been inoculated in the Central Provinces. The work is being carried out, under carefully controlled conditions, by special staff, a grant for which was sanctioned by the Imperial Council of Agricultural Research, to investigate the proper application of goat blood-virus used in accordance with the method of controlling Rinderpest (by means of the Muktesar virus inoculated into locally purchased goats) which was introduced in that province by the late Major Stirling. This method is now being systematically tested alongside the tissue-virus method recommended by the Imperial Institute of Veterinary Research, Muktesar. In both cases the virus with which the goats are infected is the Muktesar fixed goat virus and valuable information has been obtained as to the comparative merits of inoculation with this virus, as contained in goat blood and in the Muktesar goat tissue-vaccine.

The results have been eminently satisfactory for the control of Rinderpest amongst indigenous Indian cattle but it appears that further investigation is necessary to ascertain the suitable dosage, of each of these vaccines, for the protection of buffaloes, in which animals, the reaction is apt to be variable and in some cases severe.

Observations are also being made as to the length of time necessary to secure satisfactory attenuation and fixation of virus, obtained from cattle in the course of a natural outbreak, by repeated passage through goats.

(c) *Investigation of Johne's disease among cattle in Mysore* :—The systematic investigation of Johne's disease among cattle in Mysore was taken up during the year, under a grant from the Imperial Council of Agricultural Research, with particular reference to the curative properties of certain derivatives of *Chaumoogra* oil and to endeavour to find a more satisfactory test than is at present available for the early detection of cases of this insidious disease.

(d) *All-India legislaton for the control of disease amongst live-stock* :—The draft All-India Act for the control of disease amongst live-stock and rules thereunder was circulated to Local Governments and Minor Administrations and is now under consideration with a view to being placed before the Legislative Assembly at the earliest opportunity.

(vi) *Animal Nutrition* :—Mention was made in last year's report of the extension of research upon Animal Nutrition in Madras Presidency.

It has since been decided to concentrate all the work at Coimbatore, under the direction of the Agricultural Chemist, instead of at Coimbatore and Hosur as originally proposed. Work under the scheme was started from 1st April 1935.

The Annual Reports of the Bengal Animal Nutrition Research Scheme for the years 1931 to 1935 were considered by the Standing Animal Nutrition Committee of the Council and it was agreed that the work done at Dacca, though it had extended beyond its original purpose, was valuable and extension of the scheme was recommended on a reduced scale in order to complete the original programme.

(vii) *Animal Industry*—(a) *Goat Breeding* :—Mention was made, in the last report, of the remarks of the Cattle Breeding Committee of the Advisory Board on the reports of the Goat Breeding Scheme at the Mission Poultry Farm, Etah, recommending that the cost of producing a lb. of milk should be made available and suggesting that an attempt should be made to reduce the kidding interval of goats maintained under this scheme. In the report for the year 1935-36 very considerable progress was shown in both these directions and an arrangement has been arrived at, with the Director, Civil Veterinary Department, United Provinces, for the rearing of male kids to maturity and for their utilisation for breeding purposes within the province.

In connection with this scheme, a small grant has also been obtained from the Rural Development Fund, for the holding of goat shows. Altogether 645 goats from 149 villages were exhibited and there is considerable demand from the United Provinces and other parts of India for the progeny of these improved goats, for breeding purposes.

The work on the manufacture of " soft " or " cottage " cheese, mentioned in last year's Report, was continued throughout the winter and it is proposed to extend this and to standardise and publish details of the method in the form of a pamphlet.

There has been a further steady increase in the average milk-yield of all the three types of indigenous goats bred at the Farm and it is noticeable that the best indigenous goats, and their cross-breds with local *desi* goats, are able to hold their own with the Toggenberg crosses, a few of which are still available. Since 1933 the average daily milk yield of the whole milking flock has increased from 1·9 lb. per diem to 2·5 while the number of days in milk has decreased from 269 to 167. During the year, the cost of production of a lb. of milk was reduced from 7·3 to 7·1 pies per lb. and there was a noticeable increase in the milk yields of daughters as compared with their mothers.

All the goats in the flock were tested with *Brucella* infection in October 1935, for the fourth time, and there were no reactions. It transpired that there is a steady and increasing demand for such goats from various parts of India and extension of the grant for a further 5 years was recommended. During the year two further schemes of research on goat breeding were sanctioned by the Governing Body, one from the Government of Bombay and one at the Agricultural Institute, Katpadi.

(b) *Dairying* :—Mention has already been made of the special grant which has been obtained to provide an Experimental Creamery and to extend the facilities for dairy instruction and research at the Imperial Institute of Dairying at Bangalore. In this connection a scholarship was granted to Mr. Varma, Assistant at the Imperial Institute of Dairying at Bangalore, for special study in England of the Marketing of milk and dairy products as well as the latest methods of manufacture of condensed and evaporated milk and cream, dried milk, casein, etc.

The original scheme for carrying on investigations at the old Anand Creamery on the processing and handling of milk, which was sanctioned in 1932 but not put into operation owing to financial and other difficulties, was reconsidered by the Governing Body and sanction has now been given for this work to be carried out at the new Creamery as soon as work commences there.

(c) *Poultry* :—In regard to the Poultry Institute, mentioned already, which it is proposed to establish at Izatnagar, it was agreed that its functions should be as follows :—

(i) To carry on research on disease, nutrition and genetics and to act as a bureau for the dissemination of the results

of research on poultry in this and other institutions in India.

(ii) To carry on investigations on the processing and disposal of poultry and egg products.

(iii) To make arrangements at the Central Poultry Institute for courses of training if there should be a demand for them.

(viii) *Dairy Legislation*:— The subjects of Dairy Legislation to pervent adulteration and to assist in the development of the Dairy Industry in India, on sanitary lines, was discussed by a special Dairy Legislation Committee. Considerable information was obtained by visits of sub-committees to certain big cities, as to the present state of the industry, and it has been decided to examine the existing legislation and municipal regulations with a view to obtain suitable modifications where necessary. A special committee was also formed to consider the fixation of dairy standards and arrangements are in progress to get a series of chemical analyses carried out, with a view to arriving at a decision on suitable all-India standards for milk, cream, butter, ghee and other dairy products.

(ix) *Animal Husbandry Bureau*:— (a) The Animal Husbandry Bureau of the council continued to function on the lines indicated in the last year's report and its activities are steadily expanding. One notable item of work started during the year is the maintenance of an index of important articles on Animal Husbandry, as they appear in the scientific and other publications received by the council from all over the world. This index should in time become of very great value to Animal Husbandry workers in India.

(b) Another important item of work, now nearing completion, is the arrangement which is being made for the publication at regular intervals of available records of milk yields in India. Owing to the increasing recognition that a certain proportion of Zebu blood is essential for the maintenance of constitution in tropical countries, enquiries are being received for information regarding the capacity of Indian dairy cattle for milk production, the results of cross breeding in India and on a variety of other matters. Apart therefore from its value to breeders of dairy cattle in India the publication of such data should help to build up an external trade in dairy cattle in India and indirectly should help materially towards breeding on scientific lines.

(c) Arrangements have been made for the collection from all parts of India of data relating to milk yields, feeding, milking period, dry period, and other data regarding dairy cattle and buffaloes maintained by the *Gowalas* in towns and villages. These will be compiled and published in the course of the ensuring year. This investigation is expected to furnish much needed information regarding indigenous dairying in India, about which, at present, there is very little reliable information.

(d) Investigation, further to that reported last year, was proceedod with regarding the incidence and the economic loss caused by Abortion and Foot and Mouth disease.

(e) Steps were taken to obtain regularly from provinces figures relating to the slaughter in recognised slaughter houses, of different kinds of live-stock and regarding inter-provincial trade in live-stock.

(f) With the approval of the Cattle Breeding Committee and the Advisory Board a definite step has now been taken to convene meetings of *ad hoc* committees, composed of official and private breeders of the best recognised breeds of dairy cattle, to define the breed characteristics of the most important dairy breeds of Indian Dairy cattle. When these have been defined it is proposed to undertake the preparation of a *brochure* on the subject for the guidance of breeders in India and abroad to maintain all-India Herd Books for the registration of accredited stock of these breeds.

(g) The Bureau has collected much information regarding existing legislation in India, in relation to the adulteration of foods, the standards at present prescribed by various dairy products. It has also studied the legislative enactments of other coudtries, notably United States of America, relating to the production and distribution of milk with a view to considering what action could be taken for the better control of the dairy trade in India.

(h) Statistical information was collected and enquiries answered from India and abroad in relation to a variety of subjects.

(x) *Award of Gold and Silver medals for improvements in the Science and Art of Agriculture and Animal Husbandry*:—In 1933 the Imperial Council of Agricultural Research invited entries for the award of Gold and Silver medals for improvements of distinctive merit in instruments and appliances used in veterinary science. Eight entries were received and examined by a special committee. The instruments were put to practical test and the results were again considered by an expert sub-committee in February 1936. In the end a Gold medal was awarded to Ch. Mushtaq Ahmed, Hospital Surgeon of the Punjab Veterinay College, for his appliances for the treatment of prolapse of the vagina and uterus of animals and of prolapsus recti.

(xi) *Animal Husbandry Research Workers' Conference*:—At an informal meeting held in July 1935, at which provincial Directors of Veterinary Services and the Director of Imperial Institute of Veterinary Research were present, it was agreed, in view of the lack of adequate accommodation at the Imperial Institute of Veterinary Research, Muktesar, that, if possible, a Research Workers' Conference should be held every second year, at Delhi or some other place suitable for holding meetings during the winter season. This idea was afterwards developed so as to include workers on all branch of Animal Husbandry Research and the first Animal Husbandry Research Workers' Conference was accordingly organised during the year under review and met from the 17th to 19th February 1936. About 55 Research Workers in all branches of Animal Husbandry attended and an agenda of 20 items was discussed dealings with a wide range of Animal Husbandry subjects. Papers were read and full notes of the discussion will be published in due course."

The Council continued the publication of its bi-montly 'Agriculture and Live-stock in India' and its quarterly 'The Indian Journal of Veterinary Science and Animal Husbandry', both of which entered their sixth year of life during the year under report. Among the many scientific monographs and miscellaneous bulletins of the council the following are of veterinary interest:—

1. An interesting outbreak of a *Variola Vaccinia* in milch cattle at Lahore,
2. An unusual case of Navicular Disease, and
3. Supernumerary Teats in Buffalo-cows.

The scheme of investigation on the systematic cultivation of medicinal plants and study of food poisons in India described in the previous annual report was started during the year. On the recommendation of the Advisory Board made in 1933 the following were published in the 'Indian Journal of Agricultural Science' (Feb. 1935):—

1. A list of important indigenous drugs which grow or are cultivated in India for which there is a good market, and
2. A list of Pharmacopoecal drugs, and substitutes, grown in India.

These will really be of great use to all interests. At the instance of Government of Madras, the question was discussed as to the action that could be usefully taken provincially on the recommendation of the Drugs Enquiry Committee, *viz.*, that every encouragement should be given to promote the cultivation of medicinal plants and herbs. The Board made the following recommendations for consideration :—

(1) That enquiries should be made regarding the state of the demand in India for medicinal drugs as Medical Stores Depots and the various Ayurvedic and Unanic may be in a position to furnish the required particulars and

(2) That a survey of medicinal plants cultivated by ryots should be undertaen by provincial Governments.

The report records a steady (though slow) progress.

Annual Report of the Civil Veterinary Department, Punjab, for the year 1934-35.

The strength of the Gazetted Officers in the Department was one Director, three Superintendents, one Assistant Superintendent, 11 Deputy Superintendents ; in the Government Cattle Farm, Hissar, one Superintendent, two Assistant Superintendents and two Deputy Superintendents and in the College one Principal, three other Officers of the P. V. S. Class 1 and an Officer on contract and seven others of the Deputy Superintendent's grade. In the non-gazetted service, there were nine Veterinary Inspectors, 66 Veterinary Assistant Surgeons and 307 Veterinary

Assistants including the 13 permanent and 13 temporary, sanctioned during the year. The number of villages in the Province is 36,916 and the number of bovines is 15,840,000. There were 299 Veterinary Hospitals at the end of the year including the five newly opened during the year. This works out to about 123 villages to each hospital. Besides these there were 1,100 out-lying dispensaries designed to bring first aid veterinary facilities within easy reach of the people. There was heavy demand for more Veterinary Hospitals and some of the District Boards had promised and provided the necessary funds for the cost of maintenance of the proposed new institutions. This shows the District Boards, unlike in the south, are very keen to provide veterinary aid to the live-stock. There has been an all round progress in the number of cases treated and castrated, 555,709 being the number of castration alone and 1,813,386 cases treated. The number of villages visited by the touring staff increased to 64,940. Total reported mortality from contagious diseases is 39,026 ; rinderpest was responsible for 59 per cent. Of this total, Hæmorrhagic Septicæmia is the next in importance, and the report does not pretend this figure as correct and its reason is the Patwares do not report the exact number. Rs. 1,200 sanctioned by the Government for rewarding the Patwares and Lambarders who showed promptness in reporting outbreaks, was utilised in full. We have suggested many times in these reviews that this system of rewards for prompt and correct reporting, may be usefully adopted in the other provinces as well.

Among equines, there were six cases of glanders. Out of 7,401 cases of Surra, there were 3,028 of equines, three dogs, one buffalo and 4,370 camels. 7,156 cases were discharged out of this cured. 31 cases were reported to have died after the completion of treatment and 88 cases relapsed. 245 cases died while under treatment. Surra prevailed severely throughout the province. 1,157 surra cases were treated with single injection of Naganol, out of which 10 died and 84 relapsed. Complete results were not yet tabulated during the year.

241,963 were inoculated against R. P. 4,492 Serum inoculations and 340,659 vaccinations against H. S. were also done even in actual outbreaks with satisfactory results. 15,516 animals were vaccinated against B. Q. Total number of protective inoculations and vaccinations was 638,650.

The Punjab Veterinary College sent out 17 graduates during the year. The low number of students in the college due to the unpopularity of veterinary education for some time evidently owing to unemployment of successful graduates, gave some respite to open a number of special training courses of short duration for different purposes of the subordinate staff in the district. The college also conducted classes for training farriers, dressers and also syces. The average attendance in the college hospital was 235. 210 skiagrams was taken. 114 gallons of electrolytic chlorine were prepared. There was an increase of work in the Pathology, Hygiene and Parasitological sections of the Laboratory. The research section of the college had increased activities during the year taxing the capacity of the staff to its limit. Investigation of equine encephalomyelitis in several outbreaks was done for the Army. 111,256 doses of R. P. tissue vaccine of goat were supplied

and investigation into the potency of this product under refregerant conditions was also done. Investigation into the essential pathology (including Hæmocytology) of P. Gibsoni infection in dogs was conducted and numerous chemotherapeutic observations made. The researches upon dog diseases were nearing completion and exact pathology of the condition had been worked out. Results even if briefly mentioned in the report would have been useful to the readers.

Canine fever occupied much study and the section was correlate these obscure fevers with infections of the Colon typhoid group. The elaboration of a simple and suitable vaccine against rabies (after the method of Remlinger and Bailly) was attempted with quite satisfactory and encouraging results and the laboratory hopes to make shortly this vaccine available to the public. An important field experiment based on the lines of previous year's experiments was instituted on a large scale in the Surra centres, to determine the prophylactic value of Bayer 205 in controlling the incidence of the disease. Various other experiments were also conducted. The value of the report would have enhanced if the result achieved so far in each case, had been mentioned even in brief. We hope that this suggestion will be availed of, in writing the reports in future. The college staff carried on some useful propaganda, published leaflets and articles on "Goats in India", "Meat Poisoning", "Goat's Milk" and "The Art of Milking", besides numerous other small articles containing hints for the benefit of the stock owners through the medium of the press, both vernacular and English.

Live-stock section is a very important part of the activities of the C.V.D., in the Punjab, unlike in the other Provinces. The contribution of this section towards the rural upliftment has been immense and if proof is needed to show how successfully the Veterinary Department could run the live-stock industry, one can find it in the Punjab. Nearly half of the report and that the very first half is covered up by the various activities of the live-stock section. Out of Rs. 19,80,505 expenditure of the Department, over Rs. 2,50,000 have been expended on this section. The Government, the Local Bodies and the public are all keen on the success of these operations. This section of the report contains very useful information on various subjects such as cattle-breeding, milk recording, sheep and goat breeding, horse and donkey breeding, tattooing of animals and many other useful and interesting items. This portion of the report is worth perusal by any worker interested not only in live-stock improvement but also in rural improvement. The report says that according to the Punjab Cattle Census Report of 1930, the number of cows in the province was 2,418,444. This number requires 24,184 bulls on the basis of one bull for every 100 cows. During the year there were nearly 9,000 bulls both brahmini registered and those of District Boards. According to the above calculations 15,000 more bulls were still required to complete the bull power of the province. The department is making a serious effort to reach this goal. The Government, the Local Boards and the Zemindars are not less enthusiastic. 149 cattle fairs and shows were held wherein Rs. 25,693 were spent in awarding money prizes. Besides 61 medals were also awarded.

The Agricultural Minister of the Punjab Sir Chotturam, with pride, mentioned in the Simla Cattle Conference that his Province was probably the first in India with an expenditure of Rs. 20 lakhs a year. This Province has always been uniformly fortunate in having for a long number of years a succession of Agriculture Ministers and heads of Veterinary Departments who are quite genuinely enthusiastic and active in doing all that is necessary for an all round improvement of live-stock during their term of office.

The year was on the whole a healthy one for the live-stock and the report records an all round good year's work.

Report of the Civil Veterinary Department, North-West Frontier Province, for the year 1934-35.

The Gazetted staff of the department consisted of one Superintendent and one Deputy Superintendent. The subordinate staff consisted of two Veterinary Inspectors, seven Assistant Surgeons and 26 Veterinary Assistants including the one post of Vete inary Assistant Surgeon sanctioned during the year. The total head of cattle in the province was roughly two millions for which at least 80 Veterinary Assistant Surgeons are needed according to the recommendations of the Linlithgow Commission on the basis of at least one Veterinary Assistant Surgeon for every 25,000 cattle. Financial stringency is the one thing mentioned almost in every section of the report, impeding progress. There were 20 Veterinary Hospitals and 23 rural dispensaries including the three opened during the year. Total numder of castrations done was 56,064; cases treated 207,940 and preventive inoculation 41,600. Total reported mortality from contagious diseases among all classes of animals was 2,043. 417 outbreaks of contagious diseases were reported. R. P. and F. & M. were the most common diseases. Prompt and necessary action taken by the department brought them under control. The year was not particularly unhealthy for the live-stock. Only serum-alone method of inoculation was adopted against R. P. The O.V.A.S., in addition to his work examined pathological specimens, preserved interesting specimens in the Museum and carried on Anti-rabic treatment. The necessity for whole time V.A.S. for the Laboratory is keenly felt in the report.

There were cases of equine glanders and no cases of Surra and Anthrax, but 17 deaths from Tetanus. 95 cases of rabies among animals were reported. 14 members of the staff and 29 animals were given anti-rabic treatment. Distemper was also reported extensively. Fowl cholera, Ranikhet Disease and Fowl Diptheria prevailed also.

Post-mortem on 31 cases of criminal poisoning was conducted and nine were confirmed. Financial stringency was again responsible for not providing pucca buildings for the existing hospitals.

Horse, mule, cattle, buffalo and sheep breeding operation were also in the charge of the C. V. D. in this province. 33 horses and 35 mules stallions, 223 cattle and buffalo bulls and 20 rams were maintained for the purpose. Four cattle fairs and horse shows were held but no money

was found to spend on them. Two stipendiary students returned as L. V. P.'s and there were ten stipendiary students under training in the Punjab Veterinary College. Mention is made of four persons who were given Kursi Nashin tickets in recognition of their services to the department.

The expenditure of the department was Rs. 1,51,981. It is really creditable that the department though considerably undermanned has done quite useful work during the year.

Annual Report of the Veterinary Section of the Agricultural Department in Cochin State for the year 1934-35.

The Veterinary Section is in charge of the Superintendent of Agriculture in the State. The section consists of nine Veterinary Inspectors, two touring Veterinary Inspectors and eight honorary Veterinary Inspectors. There were eight Veterinary Hospitals. The two touring billets were opened to do propaganda work. The Senior Veterinary Inspector represents the State at the meetings of the Imperial Council of Agricultural Research along with the Agricultural Superintendent of the State. In the towns of Ernakulam, Trichur, and Chittore-Tattamangalam, meat inspection, was done by the respective inspectors. The animals in the central farm, the Zoo and the Central gaol were inspected by the staff. One Veterinary Inspector gives lessons to the pupils of the Agricultural School on Veterinary matters. 25,505 cases were treated in the hospitals. For want of facilities in the rental buildings, the number of in-patients could not be greater. The touring Veterinary Inspectors treated 3,701 cases, 2,414 castrations were done in the hospitals and 327 on tours. The State seems to have been free from Rinderpest during the year. But Anthrax, Foot and Mouth, H.S., Fowl Cholera, B.Q., and Johne's disease were reported during the year. Timely action was taken both by the Veterinary Inspector and the Touring Veterinary Inspectors. The mortality was very few. The expenditure on the department was about Rs. 28,527. The information given about the Veterinary matters is very meagre. In a report of about 75 pages of the Agricultural Department, hardly three pages are devoted to the Veterinary Section. The Government in its review however has said "It is gratified to note that the Veterinary Department is doing very useful work in attending promptly to the diseases of live-stock, Improvement of the breed of the cattle should always be uppermost in the mind of every Inspector." We hardly find any mention of efforts in this direction in the report realting to Veterinary Section. It is ture the State is small but still live-stock problems of the State are big enough to be placed in charge of a Veterinary Officer independent of Agricultural Department.

Annual Report of the Civil Veterinary Department in Baluchistan for the year 1934-35.

The Department consisted of one Deputy Superintendent and fourteen Veterinary Assistant Surgeons. Evidently the Deputy Superintendent is the head of the Department. Instead of designating the head of the Department as Deputy Superintendent, if he had been called Superintendent, it would have been better, since economy in words would be on a par with the economy in the expenditure of funds. There were 10 dispensaries working during the year. 89,036 cases were treated in the hospitals and on tours for contagious and non-contagious diseases. 332 castrations were performed. There were 239 outbreaks of contagious diseases. There were 912 deaths from R.P., 80 from Foot and Mouth and 30 from B.Q. in bovines. 522 other animals died of Anthrax. Among other animals we also find 1,256 deaths from Sheep-pox; goat and sheep mange claimed 1,178 deaths; camel mange 4; contagious pneumonia 237; F. & M. 252; Wire worm 954; Lever Fluke 777; Rabies 12 and other contagious 1,318. One horse also died from rabies. Total number of deaths from contagious diseases was 7,584. 3,041 inoculations were done.

Two horse shows were held. Three silver cups and prizes to the value of Rs. 894 were awarded in the Quetta Horse Show. Two silver medals and prizes worth Rs. 2,033 were awarded in the Sivi Horse Show. Both the shows were a great success and among the stock the prize-winners in most cases were the produce of the provincial stallions. This is indeed creditable.

A cattle show was held along with the Sivi Horse Show. One silver medal and prizes worth Rs. 625 were awarded. The total number of stallions maintained was ten at the end of the year and the total number of mares covered during the year was 416. The total expenditure on the maintenance was Rs. 5,005 and the total expenditure of the department was Rs. 65,416. This Department has a very small establishment but has done quite good work during the year.

Annual Report of the Civil Veterinary Department of Central Provinces and Berar for 1934-35.

This report reminds us of the sudden demise of the Director Major R. F. Stirling after the close of the year to which to this report relates. He was a pioneer of goat virus inoculation and his work in that direction has deservedly carried his reputation beyond the confines of the province. He also raised the administration to a high pitch of efficiency and effected a marked expansion in all the activities of the department. And his sudden demise has been a great loss to the province. He was a very active member of the profession and the service. He contributed richly towards the general improvement of the health of cattle of the province.

Under the gazetted staff we find the names of nine officers and the subordinate staff consisted of 13 Veterinary Inspectors and 131 Veteri-

nary Assistant Surgeons including the seven new recruits of the year. The cattle population of the province was 13,844,000. This works out to one Veterinary Assistant Surgeon for every 105,679 head of cattle. There were 104 hospitals and dispensaries. Total number of contagious and non-contagious cases treated in the hospitals and on tour is 793,424, castrations 160,981, protective inoculations and vaccinations 485,713. There were 10,180 outbreaks including those detected by the staff while on tours. 10,146 outbreaks were attended to. The reported mortality from R.P. is 6,000; H.S. 5,000; Anthrax 1,670 and B.Q. 873.

There was a Veterinary disease investigation officer whose work was included in a separate report submitted to the I.C.A.R., who finances this scheme. One C.P. scholar completed his course in Great Britain and he was employed as Officiating Assistant Director of Veterinary Services, Nagpur Division. Ten suitable C.P. candidates were given scholarships for their study in the Bombay Veterinary College. Two C.P. scholars from the same College were absorbed into the department during the year. All the graduates before being posted as Veterinary Assistant Surgeons are trained in the Laboratory in Elementry Bacteriology and dispensary routine at the Nagpur Veterinary Hospital. Minimum qualification of the candidates for scholarships has been raised to the Intermediate passed in Arts or Science. Seven compounders were trained at Nagpur and two compounders had their refresher course.

Over 12,000 specimens were examined in the Laboratory which also supplied 2,636,660 c.c. of Trypan Blue solution to the staff. Piroplasmosis once a very much dreaded disease, was brought under control by the extensive use of Trypan Blue solution. 102,903 animals were given this solution intravenously. This injection was equally found good as a general tonic. 30 cases of P. Gibsoni were successfuly treated with Tryparsomide solution. T. Mutans was confirmed microscopically in 5 cases and symptomatic treatment was given; with what results is not mentioned. There were 42 cases of Trypanosomiasis confirmed. 20 were dogs from the Hunt Club, Kamptee. The outbreak was soon brought under control. Anti-Tart. was given successfully in bovines for this disease. 16 dogs received anti-rabic treatment. Fowl cholera and Spirochaetosis prevailed among fowls in a sporadic form. H. S. Serum alone had the desired effect as preventive inoculation against fowl cholera. Soamin gave satisfactory results in spirochaetosis. Methylene blue solution gave satisfactory results in three cases of bovines suffering from Coccidiosis confirmed microscopically.

Breeding operations in the province are in the control of Agricultural Department. There were 38 stud bulls and they were inspected by the veterinary staff. Eight cattle fairs and shows were held in which Rs. 125 were given as money prizes and two sanads and no medals were given in these shows. 16 sanads were also awarded to the land owners and others who rendered services to the staff in the villages. 'The condition of cattle termed loosely 'Cancer of the horn and the face' almost invariably fatal caused anxiety to the officers" and it is brought to their notice very frequently affecting valuable bullocks. Mineral deficiency was another recognised condition regarding which much doubt still existed. To investigate into these conditions grants were needed from the I.C.A.R., and a small laboratory for research officers. The whole matter awaited

improvement in financial conditions. The goat virus scheme of Major Stirling was approved by the I. C. A. R., which placed the necessary funds at the disposal of the local Government to work out the scheme. The work was taken on hand during the year.

The Director of Veterinary Services inspected in the course of his tours the more important slaughter houses. We wonder how many of his compeers in other Provinces have done similarly. We are however sure such inspections will produce beneficial results in Municipal Hygiene of the places.

Under buildngs we find the following significant sentence "There are places like Katol, Ramtek, Karanja, Burhanpur and Wardha to which one is reluctant to post any self-respecting officer". We do not propose to comment on this but only hope this frank statement will induce the authorities to soon provide the necessary buildings.

Regarding the activities of the S. P. C. A. the report says: "It is noted with great satisfaction that a Society for the Prevention of Cruelty to Animals has been started since the last annual report and it is being worked out very smoothly under the able guidance of Mr. W. H. Shoobert, I.C.S., Deputy Commissioner, Nagpur. The services of a Veterinary Surgeon have been lent to work under the Society as an Inspector." This is indeed commendable.

Another interesting para in the report is "The Central Provinces' Veterinary Conference was held in the month of November and as usual it was characterised by great activities on the part of all members present." Everybody knows late Major Stirling took keen interest in organising the C. P. Veterinary Association and Conference. Mrs. Stirling played the part of a genial host. This is a rare thing not found in many of the provinces.

The work recorded in the report is an increase over that of the previous year.

Practical Veterinary Pharmacology, Materia Medica and Therapeutics. (Third Edition.) BY HOWARD JAY MILKS, D.V.M., Professor of Therapeutics and Director of the Small Animal Clinic, New York State Veterinary College at Cornell University, Ithaca, N. Y. Bailliere, Tindal and Cox, 7 and 8, Henrietta Street, Covent Garden, London, W. C. 2. Pp. 16·582; 32 illustrations. Price 30*s.*

The third edition of this book which has been published in 1937, contains certain new drugs of great use in Veterinary practice. New sections have been added on the treatment of heart worms, the vitamins and insecticides. Certain sections have been largely rewritten and much new material has been added to bring them up-to-date.

We have gone through the book carefully and can say confidently that it will be a very useful book in the hands of students preparing for Veterinary Examination and of practitioners desiring up-to-date and ready reference in the satisfactory discharge of their work.

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