

460

The Indian Veterinary Journal

1948 - March

VOL. 24. NO. 5



JL

KXm2. N24

N48.24.5

79832

THE
INDIAN VETERINARY JOURNAL
PUBLISHED BI-MONTHLY

(THE JOURNAL OF THE ALL-INDIA VETERINARY ASSOCIATION)

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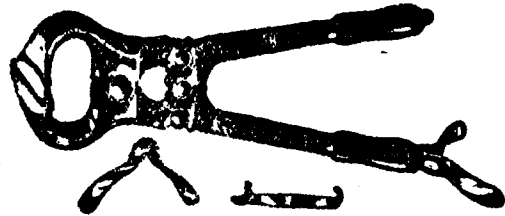


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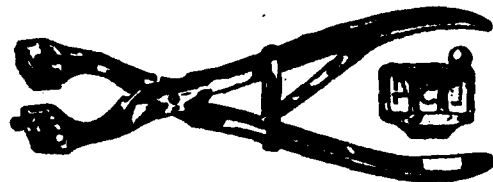
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Published Bi-Monthly

Vol. XXIV

March 1948

No. 5

THE
INDIAN VETERINARY JOURNAL

(The Journal of the All-India Veterinary Association)



Editor:

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

Veterinary Surgeon, Madras.

Office: 26, Wallajah Road, Mount Road, Madras 2, (S. India)

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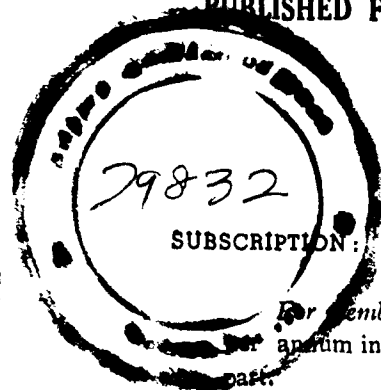
The Indian Veterinary Journal

A Bi-monthly Record of Veterinary Medicine and Surgery
Devoted to the Cause of Veterinary Profession.

PUBLISHED FOR THE ALL-INDIA VETERINARY ASSOCIATION

EDITOR :

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



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General Articles

ROLE OF CATTLE WEALTH IN INDIA*

BY

THE HONOURABLE MR. JAIRAMDAS DOULATRAM,
Minister for Food and Agriculture, Government of India.

I am glad it has been possible for me to snatch some time from other urgent duties and come and open this All-India Cattle Show. I have come because I realise the important place which the cattle problem occupies in the national economy of our country. With so many big questions confronting the nation at the present moment, it may appear as if one were diverting time to a small affair in performing the opening ceremony of this cattle show. Clouds are still thick over Kashmir, scarcity and who knows worse is in the offing in Madras, our fellow Indian evacuees from Pakistan are still awaiting full response from the people of India. Other problems also occupy our present thoughts. But despite these urgent calls on our time and attention, we cannot afford to ignore those problems the far-sighted solution of which affects the very foundation of the nation's economic life and, therefore, the happiness and well-being of our people. Our country has achieved its freedom. Let us fill in now the true contents of such freedom. Let us reconstruct the nation's economic life on right lines. And so in the midst of other demands on us, we cannot but spare time and energy to concern ourselves with programmes which are intended to give a proper direction to long range plans for our country's economic welfare. Hence it is that you find me in your midst even though it be for a brief while. I have agreed to participate in to-day's function, not because I am Minister of Agriculture, but because I fully appreciate the importance of cattle wealth to our predominantly agricultural nation and, therefore, its close connection with the vital interests of the people.

* Address delivered at the opening of the Seventh All-India Cattle Show in New Delhi on the 29th January 1948.

Cattle Show Society

I congratulate the workers of the All-India Cattle Show Society for the good work it has been performing. The society was started by the Government of India in the year 1938 with the object of organising and establishing periodical shows of cattle and poultry and to carry out all activities for the furtherance of breeding and improvement of livestock in India, to undertake propaganda for the improvement of animals and poultry in India and to spread the knowledge of the principles upon which better animals and poultry may be bred. Besides the central show held in Delhi, two regional shows and several smaller shows in the well-known breeding tracts are held annually with the help of Provincial and State Governments. I know the Society can do far more service if its financial resources were greater and I hope it will not be long before its funds are substantially augmented to hold it to serve better cause of agriculture.

Two-fold Problem

You know that India is essentially an agricultural country and cattle are the backbone of agriculture. About 80% of India's rural population is agriculturist, for whom cattle have an importance of their own. They occupy a unique position in the rural economy of this country and have therefore been an object of special care and affection in India from the most ancient times. Our problems are two-fold. We need more milk and milk products to provide an adequate diet to our people and we need better, healthier and stronger bullocks, for in all agricultural operations oxen are indispensable to the Indian farmer.

Present Position

We possess one third of the total cattle population of the world. According to the 1941 census report, the total bovine population (cattle and buffaloes) of undivided India was 208.2 millions. It is estimated that as a result of the partitioning of the country, about 30 million cattle have gone to Pakistan. In spite of our huge cattle population, the country is in short supply both with regard to bullocks as well as milk. One of the main reasons is that our cattle suffer essentially from food shortage. The slow process of starvation to which our livestock is exposed, is evident from its unthrifty condition, poor productive capacity, stunted growth, late maturity and long inter-calving period. We thus lose millions of tons of milk and an enormous amount of horse power. Do we realise what this means in terms of national health and production and therefore of national wealth? As matters stand at present, not more than 60% of the fodder required is available and only one-fourth of the total concentrates needed can be obtained. The position with regard to the supply of milk is still worse. About 22 million tons of milk is produced annually from cows and buffaloes in India. This must be increased to about 65 million tons to meet the minimum

nutritional requirements of our people when calculated at the rate of 1 lb. of milk per day per head of the population (8 oz. in milk and 8 oz. in the form of milk products, ghee, butter, etc.) To allow for the feeding of calves, another 10 million tons is needed. The present per capita consumption of milk in this country is only 5 to 6 oz. In some of the other countries, it is far greater. It is as much as 40 oz. in Denmark, 45 oz. in Australia, 35 in U. S. A. and 39 in Great Britain. It would thus be seen that although we possess the largest cattle population in the world, we supply the least quantity of milk per head for human consumption. Cattle rearing in this country is carried out under a variety of adverse climatic and other environmental conditions. The average cattle breeder is poor. He lives on small fragmented holdings, the large majority of which are less than 5 acres. The average size of his herd consists of only two to three animals as against 27 to 28 in countries like England and U. S. A. The units are thus uneconomical and the individual owner cannot by himself introduce any appreciable improvements.

Considering the immensity of the task and the numerous complications, the solution is not easy to find, but it is evident that we must endeavour to improve our cattle by better feeding and management.

Better Feeding

The problem of providing more fodder and concentrates for our cattle is indeed difficult, for pressure on land is already heavy and there is serious competition between man and animal. In any plan to bridge the gulf between supply and demand as regards deficiency in cattle feed, the requirements of human beings must, of course, receive primary consideration; but on a careful review of the entire position in regard to cultivation and yield as a result of introduction of the latest scientific methods, it appears possible that by re-adjustment of our cropping programme some extra feed can be made available for cattle. But their total requirements can only be met if production from land can be increased by about 50%. We must, therefore, tap every other source to supplement food for cattle. These sources can be:—

(1) Hay and silage making out of the surplus grass which is available during monsoons should be practised all over the country. There are 136 million acres of grazing land in India. No precise data are available as to how much grass this land produces, but the limited information we have, goes to show that the production of grass is about 2 tons green per acre. At least one-third of it could easily be preserved as hay or silage. All this now goes to waste.

(2) A number of forest areas under the Forest Department grow large quantities of grass which should be made use of by cutting and preserving as hay or silage.

(3) Crops which are known not only to increase the quality of nutritious fodder but also improve fertility of the soil such as Burseem should be extensively grown, wherever possible.

(4) Large quantities of oilcakes are at present used entirely for manurial purposes. It is a matter for consideration if this cake would not equally serve the object in view if some of it is passed through cattle.

(5) The Nutritional Laboratories of the Indian Veterinary Research Institute have extensively explored the possibility of new sources of food-stuffs and it has been shown that mango seed kernel, munj, kans, jammun seed, acacia pods, groundnut husk, bawar seed are rich in feeding value and can be extensively used as feed for cattle. The methods of their preparation and use have been described in detail in one of the issues of the *Indian Farming* published by the Indian Council of Agricultural Research.

(6) The deficiencies in rice straw, if corrected by the addition of bone ash, will increase the utilisation of this foodstuff.

(7) A great deal can be accomplished, if the mixed farming practices are more widely adopted.

(8) Thirty per cent of waste can be saved if all fodder is chaffed before being fed to cattle.

(9) More use should be made of fodder bearing trees, as their leaves and pods provide excellent fodder.

(10) The fish meal industry in the country should be developed so that more of highly concentrated protein food is made available in the form of fish meal for cattle.

Improvement by Breeding

Planned scientific breeding of animals is also necessary for improvement of our cattle. A number of Government farms are at present producing pedigree bulls of various breeds and these animals are distributed in the villages for the improvement of local stock. There are about 45 such farms in India which annually issue about 1868 bulls. Considering the requirements of the whole country, these 1868 bulls distributed annually do not meet even 1% of our annual requirements. To produce the bulls required annually for the whole country at the Government farms is not a practical proposition. Our efforts to improve the village cattle should, therefore, be concentrated in the following directions.

(a) All bulls issued from farms should be located in a specially selected breeding tract and concentrated in a few villages, so that casualties and replacements are assured. From this area all other male stock should be removed. In due course, these "Key villages" would be in a position to supply the better bred animals for distribution in other areas.

(b) Efforts should be made to evolve dual purpose breeds, that is, breeds which would produce good working bullocks and also yield a fair amount of milk. Work in this connection is in progress with some of the indigenous breeds such as the Harianas and the Hallikar. The Government of India are now setting up a farm at Jubbulpore, where it is proposed to study this problem in great detail.

(c) The method of artificial insemination is being widely practised in several other countries, where it has definitely proved its value. Work done at the Indian Veterinary Research Institute has shown that a great deal can be achieved even under Indian conditions. Four experimental field centres set up recently have yielded very promising results. By the adoption of this method one bull can do the work of 10 and extensive use can be made of really superior sires. It is, therefore, essential that necessary steps should be taken by all Provinces and States to explore the possibilities of the use of this method to the fullest extent.

I do not propose to deal in to-day's speech with all the problems relating to our cattle wealth and thus blur the main outline of the picture. I want on the contrary to draw particular attention to that outline alone. Hence I propose to content myself with this brief reference to the outstanding features of the cattle problem in our country. The topical questions of the prevention of slaughter of cattle or the salvage of useful cattle from slaughter, and the insurance of cattle are all under examination by Committees and I hope their results will be before the public ere long. These and other allied questions will be, I trust, satisfactorily dealt with in due time. This will however be only possible if we realise that the cattle problem in India is not merely a humanitarian problem of animal welfare but that in it are substantially involved both the health and the wealth of our nation. The earlier we realise this the sooner shall we see the end of poverty and disease in this country.

We have met under the shadow of a great national tragedy. Within a yard from here lies a simple memorial of the life and work of the greatest well wisher of the animal world. Let us follow his lead in solving the cattle problem of our country and so do our duty even in a small way in keeping alive our departed leader's memory in this land.

BOVINE STERILITY*

By

S. JACOB, G.M.V.C.,

District Veterinary Officer, Cuddapah.

The Subject of Bovine Sterility is one of great importance to all those concerned with Livestock Improvement. The enormous loss caused by this scourge has never been realised so well as at present, when people are confronted with the problem of food shortage on account of the abnormal conditions brought about by the War. The Survey Committee formed by the National Veterinary Medical Association of Great Britain and Ireland after making a Special Investigation on diseases of Farm Livestock observed that it was profoundly impressed with the enormous loss in milk and calf production caused by temporary infertility and by sterility of bovines in the United Kingdom and that 80% of this loss is preventable. The Committee estimated that on account of sterility alone the annual loss of milk yield is 7 million Sterling (or 9.5 crores of rupees) and the loss in calf production is six hundred thousand sterling (or 84 lakhs of rupees) in the United Kingdom. If such colossal loss is incurred on account of sterility in a country with a cattle population of 1/30th of that of India and less than 1/3 of that of Madras Presidency, it is not known to what magnitude the loss incurred due to this scourge in India can be estimated despite the lower milk yield of Indian Cattle. For want of such revealing statistics to indicate the extent of Bovine Sterility in India, perhaps some people may think that the position in respect of this disease in India is not so bad as it is reported to be in the United Kingdom, but an officer of the Indian Veterinary Research Institute, who made an investigation tour of the country observed that it could not be denied that Sterility is common in India, and that, in his opinion, it is hardly possible to enter a village, at least in South India, without encountering numerous cases. He has further observed that in the Livestock Improvement drive, Sterility is as important as the castration of the Scrub Bull, and that there is no excuse for its diagnosis and treatment not becoming an almost daily part of the cattle practitioner's routine.

Mr. S. Y. Krishnaswami, O.B.E., I.C.S., in his Monograph on the Rural Problems in Madras observed as follows:—

"According to the latest census report the total number of cows in milk is 1,864,058 and that of dry cows is 2,155,862. Herein lies the waste of wealth with regard to our livestock. It is notorious that our cows are irregular breeders. The dry period beyond a certain limit is an avoidable waste. It is usual in villages to overlook the oestrus period and the cows do not get served at the proper time

*Paper read at the annual District Veterinary Conference Cuddapah, on 21st December 1947.

and thus the interval between two calvings extends to over a year and in some cases to two years. This increases the number of dry cows in proportion to cows in milk. The cost of feeding during the dry period coupled with the loss of milk is a waste. To add to this, there are large numbers of useless and sterile animals which do not breed at all. There are many others which are diseased and unfit for work. The total number of cows which have not calved and which are not working exceeds a million."

A thorough knowledge of the re-productive organs of the cow, their physiological functions, and the technique of pregnancy diagnosis are absolutely necessary for a practitioner who desires to undertake the treatment of Sterility. This need not scare the beginner or the uninitiated, as experience reveals that with a little interest and effort an average practitioner can acquire a certain amount of proficiency in the treatment of Bovine Sterility and diagnosis of pregnancy in its early stages.

The National Veterinary Medical Association of Great Britain and Ireland has arranged for the benefit of its members, free Refresher tuition in Pregnancy Diagnosis and the treatment of infertility in bovines. Practitioners desiring to take advantage of this tuition have to provide facilities for the tuition to be given in their own locality and intimate the fact to the General Secretary of the Association. Instructors who have specialised in the subject have been appointed to carry out the Refresher tuition by visiting different centres to give the tuition and necessary demonstrations for a day or two to the practitioners gathered at each centre. (*Veterinary Record* dated 1-11-'41 and 21-2-'42). Reviewing in the Editorial Column of its issue dated 30-8-'41, the *Veterinary Record* has commented as follows on the usefulness of this tuition. "It behoves every Veterinary Practitioner to see that he is in the position to render efficient service to his client both in the diagnosis of pregnancy and the treatment of infertility..... For a long time past, pregnancy diagnosis and the treatment of infertility, have been regarded as being only within the scope of the expert. More recently, however, at demonstrations which have been arranged by divisions, it has been pointed out that it is well within the capacity of the average practitioner. In the main report in this issue, the speaker clearly reveals in a masterly but simple diction how relatively easy it is for even the least experienced to acquire a high degree of efficiency..... We are pleased to learn that further appointments are being made to enable individuals to undergo an intense course of study in the subject of infertility; we also congratulate the Association upon its initiative and its public spirited action in arranging refresher tuition by practitioners for their colleagues who, until now, have lacked the opportunity of acquiring the necessary technique associated with this important subject."

Even though such facilities do not exist in India at present, there is a way to acquire a working knowledge of the subject, if one has the interest and perseverance to pursue the practice suggested below. When the writer joined the ranks of the profession early in the twenties, Nasal Granuloma and String-halt were held to be incurable maladies of cattle, at least in this Province. The crude methods of treatment then practised against these maladies will look queer, not only to the posterity, but even to us, when we look back at them in retrospect. Thanks to the ingenuity, resourcefulness and skill of some of the practitioners, who unceasingly laboured at finding some suitable remedies for these ailments, and published their observations in the Veterinary Press and thus roused interest in the rank and file of the profession, with the result that the *Madras Veterinary Journal* (then existing) and subsequently, the *Indian Veterinary Journal* used to be flooded with articles on the subject containing various observations, criticisms and suggestions. This upheaval of interest among the Veterinary Practitioners in this country, has not only resulted in evolving successful lines of treatment for both the ailments, but also in educating the rank and file in the profession about the technique of treating the two ailments referred to above. Similarly, the writer of this article hopes that the members of the profession in this country will take keen interest on the subject of Bovine Sterility and publish in the columns of this journal, their observations on this subject.

Before dealing with the subject of Bovine Sterility, the writer proposes to give here a brief description of the anatomical features and the physiological functions of the reproductive organs for the benefit of the readers who do not have the facility of referring to current literature on the subject.

The glands and organs which are responsible for reproduction are:—
1. The Pituitary; 2. The Ovary; 3. The Fallopian tubes; 4. The Uterus; 5. The Vagina; 6. The Vulva and 7. The Mammary Glands.

Pituitary Body (Hypophysis Cerebri) is oval in shape, flattened dorso-ventrally and nearly an inch in width in the horse, and narrower and thicker in the bovine. It is divided into two parts which can be distinguished on section by their colour. They are known as the Anterior and Posterior Lobes.

The ovaries of the cow are much smaller than those of the mare; they measure usually about one and a half inches in length, and an inch in thickness, the weight is about half an ounce. They are oval in form, and are situated usually a little above the middle of the lateral margin of pelvic inlet in the non-pregnant subject. They are thus about 16 to 18 inches from the vulvar opening in a cow of a medium size. Follicles of various sizes are often seen projecting from the surface as well as Corpora Lutea.

Corpus Luteum is yellow in colour and may reach a width of half-an inch or more.

The Fallopian tubes are about 10 inches (20 to 25 cms) long. The uterine orifice of the tube is large and funnel shaped. The Fimbriae are not so extensive as in the mare.

The *Uterus* lies almost entirely within the abdominal cavity of the adult. The body is only about an inch and a half in length, although externally it appears to be about 5 or 6 inches long. This false impression is due to the fact that the posterior parts of the Cornua are united by connective and muscular tissue and have a common peritoneal covering."

The *Cornua* are about 15 inches long and taper gradually towards their free end. The horns curve at first downwards, forwards and outwards and then turn backwards and upwards forming a spiral coil.

The *Cervix* is about 4 inches long with a dense wall of about an inch in thickness. Its lumen, the cervical canal is spiral and is ordinarily lightly closed and very difficult to dilate.

The muscular coat of the uterus of the cow is thicker than in the mare. It consists of an external longitudinal layer and two circular strata. The inner circular layer is about a fourth of an inch thick in the Cervix. The mucous membrane of the horns and body presents as a characteristic feature, the uterine cotyledons, which are oval prominences numbering about a hundred, irregularly scattered over the surface or arranged in rows of about a dozen. In the non-gravid uterus, they measure about half an inch long and a little less in width and thickness, but during pregnancy they become greatly enlarged and pedunculated, some reaching upto 4 to 5 inches long and an inch and a half thick, and spongy in appearance.

The mucous membrane of the Cervix is pale, glandless and forms numerous folds, which on account of their presence in several series, obliterate the lumen. At the external uterine orifice the folds form rounded prominences arranged circularly which project into the vaginal cavity. As already said, there are no glands in the Cervix, but a thick mucous is secreted by goblet cells.

The vagina is about 8 to 10 inches long in the non-pregnant animal but in the pregnant animal it increases to 12 inches.

The vulva consists of thick wrinkled labia. It lies about two inches behind and 2 inches below the level of Ischial Arch.

The Oestrus Cycle:—Of the various hormones generated by the anterior lobe of the Pituitary body the most important gonadotropic hormones are Prolan A, or follicle stimulating hormone (F.S.H.), which stimulates the growth of the graafian follicle in the ovary, and Prolan B, or

lutensising hormone (L.H.), which causes rupture of the graffian follicle and growth of the Corpus Luteum. A third hormone (viz.) Oestrin, produced in the graffian follicle brings about increased vascularity and enlargement of the Uterus and Vagina together with the physiological symptoms of Oestrus or "Heat" which usually lasts in the cow from 2 to 24 hours. A graffian follicle may be detected upto 36 hours after the onset of the Oestrus, and then it ruptures liberating the ovum. Ovulation generally occurs between 36 hours to 42 hours after the onset of the Oestrus. When the follicle has ruptured the layer of the cells lining the cavity proliferate rapidly and produce a corpus luteum "Yellow Body of Pregnancy". This body can be easily detected, adhering to the ovary, from 8 to 12 days, when it reaches its maximum size, after which it recedes and atrophies disappearing about the 16th to 18th day after onset of the Oestrus, if fertilisation has not taken place. But if pregnancy supervenes the corpus luteum persists and produces a hormone called Progesterone, which inhibits ovulation, maintains the uterus in a condition favourable to the development of the embryo, stimulates the development of the mammary gland, and desensitises the uterine muscle to oxytocin, a secretion of the posterior lobe of the Pituitary gland which has the property of bringing about the contraction of the Uterine muscle. The Placenta also secretes progesterone. Relaxin, which is another hormone brings about relaxation of the pelvic ligaments and Prolactin secreted by the Anterior Pituitary gland stimulates mammary secretion. As the Corpus Luteum gets atrophied towards the end of pregnancy, its influence ceases, and the Oxytocin produced by the posterior lobe of the Pituitary brings about the contraction of the Uterus and expulsion of the foetus.

In the normal cow oestrus occurs once in every 20 to 23 days and lasts for about 2 to 24 hours in cows and 12 to 18 hours in buffaloes. Spermatozoa which are ejaculated into the posterior part of the genital passage, the vagina, as a result of copulation during the oestrus, travel all the way up the passage, right through the cervix, the uterus, the cornua and the fallopian tubes with the help of the wavy movement of their tails or flagella and on reaching the fimbriated end of the fallopian tubes lie in wait for the ovum. As a result of ovulation which occurs from 36 to 42 hours after the onset of the Oestrus, the ovum is dropped by the ovary into the fimbriated end of the fallopian tube. Then one of the Spermatozoa which are lying in wait for the ovum, pierces its head into the ovum and fertilises it. Fertilisation usually takes place at the fimbriated end of the fallopian tubes. The impregnated or fertilised ovum then travels down the fallopian tube and gets embedded in the mucous membrane of the Uterine horn and starts the chapter of prenatal life of a would be living creature on earth.

Etiology

Etiology of Sterility or Infertility in bovines has been classified in different ways by different workers. But the following perhaps is the most suitable classification to give a clear perspective of the subject and to make it easily understandable.

- A. *Infectious*: 1. Specific; 2. Non-specific.
- B. *Non-Infectious*: 1. Functional— (i) Hormonal Imbalance or Maladjustment.
(ii) Physiological derangement.
2. Inflammatory or Traumatic
- C. *Nutritional*: 1. Dietetic Errors Viz., Irregularity or Insufficiency of feeding.
2. Mineral Deficiency.
3. Vitamin Deficiency.

A. 1. The Specific Infectious diseases causing infertility are Tuberculosis, Brucellosis, and Trichomoniasis. The first may be eliminated from our consideration for the present as it is considered that the incidence of Tuberculosis in India is not very common. Most of the cases of Catarrhal Endometritis are caused by Brucellosis, while most cases of Pyometra and some cases of Catarrhal Endometritis are due to Trichomoniasis. Brucellosis often causes abortion during the first four months of pregnancy and Trichomoniasis generally causes abortion between the 4th and the 6th months.

2. The Non-specific infections are Pyogenic infection leading to Pyometra, coital exanthema or vesicular vaginitis or "Bull Burn" which is probably due to a virus, and contagious granular vaginitis of which the cause is not known. The latter two conditions may prevent a successful mating due to consequent irritation and even when a cow is successfully crossed, she may not hold due to the constant irritation of the genital passage by these conditions. Weekly irrigation with 1 : 1000 Iodine lotion or 1% Zinc Sulphocarbonate or mere saline solution containing a handful of common salt in a couple of gallons of water is said to be beneficial in these conditions. In cases of Vaginitis due to Trichomoniasis, vaginal irrigation with lactic acid in 3% solution is said to be helpful.

B. 1. Under Non-infectious causes, functional deficiency may be considered first. This may be further divided into (1) Hormonal Imbalance or maladjustments and (2) Physiological derangements. The chief manifestations of these conditions are "Silent Heat" and Anoestrus condition brought about by lack of Gonodotropic hormones and persistent Corpus Luteum. The first may be overcome by injections of Pregnancy Mare

Serum, Antutrine "S" or Urine Hormone, and Stilboestrol and the second can be overcome by enucleation of the persistent corpus luteum by digital pressure through the rectum.

A line or two about the details of treatment with the various agents mentioned above may be of interest here. Pregnancy Mare Serum, which is rich in Prolan A or follicle stimulating hormone when injected subcutaneously in doses of 1500 international units induces Oestrus and ovulation. This is specially indicated in anoestrus conditions in which the ovaries are small and shrunken without any corpus luteum or large follicles. It should never be injected when corpus luteum is present. It is not only unnecessary, as oestrus can be induced by removal of the corpus luteum, but if given in the presence of corpus luteum cysts may be formed in the ovaries. If it is injected when the corpus luteum is removed, multiple ovulation may occur with the danger of twins or worse.

Antutrine "S" (Parke Davis & Co) or Urine Hormone supplied from the Madras Veterinary College, when injected being rich in gonodotropic hormones stimulate ovulation and induce oestrus.

Solution of Stilboestrol dipropionate in oil put in the market by Burroughs Wellcome & Co., and May & Baker Ltd., are synthetic oestrogens. Intramuscular injection of these preparations in doses of 10 to 20 milligrammes are said to stimulate the anterior pituitary resulting in the release of luteinising hormone and cause the rupture of mature graffian follicles. But in a quiescent ovary which is generally found in most of the cases of anoestrus, and contains no ripe follicles, it is said to be helpless as it is said to inhibit the follicle stimulating capacity of the anterior pituitary gland. Pregnancy Mare Serum (P. M. S. Hormone) is, therefore said to be preferable in such conditions. Although Stilboestrol dipropionate re-establishes regular oestrus-cycle, it does not bring ovulation with oestrus in cases where no mature follicles are present in the ovaries. It is, therefore, said that pregnancy may result if mating is carried out at one of the succeeding oestral periods.

Stilboestrol is also said to be capable of causing regression of persistent corpus luteum.

(ii) *Inflammatory and Traumatic causes*: (a) Cystic Ovaries—An ovarian cyst is a graffian follicle which has failed to rupture, usually fibrosed giving rise to toughened tunica albugenia which prevents ovulation. This follicle continues to enlarge. Lack of luteinising hormone also leads to this condition. Pressure of follicular fluid leads to degeneration and disappearance of the ovum. The large quantity of oestrin produced leads to nymphomonal symptoms. The treatment of this condition consists in the rupture of the cysts by digital pressure through the rectal wall. This operation

should be repeated in 7 to 10 days. A large dose of Prolan A in oil is also said to be effective in this condition.

(b) *Persistent Corpus Luteum*:—This should be extruded by digital pressure through the rectal wall. To prevent haemorrhage, it is advised to hold the ovary for a minute or two after the operation, applying pressure over the spot from which the corpus luteum has been extruded. Some hold that this operation may result fatally in a few cases, and therefore prefer to use Stilboestrol which is said to have the effect of regressing the corpus luteum.

(c) *Salpingitis*:—Inflammation of the fallopian tubes is usually secondary to pyometra or catarrhal Endometritis. Rarely this condition results from tuberculous peritonitis. In tuberculous salpingitis nodules are found along the course of the fallopian tubes.

Inflammation of the oviducts leads to thickening which can readily be detected on rectal examination and at the same time adhesions are contracted in the ovarian bursa. This condition is frequently met with in Brucellosis. Further adhesions tend to anchor the ovary and finally the lumen of the tube becomes obliterated. Salpingitis to any degree is serious, and when bi-lateral the case is hopeless. Efforts to open up the tubes again by means of air pressure, as has been done in women and mares, have not proved successful in bovines.

(d) *Inflammatory conditions of the Uterus*:—In the bovine uterus, the body is so small that it is of little importance compared with the horns. 1. Acute metritis, 2. Simple Endometritis, 3. Catarrhal Endometritis, and 4. Pyometra are the four diseased conditions of the uterus. The first is caused by the retention of the foetal membranes. In this condition the rectal examination reveals very little, except slight thickening of the uterine wall which may feel spongy and a little pus may be massaged through the cervix, while oestrus may be either regular or irregular.

In Catarrhal Endometritis the uterine horns get enlarged, there is a vaginal discharge, and the animal may not come into heat.

Pyometra is accompanied by a distension of one or both horns, which on rectal examination may be mistaken for pregnancy, although they are more fluctuant than in pregnancy. In some cases one or both the horns are so distended with pus that they fall forward over the pelvic brim and are scarcely palpable. Both catarrhal Endometritis and Pyometra are frequently complicated by salpingitis. Most of the cases of Catarrhal Endometritis are caused by Brucellosis, while most cases of Pyometra and some of catarrhal Endometritis are due to Trichomoniasis.

Pyometra is treated by the enucleation of the corpus luteum and injections of Stilboestral dipropionate. As soon as the purulent contents

start to discharge, the vagina should be douched with some antiseptic solution twice a day for 3 or 4 days until the discharge slackens. Then give an intra uterine injection of 100 c.cs. of 1.0% solution of Iodine.

(e) *Cervicitis*:—Inflammatory condition of the cervix is generally caused by either Endometritis or Vaginitis and occasionally due to the injuries caused during calving. Use the speculum and paint the visible cervix with a weak solution of iodine.

(f) *Vaginitis*:—Most of the cases of Vaginitis are secondary to infection, higher in the genitalia with or without discharge flowing over the vaginal floor; generally the trouble is secondary to metritis. In such cases, the vaginal mucosa assumes a roughened nature and a dirty pinkish yellow appearance. Various forms of primary vaginitis do occur and these include vesicular vaginitis or "Bull Burn" and granular vaginitis etc., which have been already dealt with above.

(g) *Persistent Hymen*.—This is also one of the rare causes of sterility but this can be treated surgically.

C Nutritional. (1) *Dietetic errors viz.*, Irregularity or insufficiency of feeding. Due to lack of green fodder during the winter months, in the western countries, and the summer months in the tropics, animals do not come into heat generally during these periods. With the onset of the Spring in the West, and after the early showers which bring up green grass in the tropics, animals come into heat. This indicates that fresh green fodder has a stimulating effect on the reproductive mechanism. Several cases of anoestrus condition and silent Heat are brought round by nourishing food, green fodder and exercise. Germinating grain is also said to have a stimulating effect on indifferent breeders.

(2) *Mineral Deficiency*:—Some animals even without cystic ovaries show nymphomonal symptoms, such cases are usually due to vitamin and Mineral deficiency. In some cases, sterility is due to delayed ovulation, the ovum not being liberated until perhaps 5 to 7 days after oestrus by which time the Spermatazoa have perished. This condition is due to mineral deficiency, and it is successfully treated by feeding Manganese Sulphate at the rate of 1 gramme per day. A 4% solution may be given in feed. In cases of some cystic ovaries in which the animals show nymphomonal symptoms, it is said that there is a depletion of calcium salts from bones, and it is therefore necessary to give such animals some calcium supplement to their feed.

(3) *Vitamin Deficiency*:—Vitamin E is said to contain stimulating effects on the reproductive mechanism. Wheat germ is said to be rich in this vitamin. Hence intramuscular injections of wheat germoil are said to assist animals which are suspected to be sterile due to vitamin

deficiency, such as maiden heifers which do not hold service without any other apparent cause.

Sterility in the bull.

There is a tendency to often blame the female subject for causes of sterility. But in certain cases, sterility of the bull may be responsible for infertility in the cows served by him. It is, therefore, necessary to consider for a while the factors responsible for sterility in the bull.

1. Orchitis, (usually caused by *Brucella abortus*) 2. Cryptorchidism, 3. Adhesions in the Prepuce, 4. Lameness, 5. Adiposity and 6. Foreign body in the reticulum are said to be some of the main causes of sterility in the bull. The average number of spermatozoa per c. c. of semen in the bull is 800,000 but within normality, their number may vary from 300,000 to 1,200,000. The volume of semen ejaculated at each service normally varies from 2 to 8 c. c. the average being 5 c. cs. Any deviation from these normal limits such as low sperm count, sluggish movement of the spermatozoa etc., will lead to infertility in spite of the fact that only one spermatozoa is necessary to fertilise the ovum.

Antiurine "S" Parke Davis & Co., is said to be useful in case of Cryptorchidism.

Injections of 25 c. c. of ascorbic acid solution containing 2 gms. of ascorbic acid is said to be helpful in slow serving bulls.

Urine hormone injections are very useful in indifferent servers. A Murrah Buffalo Bull was recently treated very successfully with Urine hormone in this district.

Ability to diagnose pregnancy in its early stages is absolutely essential to the Veterinary Surgeon who intends to undertake treatment of cases of infertility. Insistence on pregnancy diagnosis is essential since any treatment given is likely to induce abortion if the cow is pregnant. The onus of ensuring that a cow treated is not pregnant, is on the Veterinary Surgeon. It is therefore essential to carry out pregnancy diagnosis prior to treatment of any so called infertile cow, whatever the history given may be.

A complete examination of the cow must be carried out before any drastic treatment is undertaken, otherwise disastrous results in the form of abortion of a foetus or even death of the mother are likely to result. Some cows will continue to come into oestrus even when in calf, and have even been known to calve a few hours after being bulled. Therefore, full information should be obtained first on the following points:—1. Date of last calving; 2. Was it at full time? 3. Did the animal cleanse properly? 4. How many times has she been served and when was the last time? 5. When was she in service last, and what

was the duration of oestrus? 6. Does she come into service regularly? 7. Has she been blood tested, and if so, with what results? etc.

Vaginal examination is then made. It is short and important, but it cannot be carried out in the heifer. It reveals the condition of the vagina, presence or absence of oestral or of abnormal discharge. Presence or absence of UTERINE SEAL—and the condition of the Oestrus.

Rectal examination is then made for a conclusive proof of pregnancy. A considerable amount of experience is necessary to become well acquainted with the anatomy and the feel of the uterus and its appendages in their normal condition, in the gravid state, and also in diseased conditions. For this purpose, the Veterinary Institution and the Slaughter house provide ample opportunities for the beginner.

The following technique is advised to gain a working knowledge of the subject.

"Clean the hands, pass the right hand into the vagina and examine the uterus. If a vaginal speculum is available, examine the cervix with the aid of a torch light and have a visual idea of its normal condition in health. Then pass the left hand into the rectum a few inches deep and feel for the cervix which will be found as a hard lump below the rectal floor. Pass the hand further forwards feeling your way along the body of the uterus, the cornua, the fallopian tubes, and the ovaries. The ovaries are found just at the lateral margin of the Pelvic inlet within a distance of 18 inches from the vulvar opening. The surface of the ovaries may be felt carefully to see if there are any cysts, and also the corpus luteum. After examining a few cows in health, the practitioner can gain certain amount of experience in the feel of the genitalia. Some advise that the examination of the genitalia of a cow in heat is more helpful to the beginner as the uterus, the cornua and the fallopian tubes are said to be erect and stiff during this period. But the feel of such organs may give an exaggerated idea to the beginner. Then the practitioner can further improve his knowledge by antimortem and postmortem examination of cows at the Slaughter house where a large number of cows are killed perhaps on account of being sterile.

If the above technique is followed a fair working knowledge of the subject can be acquired.

Pregnancy Diagnosis

Pregnancy in the cow can be diagnosed at the fifth week. The enlargement in the pregnant horn of the uterus takes the form of a bulge rather than a uniform enlargement. The bulge occurs at the curvature of the horn, and in the corresponding ovary there is a corpus luteum of pregnancy while the opposite ovary has none. Without considerable experience an opinion as to pregnancy should not be given until 9 weeks after service.

If every one of us can acquire a working knowledge of pregnancy diagnosis and treatment of sterility, we as a profession, will be able to solve a great economic problem which is of vital importance to the country in these critical times.

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DISCUSSIONS

There was a lengthy discussion on the paper and some of the main questions asked were as follows :—

1. Mr. M. S. Anthony said that lotio Iodine injections into the genital passage cause immense irritation and that they should be avoided if possible.
2. Mr. Subramanyam wanted to be enlightened about the biological assay of urine Hormone.
3. Mr. Sankaranarayanan observed that any uterine injection is objectionable.
4. Mr. Narayana Rao asked why it has been advised that the right hand should be used for vaginal examination.

REPLY

The author thanked the audience for the keen interest evoked on the subject and the lively discussion that ensued.

1. In answer to Mr. Anthony's observation, the author said that he is in agreement with Mr. Anthony, but in cases of Pyometra where the Endometrium needs stimulation and revitalisation, some sort of stimulant is indicated. However, in the light of the recent advances made in the treatment of Pyometra, intra uterine injections of iodine solution

may be done away with and the desired effect can be had by (i) snipping off the Corpus Luteum, (ii) with intra muscular injections of Stilboestrol in oil and (iii) intra uterine injections of Sulphanilamide in Shark Liver Oil.

2. In answer to Mr. Subramanyam's query, the author said that urine of cows and mares during the later stages of pregnancy is rich in Gonodotropic hormones. By Zondoc's test, the unitary potency of this product can be biologically assayed. Such an assay can help the determination of the dose of urine that is required for injection. Parke Davis & Co., supply a product called "Antutrine 'S' " containing 600 International units of Gonodotropic Hormone per c. c.

3. In answer to Mr. Sankaranarayanan, the author observed that there is a tendency in these days to think that any form of uterine injections in the bovine subject, is unnecessary and harmful. But the author is inclined to feel that in certain septic conditions, uterine irrigations, with aqueous solutions is indicated and he doubts if any harm could be done by them if each solution is properly drained off by syphon action after each irrigation.

4. In answer to Mr. Narayana Rao's query, the author observed that, for the sake of convenience many leading clinician's advise that the right hand should be employed for vaginal examination, which is done first in the examination of a cow for sterility, so that he may then employ his left hand without further washing, for rectal examination. As the uterus and its appendages are on the right side, their examination, per rectum can be better done with the left hand. In order to avoid the washing of hands in the middle of the examination, the left hand is reserved for rectal examinations which is done later, and the vaginal examination is first done with right hand.

GOAT DERMATITIS : A NEW VIRUS DISEASE OF GOATS IN INDIA*

BY

J. R. HADDOW and J. A. IDNANI,

Imperial Veterinary Research Institute, Mukteswar.

This article describes the circumstances under which the disease was discovered, the main clinical features and post-mortem findings, the aetiology and possible means of control. Although the investigation is not complete, the present moment seems opportune to draw attention to the disease, so that it may be recognised and its incidence and epizootiology recorded, as at present we have no information on these points.

*Reprinted from the *Indian Journal of Veterinary Science and Animal Husbandry*, Vol. XVI, Part III, September 1946.

Occurrence

During studies on cross-immunity reactions using sheep and goat-pox virus strains, we observed that some of our discarded stock goat immunes were dying from an infection which was reported to be goat-pox. On going into the matter we found that, though this condition on casual examination might be mistaken for an aberrant type of goat-pox such as has not infrequently been reported in India, there were several easily recognised clinical features which made us doubt the accuracy of the original diagnosis. Simultaneously we discovered the same disease in goats which were being used on experimental work other than goat-pox, and reference to records yielded the additional information that a similar condition had existed at Mukteswar in the healthy goat stocks on two previous years during the monsoon period.

Since the investigation started, two outbreaks of goat dermatitis have been observed in the healthy stocks; both apparently arose from outside sources and both occurred during the monsoon. Also out of a number of specimens received at this Institute for confirmation of diagnosis of goat-pox, one originating in the United Provinces and reported to be from an outbreak of pneumonia in goats in Sind proved to be aetiologically identical with the condition which was under study at Mukteswar.

Clinical Symptoms

In natural cases the first symptoms observed are general malaise accompanied by a high temperature and rough staring coat. On examination, the skin is found to be studded with numerous round elevated areas distributed over the body surface (Plate X Figs. 1 and 2) and extending on to the lips, gums and tongue. Simultaneously or within a day or two, symptoms of pneumonia appear and death follows invariably.

In cases artificially produced by rubbing dilute emulsions of tissue from the stud-like nodules on to the scarified skin of healthy goats there is an incubation period of seven to ten days, after which the scarified area shows sharply circumscribed circular hyperaemic areas and simultaneously the temperature rises two to three degrees. The hyperaemia rapidly increases, the area becomes thickened and elevated, and within 48 hours there is a hard stud of rubbery consistence and black colour. The nodules are approximately 4-12 mm. in diameter and raised about 1-2 mm. above the normal surface. At no stage in the development of the nodules is there any vesiculation or pustule formation.

Within seven to ten days the tissue of the nodule becomes necrotic and is shed, leaving a shallow ulcer with a very clear-cut punched-out rim the floor of which is bright red and faintly striated. There is little pus formation and the floor of the ulcer gradually dries up and forms a scab which is strongly

adherent to the underlying tissue. Healing takes place from the periphery and is very slow, the scabs remaining in place for three weeks or longer in the few cases which survive. The nodules in the buccal cavity are similar in character but are grayish-white in colour. The pyrexia persists for nine to ten days or until a few hours before death. In very acute cases death may occur within three or four days after the appearance of skin lesions; in less acute cases accompanied by generalization, an invariably fatal and apparently secondary pneumonia is a constant feature. In a few cases, as for instance, when inoculation by scarification is practised, the lesions remain localized and animals may survive.

Morbid Anatomy

The skin lesions previously described are a constant feature. On opening the carcass, typical lesions can in almost all cases be observed in the alimentary tract, lungs and kidneys. The internal lesions are essentially similar to those seen on the skin. In the alimentary tract, the abomasum is almost invariably affected. The duodenum, lips, gum and tongue, oesophagus, large intestine and rectum are also frequently affected, the frequency being in that order. In these locations the nodules are greyish-white or yellow in colour and usually smaller in diameter than those seen on the skin. In the later stages the mucous membrane is desquamated leaving a bright red punched-out ulcer. The liver is more rarely affected and the lesions present the appearance of infarcts. In the respiratory tract, lesions are as frequent as in the abomasum and are present on the surface of the trachea and larger bronchi—they have not been seen on the larynx—where they are similar to those seen on other mucous membranes, and in the lung they are present throughout the tissue as circular greyish white nodules varying greatly in diameter and when they impinge on the surface, the stud-like appearance of the skin lesion is reproduced. At a later stage the nodules appear to serve as foci for secondary bacterial infection and the picture becomes that of an ordinary purulent pneumonia. The kidneys are frequently affected and the lesions appear as white infarcts in the cortical substance. There is also intense congestion of the medulla. No lesions have been seen in other parts of the urinary tract. In females, the udder is almost always affected. In early cases there is a general inflammation of the mammary tissue which in later cases gives place to large, white, tough nodes. No macroscopic changes are visible in the spleen, lymphatic or other glands or in the brain.

Histologically, the skin nodule starts as a proliferation of the cells of the malpighian layer, the ridges in this layer, becoming more accentuated and projecting more deeply into the corium (Plate XI fig. 3). There is at the same time a marked hypertrophy of individual cells (Plate XI fig. 4) as in fowl-pox, and distention of the capillaries of the papillae and upper layers of the corium. There is an infiltration of mononuclear and plasma cells in variable numbers with extravasation of red cells in the deeper layers. Cell necrosis and an increase in the number of infiltrating polymorphs rapidly occur and finally the nodule is



FIG. 1. Natural case. Skin nodule



FIG. 2. Natural case. Skin nodules

(By the Courtesy of I.C.A.R.)



FIG. 3. Early stage of skin lesion. (Low power)



FIG. 4. Hypertrophy of cells in corium



FIG. 5. Necrotic skin nodule beginning to detach.



FIG. 6. Lung lesion. (Low power)

(By the Courtesy of I.C.A.R.)

desquamated leaving the muscular layer exposed (Plate XI fig. 5). Staining of skin sections by Goodpasture's method has not revealed distinct inclusion bodies but some epithelial cells contain red-staining granular material. In the lungs, the lesion (Plate XI fig. 6) likewise starts as a proliferation of the epithelium lining the alveoli or bronchioles, followed by a monocytic invasion of the area with engorgement of the blood vessels. As there is no sharp fibrous or inflammatory demarcation between the affected and unaffected areas, bacterial infection apparently secondary in nature, soon occurs and the picture becomes that of an ordinary broncho-pneumonia. Where the lesions impinge on the surface of the lung, the endothelium of the pleura and its underlying tissue are also affected. In the kidney the cortical lesion is similar to that in the lung while the medulla is studded with haemorrhages. In the bowel, the lesion starts as in skin and extends to the deeper glandular layers.

Transmission

As stated, the disease was discovered almost simultaneously during the course of investigating another great disease and during experiments on typing of goat and sheep-pox strains. The former required serial passages in goats with blood inoculated subcutaneously, and the latter was done by scarification or intradermal inoculation. A clue thus presented itself that both blood and skin lesions were infective. Two strains were successfully established by serial passages in goats. Attempts made at the second generation to infect hill bulls showed these animals to be refractory. At the fourteenth passage, hill bulls, sheep, rabbits and guinea-pigs along with control goats were inoculated, but apart from the goats no other animal was affected. The lesions following scarification have already been described, the only difference in the case of subcutaneous inoculation being that, in addition to the usual lesions, swelling commences at the seat of inoculation within 24-48 hours and increases slowly to include all the surrounding fascia. On incision, the swelling is seen to be due to the formation of a yellowish gelatinous exudate. On intravenous inoculation the incubation period is reduced by one or two days.

Blood is also infective from the time the temperature rises until the temperature drops in chronic cases.

We have also to record negative results in transmission experiments with four Bhutia goats (a long-haired variety from the Himalayan hinterland). Whether these goats were naturally immune cannot be said, as these goats are only supplied to the Institute during the winter months. We have also no information as to the natural method of transmission in local breeds of goats. It is peculiar that, although the nature of the disease seems to spread readily enough, healthy goats have been left in contact with artificially infected ones at all stages of the disease for long periods without acquiring the disease. Later, they were found to be fully susceptible to artificial inoculation.

Aetiology

The circumstances in which the disease was found led us to suspect a virus as the probable cause and filtration experiments with emulsions of nodules confirmed this suspicion. Infective bacteria-free filtrates were readily obtained from Berkefeld V, Chamberland L1, L2, L3 candles. Cultural examination for bacteria at the early stages of the lesions was also uniformly negative.

The virus is present in the skin lesions throughout the course and has been recovered from the scabs more than three weeks after the original inoculation. Virus in dried scabs or in tissues stored in 50 per cent glycerol remains viable for at least 16 months at 0-5°C.

Immunity

Cross-immunity tests with several strains of pox virus from goats and sheep and with the virus of contagious ecthyma of goats have shown that the virus now under consideration has no immunological relationship with these viruses. As already stated, all natural cases so far examined have been fatal. In our series of passages a few goats inoculated by scarification have survived and this led us to try the scarification of the skin of the ear as a possible means of inducing a non-fatal attack of the disease. So far, ten goats have been inoculated by lightly scarifying a small area on the inside of the ear. All showed a marked thermal reaction with local nodule formation. Six of these were available for test six weeks to two months after the original inoculation and all were solidly immune to an intravenous injection of skin nodule suspension. The serum of recovered goats possesses anti-viral properties and may be used in conjunction with virus to produce active immunity. The immunity following an attack lasts at least two years,—the longest period so far available for test.

Differential Diagnosis

The only description with which the disease under reference bears some resemblance is that of Wallace (1935), who during the course of investigation on contagious goat pleuropneumonia encountered high mortality due to what he termed 'atypical or stone-pox'. The skin lesions observed by Wallace were unlike classical pox and were probably similar to what have been described in this article. The absence of vesicles and pustules, the ease with which the virus can be filtered, together with the absence of cross-immunity reactions, and the presence of the virus in the blood stream for a prolonged period clearly differentiates this condition from goat-pox, while the widespread distribution of the skin lesions, the presence of typical nodules and the absence of cross-immunity differentiates this condition from contagious ecthyma. The presence of the nodules is of diagnostic significance in cases where confusion with other infectious or contagious pneumonias of goats might arise.

SUMMARY

An acute highly fatal disease of goats characterised by specific skin eruptions is described. At first, it was regarded as an atypical form of goat-pox, but detailed studies of the lesions and immunological tests have made it possible to recognise it as a separate disease entity.

The causal agent is a filtrable virus which is present in the blood and skin lesions throughout the course of the disease. It passes with ease a Chamberland L3 filter.

Following intravenous inoculation with skin material, symptoms of general malaise with high temperature, 104°-106°F., and rough staring coat mark the onset of the disease. On careful examination the skin is studded with small circular elevated nodules distributed all over the surface extending to the lips, eyelids and tongue. Simultaneously or within a day or two, symptoms of pneumonia appear and death follows invariably. At no stage of development of the skin nodules does vesiculation or pustule formation occur. Extension of lesions takes place into the respiratory and alimentary tracts. Greyish white nodules are mainly seen in the lungs, abomasum and often throughout the intestines. The foci in the set up an apparently secondary pneumonia almost as quickly as they appear and produce early death. The disease was easily transmitted with blood or material from skin lesions subcutaneously, intravenously or by scarification to pox-immune goats. Bulls, sheep, rabbits and guinea-pigs proved refractory. Light scarification on the inside of the ear with the virus sets up a localised lesion and is suggested as possible means of prophylaxis.

ACKNOWLEDGEMENT

The authors desire to record their thanks to Dr. F. C. Minett for his interest and encouragement during the course of the investigation.

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THE Indian Veterinary Journal

(The Journal of The All-India Veterinary Association)

Vol. XXIV

MARCH, 1948

No. 5

Editorial

THE TASK AHEAD

With the dawn of Independence, a number of vital and urgent problems confront our country for immediate solution. One of the most important of such problems is the food problem and the feeding of the starving millions of the country. Poverty and Hunger are stalking the country and unless they are vigorously tackled with earnestness and skill, troublous times are ahead of us. As Aristotle very wisely said, Poverty is the parent of revolutions and crimes. And, therefore, a tremendous responsibility rests upon our Government and our Administrators in whipping up the Nation-building activities to dynamic action. The food crisis which has been threatening for the past few years is fortunately getting eased up, mainly due to the increasing imports from other countries. It is, therefore, of a temporary nature and cannot give room for complacency and satisfaction to those in power. Our aim must be to make the country self-sufficient in the matter of its food requirements. There must be plenty in the land and the common man must feel assured of freedom from starvation. Towards this end in view, the administration must gird itself for vigorous action. As the Food Minister said at the opening of the Seventh All-India Cattle Show in New Delhi in January 1948, the cattle problem is not merely a humanitarian problem of animal welfare; in it, are substantially involved both the health and wealth of our nation and the earlier we realise this the sooner shall we see the end of poverty and disease in this country. In the past, it had been a practice to mistake

the normal inevitable growth of an organisation for a planned development and expansion, and some of those in charge of Departments like the Veterinary Department in the Provinces have in this way been laying the flattering unction to their souls that things have been progressing and that they were leaving the department better than what they found it. We had to pity such persons. Latterly, it has become the fashion to ignore all progressive ideas on the ground that the so called Post-war plans, said to have been drawn out elaborately, assured us of everything the country needs. As the proverb goes, the pumpkin sketched out on paper cannot possibly fill the belly. As such, what really matters is, not the planning of the schemes but the timely execution of those schemes and plans. It is only then that the administrations can make themselves really useful to the country. A timid, halting and hesitating approach to each and every question, a magnification of the inherent difficulties in them, and a strong disinclination to take a broad view of things is fatal to progress. They will inevitably lead to stagnation. Little or nothing can be achieved with such an outlook. The country has no use for persons with such an outlook and approach. The country is in a hurry,—in a tremendous hurry—to have things shaped out quickly and it needs a vital, dynamic approach to the pressing problems. Improvement of our livestock is a vital problem of a very urgent nature and it must be planned out with vision and fore-thought and executed with boldness and earnestness. The past neglect must be corrected, and the bullock which, as every one knows, bears on its patient back the whole economy of Indian agriculture, should be improved and developed in as short a time as possible. We earnestly appeal to the members of our profession, young and old, to realise their potentialities in effecting this improvement and, putting all other considerations aside, work for the progress and advancement of our people and country so that we can align ourselves with other advanced countries of the world in the shortest time possible in the wealth of our livestock.



S. VAIDYANATHA MUDALIYAR, G.M.V.C.,
Who has been appointed as Ag. Principal,
Madras Veterinary College.

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THE FIFTY YEAR RULE

Some time back we had occasion to comment on the order of the Madras Government banning promotion to gazetted ranks to Veterinary Assistant Surgeons who were fifty years of age. This order quite unjustifiably declared people as too old at fifty and had been passed, as the *Hindu* well put it, on no intelligent principle. It created a good deal of dissatisfaction amongst the **members** of the service who were eagerly looking forward to such promotions after long years of approved service. We are now glad to announce that the order has been cancelled and that the persons who were superseded on this account are now being gazetted as and when vacancies occur. We are very thankful to Madras Government for so graciously correcting the wrong.

APPOINTMENT

Sri S. VAIDYANATHA MUDALIYAR, G.M.V.C.

We are glad that Sri S. Vaidyanatha Mudaliar, G.M.V.C., Lecturer in Parasitology, Madras Veterinary College, has been appointed as Acting Principal of the same College.

We congratulate Sri S. V. Mudaliar on his promotion and wish him all success in his work.

Clinical Articles

VACCINIA IN CALVES

By

M. MAQSOOD, L.V.P., (HONS.), P. G. (MUKT.)

Lately of Civil Veterinary Hospital, Murree Hills, West Punjab.

Vaccinia or Cow-pox is a common, comparatively benign contagious disease chiefly of milch cattle, the lesions of which are mainly localized on the teats and udder, though rarely in buffaloes and cows generalized form of the disease had been recorded by Dupuis (1889), Strebel (1898), Blaxall (1930), Sharma (1935), Bhatia (1936) and Maqsood (1944). In calves pox lesions appear on the lips, muzzle and around the nostrils and in bulls often on the scrotum and inside the thighs (Hoare, 1913; Gaiger & Davies, 1938). Studies of the available literature show that there are not many records of naturally occurring cases of cow-pox in calves. In the following note four cases of naturally occurring cow-pox, observed in calves at Lahore and Murree Hills, are recorded.

Case reports

1. The subject—a grey calf, age about one month, was examined on 14th January 1943 at Lahore. It was stated by the attendant that on 12-1-1943 numerous reddish pimples were seen on the lips, muzzle and around the nostrils. The calf became dull and off food. The mother-cow was not suffering from cow-pox. On examination the temperature was 101.8°F. and vesicles varying in size from that of a split gram to a pea were seen on the lips, muzzle and around the nostrils. By the fourth day the vesicles became converted into pustules which dried up, forming yellowish scabs and later on brown crusts. The crusts became detached and the calf recovered in about 12 days. The depressed pinkish areas on the skin disappeared in about a fortnight.

2. A two weeks old red calf, was brought to the Punjab Veterinary College Hospital, Lahore, on 29th July 1945, with the history that on 23-7-45 numerous small pimples were noticed on the lips and muzzle and for the previous two days they had also appeared on the inside of thighs and in the scrotal region. The calf was dull with a temperature of 102.0°F: examination of the inside of the mouth did not reveal anything abnormal. Vesicles, about the size of a split gram, were seen on the lips, muzzle, around the nostrils and on the medial aspect of thighs. In the scrotal region besides crops of vesicles, a few papules were also present. On the 3rd day the vesicles had slightly increased in size and some of them became depressed in the centres. The temperature came down to 100.2°F. and the calf looked bright. By the 5th and 6th day the vesicles had converted into pustules, some of which became confluent forming small irregular areas, especially on the inside of the thighs. Gradually the

pustules dried up forming yellowish scabs which finally changed into dark brown crust and on about the 11th day all the pustules had converted into crusts. Within a few days the dried crusts became detached, leaving the underlying areas of the skin pinkish in colour and slightly depressed in the centres. The calf recovered in about 2 weeks. On 29-8-1945 the calf was again examined, he was then in good condition and practically all the depressed pinkish areas on the skin had disappeared. The mother of the calf also was suffering from cow-pox.

3. A grey spotted calf, age about 20 days, was examined on 20th July 1945 at Lahore. As narrated by the owner, pimples in successive crops, were noticed on the inside of the thighs about a week previously and the following day they also appeared on the lips, and around the nostrils. On examination the temperature was 100.4°F. and the calf looked bright. Pustules about the size of a split pea were present on the lips, muzzle, around the nostrils and inside of the thighs. A few yellowish scabs were also seen on the medial aspect of the right thigh and the lower lip. The calf recovered in about 13 days. Lesions of cow-pox were seen on the teats and udder of the mother-cow.

4. The subject a light brown calf, age about 2 months, was brought to the Civil Veterinary Hospital, Murree Hills, Punjab on 14th May 1947, with the history that about a week previously groups of pimples appeared on the lips, muzzle and that the calf had become dull. On examination, the temperature was 100.2°F: the calf was feeding well. Numerous pustules with a few practically dried crusts were seen on the lips, muzzle and around the nostrils. The calf recovered in about 12 days. The mother-cow was also suffering from cow-pox, with lesions on the teats and udder. The owner also stated that the cow first developed the disease and, afterwards, the calf.

Cases No. 1, 2 and 3 were examined, while the author was working in the Pathology and Bacteriology Section, Punjab Veterinary College Lahore.

Course of the disease

In uncomplicated cases, it seems that the affected animals usually recover within 10 days to 2 weeks but in cases of secondary complications the course may be prolonged.

Diagnosis

The occurrence of eruptions on the lips, muzzle, around the nostrils and other parts of the integument, the fact that they passed through the various classical stages of pox, viz. papule, vesicle, pustule and scab, as well as the evidence mentioned in the next section, concerning the origin of infection in some of the cases and the experimental transmission of the disease to a healthy cow may be regarded as giving a clear diagnosis.

Epizootiology

As regards the source of infection in the cases under discussion, the following facts were ascertained. In case No. 2, the cow was suffering from cow-pox. The suckling calf probably contracted the disease from the mother-cow because the disease appeared first in the cow and it was observed in the calf about 4 days later on. In case No. 4, the calf contracted the disease from the affected mother-cow. The source of infection in cases Nos. 1 and 3 could not be traced, but it was stated by the attendant of case No. 3 that the disease first appeared in the calf and after a day the cow developed pimples on the teats and udder.

Experimental transmission

With a view to find out, whether naturally occurring calf vaccinia is infective to cows, a thick emulsion was prepared from material collected from the vesicles in case No 2 and was rubbed on the scarified teats of another healthy milch cow. It gave a reaction and developed pox lesions on the teats and udder.

SUMMARY

1. Four cases of naturally occurring Variola Vaccinia in calves are recorded and the lesions were present on the lips, muzzle, around the nostrils, medial aspect of the thighs and in the scrotal region.

2. The calf may contract the disease from the affected cow while suckling and the disease was experimentally transmitted to another cow which developed pox lesions on the teats and udder.

ACKNOWLEDGEMENTS

Valuable suggestions were received from Mr. S. I. A. Shah, M.R.C.V.S., P.V.S., the then Professor of Pathology & Bacteriology, Punjab Veterinary College, Lahore.

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ANTHIOMALINE IN THE TREATMENT OF INFECTIOUS GRANULOMA OF DOGS

By

B. S. P. RAO, G.M.V.C.,
 Veterinary Officer,

and

A. H. KHAN, G.V.Sc.,
 Assistant Veterinary Surgeon, Hyderabad-Dn.

Anthiomaline—a lithium antimony thiomalate preparation by May & Baker—has been used by us in cases commonly known as 'Cancer' of sexual organs in dogs. The following are some of the clinical cases in which this drug has been tried:—

1. *Case O. P. No. 3806*:—A local bred dog with cauli-flower-like growths round the base of the penis and discharging foul smelling blood-stained discharge. The growths were removed surgically and the wound was cauterised with silver nitrate stick. A dose of Anthiomaline $\frac{1}{2}$ c. c. was then injected intramuscularly and the drug was repeated in 1 c. c. $1\frac{1}{2}$ c. c. and 2 c. c. doses every four days. The patient did not turn up later for treatment but it was learnt from the owner, some time after, that there was no bleeding from the prepuce subsequent to treatment and that the dog was doing well.

2. *Case O. P. No. 3127*:—A Golden Retriever, male, aged $2\frac{1}{2}$ years. This animal had a history of having been operated upon two months previously in another hospital. The growth was therefore a recurrence and was not big and extensive. It was clipped with antiseptic precaution and the part cauterised. Anthiomaline $\frac{1}{2}$ c. c. was injected immediately and repeated thrice at an interval of 4 days, the dose being increased by $\frac{1}{2}$ c. c. every time. The treatment resulted in a complete cure and the dog later on mated with several bitches bringing forth healthy pups. Some of the pups which have grown up to adults now are noted to be free from this disease.

3. *Case O. P. No. 4633*:—Dog with a large growth about the size of a pigeon's egg, situated on both sides of the penis. The growth was removed surgically and Anthiomaline was injected as before. The injection was repeated every fourth day, in increased doses which resulted in a complete cure.

4. *Case O. P. No. 6307*:—Terrier, male aged 6 years. He was operated and 3 injections of Anthiomaline were given from 14-5-1947 and discharged. The dog was brought again to the hospital on 6-7-47, when the growths appeared to be diffused and granular. These were cauterised and another course of five injections of Anthiomaline were

given in 1 c. c. dosage. The dog came to the hospital several times later on for other complaints but a recurrence of the 'cancer' was not noted.

5. *Case O. P. No. 7006 of 13-8-47*:—Bitch. She had a big growth on the walls of the vagina touching the cervix. These growths were clipped and cauterised with a 1% solution of Silver Nitrate. A course of five injections of Anthiomaline was given as before and the bitch was discharged cured.

6 and 7. *Cases O. P. Nos. 3268 and 3269*. An Alsatian dog and bitch (pair) belonging to the same owner. Both were suffering from infectious granuloma of the genitals. The owner suspected that the male had crossed a vagrant bitch with this disease, which was roaming near his compound. The dog and bitch were operated and given a course of five injections of Anthiomaline from 6-2-47 and were discharged cured. Subsequently the bitch was crossed by its own male and littered thrice giving healthy pups.

Besides these, many other dogs were treated in this hospital, but they did not turn up after one or two injections. Therefore the results of treatment in them are not available.

ASTHMA IN A POMERANIAN BITCH

By

CAPT. G. VENKATANARUSU, G.M.V.C., P.G. (Mukt.),
Veterinary Officer, Gwalior Kennels, C. I.

An imported Pomeranian bitch, weighing about 5½ lbs., aged five years and in the enjoyment of good health in the plains, was taken during summer to a hill station at an altitude of 8,000 ft. high; after a couple of months stay there, it was brought back to the plains. This sudden change of temperature and altitude i. e. from the cold to the warm climate brought on an acute attack of asthma. The severity of the attack and its resultant threatening suffocation was more prominent on the slightest excitement as, for instance, when the pet ran up to her master to show all her affection. There was no pyrexia and the appetite was fairly normal. The wheezy and laboured respiration used to occur spasmodically and the animal had the characteristic prolonged dry cough. It used to stand with elbows abducted keeping the fore limbs wide apart. The hind-quarters were often brought in contact with the ground with the hocks semiflexed. A slight nasal discharge was always present. The fine coat of the animal became rough. The mouth had an offensive odour from the bad teeth which was covered with tartar in spite of

repeated brushing, cleaning and gargling. As the animal was getting weak, it was kept quiet with its movement restricted.

Treatment and observations:—The patient was kept in an airy dog-cage with equable temperature. A diet consisting of soup, soaked biscuits, minced mutton and fried fish was given. By way of treatment to begin with, a course of Liq. Arsenicalis, Tr. Digitalis with Tr. Nux Vomica was given for a fairly long period in small doses. This mitigated to a certain extent the recurrence of the attacks. Subsequently, very small doses of ipecacuanae, glycoheroin, glykeron, zephrol, and syrup glycodrin tarp. Vasaka gave temporary ease and comfort to the animal. Pot. Iodide mixtures and bromides were given a fair trial. Light ammonical stimulants were applied to the chest walls from time to time. In acute dyspnoea and distress coramine was administered both orally and hypodermically. When spasms became very extreme, relief was obtained by hypodermic administration of Adrenaline Hydrochloride 1 in 1000 solution, 2 ms. with one m. of Pituitrin.

All these treatments have been only palliative and the poor animal is still continuing to suffer from periodic attacks of the asthmatic complaint. She has lost nearly a pound of weight but is otherwise fairly well. Can any one suggest a radical cure?

RINGWORM IN CALVES

By

G. BISWAL, G.B.V.C. (Pat.), P. G. (Mukt.),
Research Assistant, Provincial Veterinary Laboratory, Cuttack, Orissa.

An outbreak of Ringworm occurred amidst the calves of the Government Civil Dairy, Cuttack, in the month of October 1947 and a short description of it is given in this article. The scrapings from the skin revealed *Trichophyton Spp.* on microscopical examination.

Most of the calves affected with Ringworm showed typical lesions of the disease. The pathologic action of the invading fungus was clinically seen by the presence of circular, hairless, black patches, from the size of a pie to that of a Rupee coin, and even upto 8 to 12 sq. inches in diameter, on the surface of the skin. In a few days 13 calves were affected, mainly due to overcrowding. The infection showed itself gradually, in a few cases whilst in others, it flared up suddenly. The calves were allowed to mix with their mothers for a few hours in the day and penned together with the buffalo calves in the same enclosure; but no infection was seen in them.

The gross pathological changes produced by the fungus were associated with the varying extension of the ever-widening, circular bare patches on the skin. The changes were brought about by a localised dermatitis caused by the fungi leading to loss of hair from the affected parts and gave a 'disfigured' look to the animal. The condition was aggravated by the animals rubbing the irritating lesions. Constant rubbing led at times to bleeding. The bleeding material was infective and when it came in contact with the neighbouring skin set up new lesions. In spite of the best nursing and feeding that could be expected in a well organised farm, the affected animals became devitalized. In the order of severity of the lesions, the parts affected were shoulder, ears, throat, face, dewlap, neck, head, back and rump. In a few cases lesions were seen throughout the whole body including the external genitalia (Calf Nos. 4, 6, 24 and 40).

Treatment:—The affected calves were segregated from the healthy ones. They were kept in three pens separately. The calves were bathed with soap and water on the day of treatment. They were muzzled with ordinary country-made bamboo muzzles to prevent licking and scratching during the course of treatment and these were removed only at the time of milking and feeding. These muzzles had the advantage that the muzzled calves could freely ruminate and take water but could not lick themselves or other animals.

Thirteen affected calves were treated with three sorts of medicaments as noted below:—

First lot:—Calf Nos. 7, 9, 10 and 24. They were topically dressed with the following ointment every fifth day.

R/-		
Chrysophanic acid	...	1 oz.
Salicylic acid	...	2 dr. 40 grs.
Boric acid	...	2 dr. 40 grs.
Vaseline	...	1½ lbs.
M. ft. Unguentum.		

5 to 7 applications gave a complete cure.

Second Lot:—Calf Nos. 6, 12, 16 and 19. The following ointment was applied over the affected parts of the animals at an interval of four days.

R/-		
Chloral Hydras	...	10 gms.
Phenol, Crystal	...	15 gms.
Tr. Iodine	...	25 c. c.
Vaseline	...	1 lb.
M. ft. Unguentum.		

The calves were given 7 to 10 applications and they were all cured.

Third Lot:—Calf Nos. 4, 14, 25, 27 and 40. They were given an intravenous injection of the following iodine solution every fourth day.

R/-		
Iodum	...	20 grs.
Sodium Iodide	...	30 grs.
Sterile distilled water	...	1 oz.

This is stock solution of iodine. 3 ozs. of this was diluted with one pint of sterile distilled water and used for injection.

Each calf was given six injections of 40 c. c. of Iodine solution intravenously. No improvement was apparent.

Result:—In these three groups, group 1 recovered quicker and more completely. Chrysophanic acid is costly; but, still, it gave the best results.

Chloral Hydras also gave equally good results, but required a few more applications.

Iodine injections did not prove effective, though they have been highly spoken of by many practitioners. Much care is needed to give it intravenously as severe local reactions are met with if the iodine solution gets into the perivascular tissues.

In my opinion, a local application of the drug is needed to produce more effective than parenteral administration. The ointments used in the first two batches gave quicker and better results because the drugs came in direct contact with the affected lesions by the vigorous rubbing.

The calves that were treated unsuccessfully with iodine solution were given a local dressing with Chrysophanic acid ointment. They were completely cured after 5 to 7 applications.

Acknowledgement.—The writer wishes to express his gratitude to Mr. G. B. Singh, M.R.C.V.S., Director of Veterinary Services and Mr. B. Rath, Investigation Officer, for their kind advice and help given in the treatment of these cases.

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FREAK OF NATURE
A CASE OF SOLIPED BULL.

BY
G. C. KALE, G.B.V.C.,
Veterinary Surgeon, Dharwar, Bombay.

What may be considered as an exceedingly rare specimen of a case of Soliped Bull is illustrated in the enclosed photograph which was taken through the kind help of Mr. G. R. Kulkarni, Veterinary officer in charge Goat-virus sub-depot, Dharwar. The bull was brought to the hospital on 28th December 1947 for castration by the owner. It was purchased by him in the local cattle market about six months back. The parents of this bull are in Morab, about 15 miles from this place and there is no abnormality about them.



It would be noticed from the photograph that the hoofs are uncleft and solid only in the front legs while they are cleft and natural in both the hind legs. The gait of the animal is for all practical purposes normal.

This is the solitary case-I have met with in my practice of 28 years' and I am sure it will interest my brethren in the profession.

**BOVINE NASAL SCHISTOSOMIASIS-A RECORD OF
TREATMENT CARRIED IN DHARWAR DISTRICT IN 1942-43**

BY
G. C. KALE, G.B.V.C.,

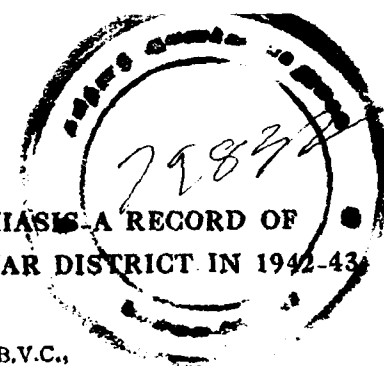
Veterinary Assistant Surgeon, Haveri, (Now At Dharwar).

Introduction :—The disease is very greatly prevalent in Haveri, Hangal, Hirekerur, Ranebennur and part of Bankapur Talukas of the Dharwar district. In most of the villages in Hangal Taluka, not less than 25% of the cattle population is affected with the disease. In these villages, ponds, pools, and the river Wardha where the village cattle are watered, are the main sources of infection. These waters are infected with snails of the genera *Helix* and *Indoplanorbis Exustus* which are the intermediate hosts of the parasite *Schistosoma Nasalis*. Animals pick up infection with the cercaria of *Schistosoma Nasalis* while drinking water from them.

Affected animals were treated by the writer and some of his colleagues in the past with Tartar Emetic in the Dharwar and Belgaum Districts. But the treatment was not given systematically until complete cure was effected, mainly due to absence of co-operation from the cattle owners.

Subsequently, Mr. R. N. Naik, the then Veterinary Investigation Officer, Bombay Province, under instructions from the Director of Veterinary Services, Bombay, first took up a systematic experiment to treat the cases of Nasal Granuloma by the intravenous injections of Tartar Emetic in Shirbadagi, a village in Haveri Taluka in my charge, in the year 1939. The results obtained by him were very encouraging. I had an opportunity to check the results of the treatment carried out by him and the whole village was thankful to the Department for having cured their valuable animals. They treated the ponds with Cupri-Sulph and thus the infection was controlled. This gave me an impetus to start the work in some other centres, and this was followed up by me in my dispensary, as a routine course, according to the instructions given to me by my colleague Mr. R. N. Naik. The results were satisfactory. With the permission of the Director of Veterinary Services, Bombay Province, I took up the work independently in four villages, where the people, after seeing the good results of the experiment carried out at Shirbadagi, were very eager to get their animals treated.

Antimony Tataratum Solution :—This was prepared according to the instructions of the Veterinary Investigation Officer, by dissolving 60 grs. of Tartar Emetic in 65 c.c. of distilled water, which yields a 6% solution. The solution required every day was prepared afresh, sterilised on a water



JL
KZ m2, N24
N48.21.5

bath and filtered before use. The dose of the solution given intravenously was 1.635 c.c. per 100 lbs body weight, and this was given for six consecutive days.

The injections were given with a 20 c.c. Record syringe using a fairly long 3" needle and taking aseptic precautions to see that there was no subcutaneous infiltration of the solution. All the injections were carried out in recumbent position except in a few docile animals, which received the injection in standing position successfully without any untoward results.

In all 145 animals were subjected to the treatment in 4 villages, viz. Devagiri (34), Sangur (58), Singapur (28) and Benchihalli (25).

These villages had a number of cases affected with the disease for periods ranging from 10 to 15 years. While carrying out the treatment, the writer once through oversight, injected 7 animals with double the strength of Antimony Tartarate in the same quantity of water; fortunately none of these animals showed any toxic symptoms of the drug. These were not injected the next day, like the other cases, but on the third day along with others.

To avoid mortality due to the cumulative action of the drug, the author went very cautiously after the 4th injection. At Devagiri, he gave the full course of treatment for the 34 animals without any ill effect. In the other villages which were taken up subsequently, all the animals had more than 3 successive injections: after that, on account of the irregularity on the part of the owners, only a few animals were given the full course of treatment. Majority, however, had 3 to 5 injections. Even with this incomplete treatment, all animals, except a few chronic ones, showed satisfactory results.

Out of 145 animals, only 12 showed dullness and went off feed after the 3rd or 4th injection. There was 1 death at Sangur, and 2 deaths at Benchihalli. All these fatal cases had only 4 injections and on the 5th day they died suddenly.

Results:—The results of the treatment were checked by me after about 5 months. Cure was noted in 90% of the treated animals. The villages who were until now under the impression that the disease was an incurable one were quite satisfied with the treatment. The animal too began to pick up conditions as time went on. Consequently, some cultivators in these villages used to purchase affected animals at a low price, from interior villages, get them treated at the dispensary, and, when cured, sell them for a profit.

General remarks:—As the source of infection has been proved to be the snails of the genus *Indoplanorbis Exustus* in the ponds used for watering the animals, it will be of more advantageous to destroy these

snails by treating the ponds with Copper Sulphate and break the life cycle of the parasite *S. nasalis*. The ponds should be treated once a year after the rains. If this is done for about 3—4 years regularly, the writer is firmly of opinion that the disease can be stamped out in a very short time. A scheme for the treatment of affected animals must also be seriously taken up simultaneously, in the interest of dumb animals, as an aid "To grow more food campaign" and to preserve the health of the cattle, which is the national wealth.

Acknowledgements:—The writer is indebted to Major E. S. Farbrother, M. R. C. V. S., Director of Veterinary Services, Bombay Province, Poona, who allowed him to carry out the experiment independently and also to Mr. S. R. Chadha, M.R.C.V.S., the then Disease Investigation Officer, Bombay Province, Poona, who personally checked the results. He is also very thankful to Mr. R. N. Naik, G.B.V.C., now Bacteriologist, Bombay Veterinary College, for helpful instruction and to Mr. G.R. Kulkarni, G.B.V.C., (now Officer, I/C Goat Virus Sub—Depot, Dharwar) for rendering technical assistance at Sangur and Singapur, when the above course of injections were carried out in 1942.

SPIRITUS METHYLATUS IN YOKE GALLS

BY

F. C. BHUYAN, G.B.V.C.,

Veterinary Assistant Surgeon, Nowgong, Assam.

In Assam, Yoke gall and inflamed neck is the commonest affection of draft cattle and buffaloes. It is caused mostly by 'bad yoke' and is met with in all seasons of the year. It causes great dislocation of work to the agriculturists to whom bullocks are the chief source of power. An effective treatment of these cases of yoke galls is always sought after so that the animals are brought back to work in as short a time as possible. With this object in view, during the last three or four years, I have used Spts. Methylatus in over 25 cattle and buffaloes with very satisfactory results. Nearly 75 per cent of the animals were cured and rendered fit for work in a surprisingly short period of time. And therefore I am recording my experiences below with details of the cases treated.

The first case was a cart he-buffaloe with a big inflamed neck as big as a cocoanut. It had resulted from carting a heavy load over a Kacha road for a distance of about 20 miles. The yoke region was very much inflamed, hot and painful, as is usually in these cases.

Treatment:—I injected Spts. Methylatus along the base of the inflammation in two places in doses of 2½ c.c. at each place and asked the owner to keep the animal at rest for atleast four days. When examined on the

fifth day, the inflammation had become reduced to one-third and almost all the pain had disappeared. The animal could bear some pressure on the part and it was also able to move the neck fairly freely. No further treatment was given and the owner was asked to get the animal for a fortnight. By this time, all the inflammation had subsided and there was no trace of the original trouble. The animal was put to work after that period and there was no recurrence.

This first case gave me encouragement to try the treatment in other cases. As mentioned already, 35 animals were treated in this way. Only one injection was found sufficient; a few cases however required a second injection after 4 or 5 days. The dose of the Spts. Methylatus varied according to the size of the animal, and the extent of the inflammation from 1½ to 2 c.c. in bullocks to 2½ to 3 c.c. in buffaloes given on each side of the inflammation. The treatment was uniformly successful in all cases, except in six cases. In these cases, suppuration had taken place already and the failures were therefore due, in my opinion, to this complication.

This line of treatment has been found by me to be the best I have tried all along and I wish my professional brethren give it a fair trial and publish their experiences in the columns of this *Journal*.

This line of treatment may also be worth a trial in affections of a similar nature on the back of the elephant called "Marag" which is caused by the bad 'howdah.'

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(Volume XXIII)

ACCOUNTS OF THE I. V. J.

	Rs. A. P.	Rs. A. P.	Rs. A. P.
To Opening Balance			
Fixed Deposit as on 1-6-46	5,000 0 0		5,867 8 7
Cash in hand	411 3 11		1,277 5 0
Subscription	...		480 0 0
Advertisement	...		880 0 0
Reprint of old issues	...		123 0 0
Interest on Fixed Deposit	...		10 8 0
			25 0 0
			1,000 0 0
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		326 10 2	
			4,326 10 2
			13,989 15 9
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20, Thambu Chetty Street,
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18th March 1948.

K. GOPALKRISHNA RAO,
Registered Accountant & Auditor.

Correspondence

[The views expressed in letters addressed to the Editor represent the personal views of the writer and must not be taken as expressing the opinion or having received the approval of the A.I.V.A.]

Sir,

IMPROVEMENT OF LIVESTOCK IN TANJORE DISTRICT

The Tanjore District, rightly known as "the Granary of South India" could enhance her reputation by improving her cattle. For an intensive and extensive agricultural district like Tanjore, cattle are the pillars of prosperity cannot be maintained if the equilibrium between land and animal is upset by unequal emphasis or attention of one and neglect of the other. The present day craze to bring more and more land under the plough is robbing the already semi-starved cattle of the little grazing ground that is available and this District stands a chance of becoming "a land with no cattle". Such a catastrophe can be avoided and I therefore propose to give a short survey of the District and its cattle with suggestions for improvement.

The Tanjore Delta lies in the temperate part of the tropical zone, with plenty of rain from October to January and a few good showers in the summer months. Except parts of Tanjore, Pattukottah and the whole of Arantangi Taluks and the Vedaranyam forests of Tiruturaipundi Taluk, the District is an extensive water logged area. With the further expansion of the Cauvery-Mettur project, a large part of the day Taluks also have come under wet cultivation.

According to the census of 1944, the livestock population is follows :-

White Cattle		Buffaloes	
a. Breeding bulls	2,408	a. Breeding bulls	1,896
b. Male stock	4,34,731	b. Male stock	43,394
c. Female stock	3,26,301	c. Female stock	1,34,115
d. Young stock	2,30,955	d. Young stock	69,837
Total	9,94,395	Total	2,49,342

Sheep 1,70,032; Goats 3,88,666; Horses 1,595; Donkeys 1,476.

A good percentage of the cattle of the District is of a mongrel type. They are grossly underfed and overworked. Consequently the work turned out by them is poor. The milk yield is very low, scarcely enough to feed the young calves. In addition to these mongrel cattle, there are a limited number of cattle belonging to the Umblachery and kindred breeds. These are indigenous to this area. If these animals are well cared for, there is no doubt, they will excel all the other breeds in utility.

Condition of the soil and water :—The soil of the District has been very much depleted of its calcium and phosphorus by the continuous and intensive cultivation with practically nothing added to make the loss except what nature has been pleased to add. The water is wholesome and good since the main service is from the branches of the Cauvery.

Fodder and food-stuffs :—"Communal grazing consists of land to which everyone in the village has an actual or an accepted right. This comprises of communal lands set apart for the purpose of unassigned waste land, of tank beds, the sides of the drains, roads and other perumbokes—usually also of harvested wet lands and of dry lands which have been left fallow" says K. W. Littlewood in his "Livestock of South India".

It is interesting to note, that in this District, though grazing is resorted to in places where everyone has a common right, almost all the abovementioned sites are not available for grazing. Under the Grow-more-food campaign, no land within the reach of canals is allowed to mean waste. Even the high-level uncultivable lands have been brought under cultivation. The rich river bunds are used for the raising of profitable cash crops like bamboo and casurina. In Pattukkottai taluk alone these crops are raised over about 4390 acres.

During pre-war days the wet fields after harvest were available for grazing from January to June. But nowadays, even these months of mercy have been snatched away from the animals. The ryots have taken to the cultivation of green and black-grams, green manure, etc. etc., in pursuance of the "Grow-more-food campaign".

During the agricultural season the cattle are tied up in their sheds or they are taken along pathways and road sides in search of grazing which for all practical purposes, is nothing. Their main feed consists of straw. This is supplemented by cotton seed, oil cake and rice bran in the case of draught bullocks and good milch cows. The plough cattle are given a limited ration of these during the ploughing season. During the off season these and the rest of the cattle have to depend only on paddy straw. No attempts have so far been made to grow fodder crops of any kind.

As a result of these factors, the cattle of this District suffer from mineral and nutritional deficiencies—and fall an easy prey to contagious and parasitic diseases. Their growth is stunted, and their bones are fragile. The heifers do not come to heat till they are about six years of age. Twenty percent of these do not conceive at all and those that conceive do not bring forth more than one or two calves in their life time. Their progeny on the whole is poor. The interval between successive heat is about three to four years. Freaks of pregnancy are not uncommon so also cases of congenital blindness, etc, etc.

Suggestions for the Improvement of Livestock

Control of contagious and parasitical diseases:—Livestock improvement depends on the successful control of the contagious and parasitic diseases. As in other parts of India, the Tanjore farmer also depends on the quantity rather than on the quality of his animals for his agriculture. There is not enough fodder for these cattle. They are underfed and easily become a prey to all diseases. As we are in a position to control all cattle diseases the ryots need not maintain large numbers of cattle. Active steps must be taken immediately to this end.

Grazing facilities:—About four to five acres of grazing land is necessary for every animal but in this District, for every acre of waste as well as cultivated land, there are about 1½ animals on an average. The grazing facilities are very inadequate. Round about Thambikottai and in the dry parts of Arantangi and Pattukottai Taluks there are some tracts which can be converted into good pasture lands. Kolukkattai grass and fodder cholam can be raised in these areas as cattle fodder. The marshy tracts from Thambikottai to Adirampatnam can be converted into beautiful pastures if the land is properly drained by taking the canals direct to the sea. The land, when properly drained, can be turned out as a permanent pasture land. Some exotic grasses also may be introduced. The introduction of the paddock system of grazing in these tracts will prevent over-grazing.

Fortunately two-thirds of Pattukottai and almost the whole of Arantangi Taluks have not yet been brought under wet cultivation. The grow more food campaign in vogue aims at converting most of these lands for paddy growing. The irrigation aimed at, may be made use of for raising cattle fodder extensively and also for raising the various dry crops. Dry cultivation not only affords facilities for "Grow more food campaign" but also yields useful cattle fodder at a reasonable cost; Deep wells will have to be sunk in the dry tracts. This can be encouraged by subsidies. Letting in of the canals will go a long way in raising the sub-soil water level in dry areas.

Forest grazing for the delta cattle:—The big cattle owners of the district at the present day are forced to send their animals to the forests for grazing. This is due to their inability to find grazing for their cattle for almost six months of the year, when the fields are full with the paddy crops. Indian forests are over-grazed and it is mainly due to the letting in of numberless cattle on these areas without any systematic procedure. Grazing area will have to be calculated on the approved calculation of 4 to 5 acres per animal. Definite areas have to be marked out for the recognised breeders under permits in the above calculation.

Forest grazing should be reserved only for those cattle that are fit for breeding. These cattle will have to return to their native home, so that they may retain in them their adaptability to the paddy growing deltaic area. Under proper planning of agriculture, grazing facilities will be available for these cattle in their native lands from about February to June (the fallow season).

Control of cattle food movement:—This is a deficit district in point of concentrated cattle food. It should therefore be able to import the necessary quantity from outside. This District exports a considerable quantity of rice-bran and also straw to the adjoining districts, States and also to Ceylon. Statistics about the total output of bran in this District and also the quantity of exported to outside areas are not available at present. The proper preparation and preservation of the straw and the necessity to limit its exports calls for immediate action. Careless preparation and stacking of the same leads to much waste of this material and creates much dietetic trouble in animals when fed with. This District exports also a considerable quantity of cocoanuts and groundnuts.

The two reasons that can be put forward for the little interest shown in the growing of cattle fodder crops are the levy of kist and the indifference shown by the mirasdars in the scientific and economic maintenance of their cattle. The removal of kist will certainly induce the ryots to take to the growing of cattle fodder, so essential for the improvement of the livestock of the land.

Doing away with the surplus useless stock:—The call to do away with India's surplus useless cattle, has been voiced by one and all interested in livestock improvement. I do not believe that this procedure can ever be counted as "killing the goose that laid the golden eggs". India has one-third of the world's livestock population. She can very well part with her useless cattle, in exchange for food grains. This procedure will develop a big industry. We stand in need of enormous quantities of bones for manure as well as for cattle feeding. The hides of these animals will also be a valuable asset to India.

Selection of breed and stock raising:—The importance of selecting the foundation stock in a certain area and maintaining it with due consideration for the climatological conditions that may exist in that area are well known.

Livestock improvement work at present in vogue in this district consists of introduction of Kangayam bulls under the District Board contribution scheme and Government premium scheme and the Umblachery cattle breeding activities. The Umblachery breed thrives well on meagre rations and is a hard worker and swift runner. There are other breeds like Komal,

Karapidagai, etc., which are equally good, and which are also akin to Umblachery. Any deterioration that may be noticeable in this breed has been solely due to the neglect and want of proper care and management. The demand for good cattle in the district can be met only by improving this breed by careful selection and breeding and this can be done by opening cattle breeding stations in the District and by organising the Kidai system. The army personnel in the District can be organised to undertake stock raising on a co-operative basis with subsidy from Government. In the whole of this District there may be 100 pure Umblachery bulls and a good number of female stock of this breed at present. Though this breed cannot be termed as a milk type some of these cows have yielded from ten to sixteen seers of milk per day.

The Kidai system is a system which is peculiar to this District and has been in existence for a very long time. Owners of good bulls collect the cows in the locality during the off cultivation season and move from place whenever grazing facilities are available. This system could profitably be extended and modified as follows:

1. Farms with extensive grazing areas should be established in the areas described previously.
2. Only pure Umblachery bulls should be made available for service.
3. Instead of collecting cows indiscriminately, Veterinary Assistant Surgeons should be deputed to visit the villages and select only the animals fit for breeding purposes.
4. The cows should be registered and tattooed or otherwise marked for easy identification.
5. Such of the cows that belong to owners who are willing to leave the cows permanently in the farms can be retained. In exchange the owners may be given all the male progeny that may be born at a minimum cost.
6. A small fee for the season may be collected from those who want their cows back. These cows should be re-admitted into the farm next year only after inspection.
7. A limited number of pure cows should be maintained permanently at the farms for producing good breeding bulls.

Artificial Insemination may be undertaken to overcome the paucity of breeding bulls. Many cows come into heat after the rains, when good pasture becomes available and it should be possible, in farms suggested above to impregnate many cows at a time by artificial insemination. There is no doubt that, given the proper equipment and facilities, it could be a success here also as has been found in other countries.

The present high demand for milk and milk products is such that we cannot hope to meet these needs by any intensive improvement of local breeds for many years to come. Hence the maintenance and improvement of the available foreign breeds and Sindhis in this District has to be considered. About 600 Cross-bred cows and Sindhi cows and a few cross-bred English and Sindhi bulls are available at present. The neglect of the animals, especially of dry cows by their owners, has resulted in their rapid deterioration and the only practical way to solve this is to start a Salvage scheme in this District on the lines similar to the Madras City Dry Cows Salvage Scheme. The dry tract available in Tanjore Taluk especially the Vallam area can very well be utilised for this purposes. It is necessary to emphasise in this connection that the local indigenous stock other than Umblachery has to be graded up by Sindhi blood. We cannot ignore the poor man's buffaloes to meet the milk demands of the public. Most of the milk products are only derived from these cattle in the poor man's as well as in the rich man's home. These semi-aquatic animals thrive very well in these District areas. We may improve the stock with the introduction of Murrah bulls. We have to bear in mind at the same time that we should not grade them to a high level.

Mannargudy, }
Tanjore Dt. }

GEORGE EBENEZER,
Veterinary Assistant Surgeon.

A VETERINARY COLLEGE FOR ASSAM

Sir,

I request the favour of your kindly publishing the following in your esteemed paper.

It is reported that nearly 70 M.L. As signed a pledge and demanded the Government in November, 1947 that the proposed Veterinary College to be located in Nowgong, and the Government consented to it. Accordingly the Hon'ble Minister incharge deputed the Veterinary Director during last Muharram holidays to make necessary arrangements which the Director did, as the Nowgong public gave all required facilities for starting the College. The first-Year Class was to start from 1st February, 1948 in the College.

But at long last the curtain has dropped. It is extremely painful to learn that in the nick of time our Govt. has referred the matter to the Central Government. It is extremely difficult to understand the real intention as to why the Govt. has referred the matter in the nick of time to the Central Govt.? Is it ingenuity of our Hon'ble Finance Minister (who declared in Boko Speech that the Veterinary College would be starting at

Gauhati) to waive the whole project? Or, is it only because of the fact that there is neither provision of a Veterinary College in Post-War Scheme, nor any provision for imparting Veterinary education in the Gauhati University? It is to be noted here that East Bengal Govt. has already started a new Veterinary College at Comilla from October, 1947 to train their Veterinary Doctors.

Now the Govt: owe an explanation to the public how they are going to utilise over 40 lacs of rupees allotted to the Post-War Scheme of which practically 2 years have already gone and allotted money is also lapsing without materialising a single project for want of trained Veterinary Doctors. Besides this we are surprised to find in Grow More Food Campaign nothing is done towards the provision of adequate Veterinary aid and to improve the cattle which are the main implement of the cultivators, and without good plough bullocks the whole campaign will nip in the bud.

Further it is reliably learnt that the Post of the Superintendent of Veterinary Vaccine Depot Gauhati, lately sanctioned, is going to be filled up by a non-Assamese in superseding the claim of deserving qualified Veterinary Doctors.

Yours faithfully,

Nowgong, }
1-3-48. }

RATNA KANTA BARAH, B.L.,
Pleader.

Abstracts

Indian Cattle in America.—Several varieties of Indian cattle have been imported into the U. S. A., particularly from Gujerat. The animals are known in the U. S. as "Brahman cattle". The first import took place in 1850 to South Carolina, Later on imports followed to Louisiana. Out of climatic reasons, Indian cattle is nowadays used in the Southern States of the U. S., e.g., the coastal districts of Texas and in Florida. The animals are well adapted to the climate prevailing in this part of the world and stand heat extremely well. They are indifferent to insect pests. They are good feeders and propagate regularly. Other writers comment on certain drawbacks of Indian cattle. Lately, however, much has been done to improve the race by cross-breeding to increase the unpopularity as animals for agricultural work. (C. H. Herweijer, *Nederlandsche Indische Bladen Voor Diergeneeskunde*, October 1947).—Dr. Br.

Streptomycin in Experimental Infections and its Possible use in Veterinary Therapeutics.—By Alfred G. Karlson and William H. Feldman (*Jour. Amer. Vet. Med. Assoc.* Vol. CX. Page 63-70.)

The success of penicillin has stimulated intensive search for other antibacterial agents and the discovery of Streptomycin was the result of organised efforts by Waksman and his colleagues to find an antibiotic substance, capable of exerting its effect on Gram-negative bacteria and acid fast micro organisms. The authors have described the characters, method of standardization, dosage, mode of administration and experimental studies of this new antibiotic from the available literature. The role of Streptomycin in Veterinary practice was discussed briefly.

Streptomycin has been pointed out to be having a bacteriostatic action on a wide variety of bacteria *in vitro* in low concentration. Among those of importance in animal diseases are the tubercle bacillus, members of the Salmonella and Shigella groups, Staphylococci, and hemolytic streptococci, *Brucella abortus*, *Actinomyces bovis*, *Bryspelothrix muris-ptica*, *Bacillus anthracis*, and *Pasteurella tularensis*, *Malleomyces mallei* is found to be quite resistant to Streptomycin *in vitro* and this drug has apparently limited activity on spore-forming anaerobes. Experimental trials in *Tularemia*, *Brucellosis*, *Leptospirosis* are reported to be quite encouraging. This antibiotic has been found to be not active against fungi, *Trypanosoma equiperdum* and parasites of avian malaria. It had no effect on the few viruses tried and had not inactivated tetanus toxin. Clinical experiments of this drug in *Tuberculosis* have so far been reported to be very successful.

The authors preface their discussion of the role of Streptomycin in Veterinary Medicine with a plea of caution of the wide gap of knowledge concerning chemotherapeutic agents and their use in animal diseases. They point out that much of the information is borrowed from experience in human medicine, without being critical of the anatomic and physiologic differences among mammals, and that very little is known about the dosage, absorption, toxicity, elimination and effectiveness of some of these new agents in animals. They deprecate the practice of trial-and-error method without adequate experimental data. The authors emphasise that the control of infectious diseases in domestic animal should be based primarily on prevention and which requires the application of hygienic principles first and immunologic procedures secondly.

It is pointed out that one of the limitations of the use of Streptomycin in Veterinary practice is requirement of frequent dosage to maintain high blood levels. This may not be of importance in hospitalized cats and dogs, but for farm animals it is obviously not economically feasible. The apparent ease with which certain micro-organisms acquire resistance to Streptomycin

is another important factor to be considered in treating transmissible diseases in animals.

Barring all these limitations, the drug is suggested to be useful to treat, valuable animals from bovine brucellosis although the experience in human beings suggests that the chronic form of the disease does not respond satisfactorily to streptomycin therapy. The high concentration of this antibiotic in urine suggests that pyelonephritis in cattle may be effectively treated with streptomycin after suitable bacteriological examination. *Actinomyces bovis* is inhibited by streptomycin *in vitro* and *Actinobacillus lignieresii* being Gram-negative, it may also be susceptible to this drug. But the granulomatous nature of the disease would suggest a long treatment with an adequate concentration or such treatment combined with surgical intervention.

The slow rate of absorption from the intestinal tract by oral administration makes the drug suitable for extensive application, despite its high cost, in poultry practice as a prophylactic measure against common diarrheal diseases of chicks and poults. Streptomycin has been pointed to be a valuable adjunct to penicillin in the treatment of mixed infections of bovine mastitis especially when staphylococci are present, and in the acute and dangerous types due to gram-negative bacteria. The alkaline reaction of milk from the inflamed gland is suggested to be a suitable medium for the activity of this antibiotic.

Since the supply of the drug is very limited, the authors suggest that the antibiotic should be made available only to those group or groups of workers who, by virtue of experience with a given disease, are best qualified to evaluate its use and disseminate the information thus gained to the profession to provide the basic knowledge for its proper use. (D.K.M.)

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Review

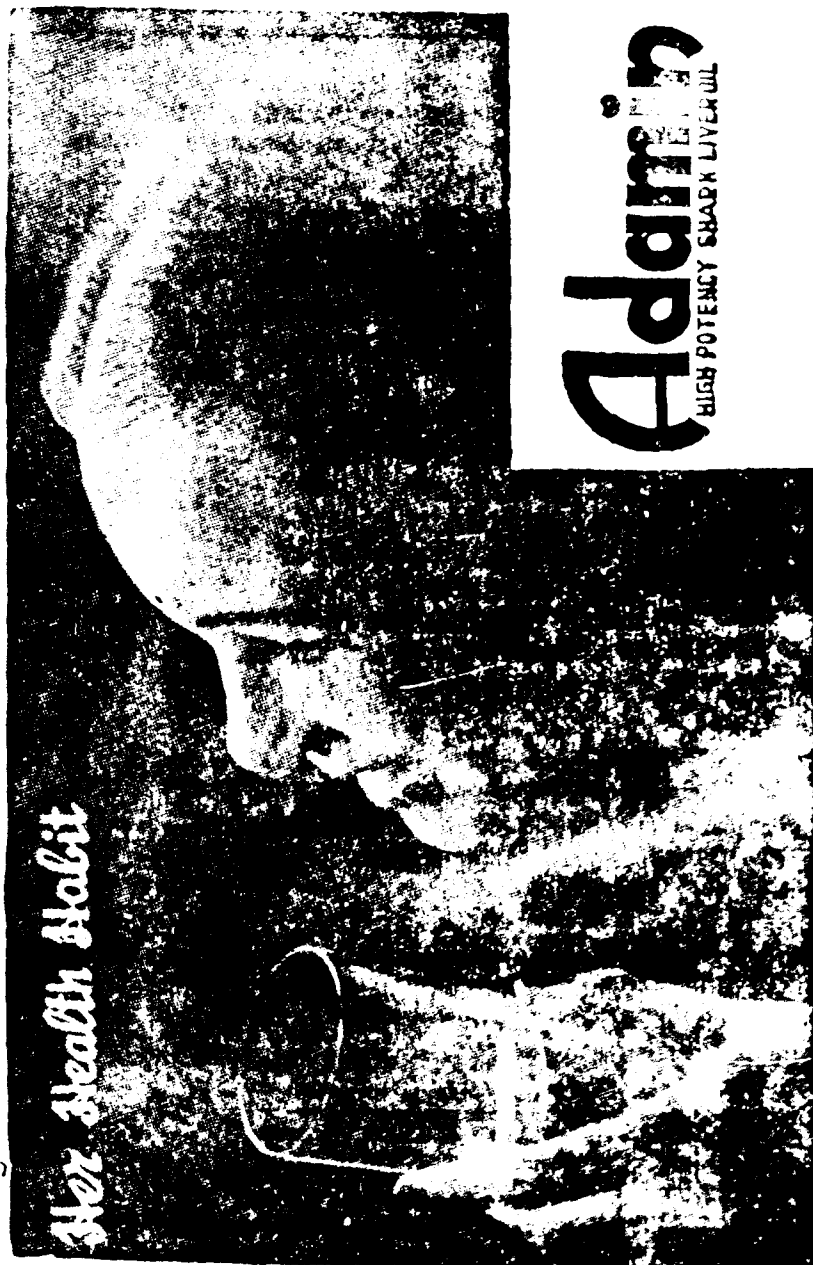
DISEASES OF POULTRY.—W. P. BLOUNT, Ph.D. (Edin.), F.R.C.V.S. F.R.S.E. Pp. xvi + 562, 116 Illustrations. *Publishers Messrs. Bailliere, Tindall & Cox, London, W.C. 2. Price 21s. net.* [Copies can be had from the Editor, I.V.J.]

This is a timely publication ably got up by Mr. W. P. Blount and serves to remind us of the growing interest which the Veterinarians all the world over are taking in Poultry Development. A number of contributors have helped in this publication and, as each is a specialist in his line, the value of the book has been greatly enhanced thereby.

The book has been divided into six parts. Part I deals with Field work and includes chapters on feeding, breeding, hatching and laying trials. This part of 134 pages contains valuable information on the various aspects of Poultry Husbandry and should prove of great value to the readers. Part II has chapters on Anatomy and Physiology of the bird and is ably written entirely by Mr. W. P. Blount himself. Part III is an introduction to diseases while Parts IV and V deal with systematic and specific diseases. Part VI gives us a valuable glimpse of Poultry Industry in all other parts of the world.

Thus the book deals with all aspects of Poultry in Health and Industry and is a very highly valuable contribution to a long neglected aspect of Veterinary Science. It should be in the hands of all students and practitioners alike.

The photographs are excellent: and 'although the publication is in complete conformity with the authorised standards', we are very pleased to find that the get up is in conformity with the usual high standard of the well known publications. (R. S.)



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