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(THE JOURNAL OF THE ALL-INDIA VETERINARY ASSOCIATION)

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(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 (S. INDIA)

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NOTICE

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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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Obituary

N. R. Rajaratnam, G.M.V.C., P.G. (Edin.)

We regret to record the untimely demise of N. R. Rajaratnam, Veterinary Assistant Surgeon, Saidapet, Madras, on 4th May 1942. He leaves behind him his widowed wife, one daughter, three sons and a large number of friends to bemoan his loss.

We tender our heartfelt condolences to the members of the bereaved family.

M. P. Kanniah Naidu, G.M.V.C., retired Veterinary Assistant Surgeon, Madras, died at Palamaneru on 14th June 1942. We tender our heartfelt condolences to the members of the bereaved family.

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(The Journal of The All-India Veterinary Association)

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THE ALL-INDIA VETERINARY ASSOCIATION

PRESIDENT'S GREETINGS AND BLESSINGS TO THE JOURNAL

Appeal to All Members of the Profession

MY DEAR SRINIVASA RAO,

On the occasion of the entry of the *Indian Veterinary Journal* in the Ninteenth Year of its life, I, as the President of the All-India Veterinary Association, wish to convey through you my greetings and blessings to the *Journal*. May God give His protection to the *Journal* to enable the celebration of its centenary. I know very well that you as its Editor have been carrying on its publication creditably championing the cause of our profession for the last eighteen years. You have appealed from time to time to the Provincial Associations to co-operate with you for its success and I join with you in the appeal to all the Members of our Profession to subscribe and contribute interesting and instructive articles to the *Journal* so that it may be converted into a monthly one.

Every profession is progressing with a view to keep pace with the fast moving times and it is therefore incumbent on all of us to bestir ourselves and rally round the only *Journal* which is fighting for our cause. 'PROGRESS' should be our watchword.

Before concluding, I ask all the Members of the Profession to join with me in the prayers for the speedy termination of the War, with a just and lasting peace and success of the Allied Forces.

Wishing every success to the *Journal* and with kindest regards,

Yours sincerely,

N. D. Dhakmarvala

President, A.-I. V. A.

General Articles

THE POULTRY INDUSTRY NEEDS THE VETERINARY PRACTITIONER*

BY

J. HOLME MARTIN, PH.D.,

Chief of Poultry Department, Purdue University, Lafayette, Indiana.

Coordination, integration and cooperation are words that are being heard a great deal during these times of national defence. However, the words apply no less aptly to the poultry industry and certain situations that exist therein. We are all aware that for the past ten years poultry diseases have taken an undue toll from the poultry industry. During this time the expenditures for medicines, drugs and remedies have mounted along with the mortality. It would be unfair to say that the two were necessarily related, although they have been concurrent. Little good has been done by the various crusades that have been launched against remedies and medicines. Perhaps these crusaders have been expecting too much from the poultrymen. All they should do is to look elsewhere in our human population. They will see that the medical profession's crusades against patent medicines and the so-called healing arts still have much territory to cover, for we have many unscientific approaches in our social order, even to the human disease problem. It is only natural that the poultryman turns to the one who leads him to believe that a solution is at hand. The practitioner's ethics do not permit

* Presented at A. V. M. A. Meeting, Indianapolis, Indiana, August 12, 1941. Reprinted from A. V. M. A. Journal, March 1942.

him to inform the poultrymen through any advertising medium of the good the veterinarian could do the poultry flock. The approach of the practitioner is through example. I regret to say that too frequently we have situations where the practitioner has indulged in ineffective medication. In some cases he has been known to consummate his call with the sale of some drug or remedy for administration to the flock. Perhaps in no class of livestock has medication proved to be of as little value as with poultry.

Lags

We are hearing about certain lags in production, in industry and in the training of men for tasks connected with defence. At the moment I am particularly concerned with the threefold lag in the poultry industry as it is related to the veterinary profession. First, I wish to refer to the lag of you practitioners in learning about the accurate diagnosis and control of poultry diseases, especially the differential diagnosis of certain diseases of virus and nutritional nature. All too frequently in certain cases the local hatcheryman, the county agent or the poultry breeder *is* better informed in certain fine points of differentiation than the local veterinarian. This is in spite of their lack of fundamental knowledge in pathology and is frequently associated with the lack of interest, thought and study on the part of the practitioner. On the surface, this appears to be a sharp criticism, but we must face the facts if we are to solve the problem at hand. Since we are primarily concerned with the good that can be done by the entire profession for the poultry industry, we had just as well "call a spade a spade".

A second lag that I wish to mention is that of the poultry industry in learning that the veterinary profession has a real service to render to the poultryman. He must think of the practitioner not as someone who might cure his sick chickens, but as one who can advise him on problems of disease control, hygiene and animal health. I am coming to believe that the Chinese philosophy of the practice of medicine might well be applied to our poultry pathology problem, namely, that the poultryman should pay the practitioner for keeping disease out of his flocks rather than for attempting to cure diseased birds.

All diseases run their natural course, and the practitioner can give the poultryman a much better understanding of the course of the disease in his flock. The industry is gaining confidence in the practitioner as he takes more interest in poultry diseases, becomes more capable of meeting the poultryman's needs and is expressing this confidence by employing the practitioner at a fair fee when results are forthcoming.

The third lag I wish to mention is that of delayed diagnosis. At present, the poultryman does little about the problem of disease in his flock

until several weeks have elapsed and a number of birds have died. He does not get excited when the first one becomes sick, nor when he loses the third or fourth hen. But finally, when ten or twelve have died, he becomes quite concerned. What does he then do? Here is a situation where an immediate diagnosis would be of untold value in controlling the spread of the infection. In case the poultryman is unaware of the help the local veterinarian could give him (all too many fall in this group) he consults his local hatcheryman, feed dealer, or perhaps the county agricultural agent. In some cases he sends a few sick birds to a laboratory for diagnosis. The shipment of these diseased birds not only may serve to spread the infection to healthy breeding stock in the same express car, but also serves to further delay the answer. When the diseased specimens arrive at the laboratory, the diagnostician may need several days to diagnose the case differentially. By the time the diagnosis has been completed and the information is available for the poultryman much of the trouble of consequence has already occurred. In many cases the resistant birds have recuperated and the more susceptible ones have died. Pardon my editorial insertion that it is my viewpoint that this is frequently what happens when a remedy, drug or medicine is thought to be effective with chickens. The remedy gets the credit for having cured the resistant birds, which probably would have survived had no medication been practised.

Diagnostic Laboratories

If poultry diseases are to be adequately controlled, these three lags must be avoided in the future, or at least the resulting damage to the poultry industry and particularly the flocks must be greatly lessened. The State diagnostic laboratories are designed to serve in controlling the last lag which I mentioned, namely, that of diagnosis at a central point by a veterinarian who has specialized in poultry pathology. However, most of these laboratories much prefer to have the diagnosis made in the field by the local veterinarian, who is familiar with poultry diseases and sees the entire flock and the environmental conditions. In such a case, the veterinarian then consults the specialist at the State laboratory only when doubtful or obscure cases occur. One big advantage of a field autopsy and diagnosis under the eye of a skilled local veterinarian is that the poultryman gets his answer immediately. Also the diseases are not tracked over the state, and the lapse of time to get the diseased birds to the central laboratory is avoided.

For diagnostic service and consultation the poultryman is only glad and willing to pay a fair and commensurate fee. Such a fee need not be large when only two or three hens, or half a dozen baby chicks are diagnosed at the veterinarian's office. Incidentally, the contacts made with farmers when diagnosing poultry diseases may develop friendly relationships which lead to

calls with other types of livestock. Indiana poultrymen, as well as poultrymen in other States, have responded to this type of service and are utilizing the services of a local veterinarian to aid them in avoiding the entrance of infection into their flocks. In other words, they are using the veterinarian as the pathological "detective" to tell them quickly if any suspicious cases happen to be carriers or are in the incipient stage of an infectious disease. Such a diagnosis warns the poultryman to be on guard for any particular infectious diseases, or in other cases, it tells him that the mortality he has been having is not due to a pathogen. The fact that the poultryman spends a dollar or two for some un-needed medicine whenever his flocks appear sick or he has lost a few birds indicates that he would be only too glad to invest as much or more in the service of the local veterinarian if he thought that he had equally as good a chance of solving his problems. You and I know that his chances of solving the problems are better with an adequate diagnosis, but we must get him to feel that way and agree with us.

Medicine Mindedness

I cannot refrain from mentioning at this point a tremendous drain on our poultry industry. I refer to the financial drain as well as a drain on the health of the flocks, represented in the expenditures or medicines and remedies which do not cure or greatly improve the situation in the flocks. It is reliably estimated that between 10 and 15 million dollars is spent annually for drugs, remedies and medicines other than the biologics of known therapeutic value. It is interesting to note that in certain sections in Indiana where we have veterinarians who have done considerable poultry practice that expenditures for such remedies by the poultrymen in these areas are at a low ebb. Observation indicates to my satisfaction that as the service of the local veterinarian improves in a poultry community, the expenditures for drugs, medicines and remedies decline and the general health of the poultry in that area is improved. While I have only a relatively small number of communities upon which to base this observation I feel quite sure that it is a sound trend and that many of you practitioners should take advantage of the need of the poultry industry for your services. In short, a large share of this 10 million dollar bill rendered to the poultry industry by the "medicine makers" belongs to you practitioners and is yours for the asking.

Real Service Needed

However, the veterinarian must have a real service to render if he asks for this expenditure, the remedy maker has mostly promises. Most certainly the poultry industry would be far better off if a large share of these millions were invested in services, particularly in diagnosis and advice regarding

flock hygiene. The poultryman resorts to questionable medication because of its immediacy and as a "crutch" to carry him over the lag of delayed diagnosis. He has, at least, doctored his mind while tiding his flocks over this situation. Frequently, the disease has run its course and the maximum loss has been incurred, or still worse, the infection has spread to the young stock or neighbouring flocks before the diagnosis comes to him and the essential practices are known to him. We should not condemn the poultrymen too much for this questionable medication, for I have visited in the homes of many friends, some of them professional people, and specifically several veterinarians, where I have found a large number of various drugs in the medicine cabinet. Perhaps these were only to take care of the situation temporarily, while the family physician was to be consulted later.

Poultry Practice Profitable

The fact that many general practitioners have built up a poultry practice in recent years indicates how willingly the poultrymen and farmers will turn to them with their poultry disease problems. Witness the interest that has been shown here in Indiana where the Purdue Extension Department employed a practitioner, specializing in poultry practice, who holds special extension schools on poultry pathology for practising veterinarians. These schools were held in two areas in the State, meeting two nights a week for eight weeks. During the sixteen lectures, practically all of the important poultry diseases were discussed in detail and many autopsies held. In numerous cases, the practitioner brought in diseased specimens from the field. Over 100 practising veterinarians have attended one or the other of these two schools; the average attendance at each of the schools running between 20 and 25 practitioners per meeting. These men would not have driven distances from 10 to 60 miles for an evening meeting unless they felt there was a real opportunity in the poultry field. Similar schools have been held in Michigan, in past years under the supervision of the extension veterinarian of Michigan State College. This phase of work has been developed in Illinois and two or three of the New England States.

Special Training Advantageous

Here is an appropriate place, I believe, to introduce a bit of testimony from one of our practitioners in Indiana, who has been attending these schools. This young practitioner graduated just a year ago and has now had one year in the field. Although he received his training at one of the leading veterinary schools he admits that his knowledge of poultry pathology was meagre. He feels, after attending this extension school, that he is much better fitted to render a service to the farmers and poultrymen of his area and that he is better able to cope with the present day needs. He feels that his alma mater made a mistake in not giving more training in poultry

pathology. Surely the opportunity will come to a number of the graduates of the veterinary schools to find one place or another to make use of poultry pathology, since our billion dollar poultry industry is scattered throughout the nation, and chickens are found on more farms than any other class of livestock.

Many veterinarians who thought there was nothing to poultry practice and had no interest whatsoever in the humble hen now find that it is a very desirable adjunct to their general practice, and they have actually learned to enjoy their contacts with poultrymen and hatcherymen. It is high time that we work together for the best interests of that billion dollar poultry industry. If we integrate our efforts, the whole situation will be greatly improved.

Lay Service Work Here to Stay

I wish to touch upon another phase of the poultry practice. It might be somewhat inappropriate for me, a layman, to speak of these matters before you practitioners, but I am one of those "fools who rush in where angels fear to tread." I refer to the matter of the rapid testing for pullorum disease and the vaccination for fowl pox by the poultryman himself. These are technics which are being learned well by the commercial poultryman or the hatchery helper. I say this with assurance, for I have seen many laymen do both of these jobs in a most effective manner. We all know that the "proof of the pudding is in the tasting" and there is no doubt that these programmes are actually working in the field where the service is being done by a well-trained layman. One of the leading professors in a Midwest Veterinary College said that he feels that the practitioner has many important contributions to make to the poultry industry in addition to vaccinating for fowl pox and testing for pullorum disease. He feels that in many cases these tasks can be passed along to the layman much in the same way that the physician passes much of his work to the nurse or medical technician.

I feel safe in saying that vaccination and rapid testing by the laymen are practices which are here to stay. Would it not be better that the local veterinarian find in addition to testing and vaccinating, place where he can perform services for the poultrymen and hatcherymen that cannot be performed by the laymen? However, there are and always will be many farmers who desire that the veterinarians do their vaccination and blood testing work. Many commercial hatcherymen and poultrymen do their testing and vaccinating because of the sheer cost of handling such large numbers of birds. There is much to be done by the practitioner in addition to these tasks, and his services are badly needed on these other problems,

particularly differential diagnosis and advice on hygienic practices. To many poultrymen rapid testing and vaccination are much in the same category that docking and castrating lambs, castrating pigs and dehorning cattle are to the livestock farmer. He has learned to carry them on to his own satisfaction and plans to continue them as general farm practices.

In closing, let me stress the fact that the poultryman has certain very definite needs that are not being met at present. These needs are particularly prompt, accurate, differential diagnosis, and secondly, definite, clean-cut, practical recommendations regarding the practice of animal hygiene and sanitation in the hatchery and on the farm. The poultrymen, like many others in our social order, have been turning to those who speak the loudest and boldest in their advertising for succour and relief. However, we see that he does not receive succour from the remedy maker, but is one (sucker), and the chief relief comes from being relieved of his hard-earned cash. The local veterinarian can do much to help correct this situation by assuring the poultryman that the practitioner, who *must of necessity* continue to serve those in a limited area, has a service that will lead to greater benefits. Through the avenue of sad experience the poultryman finally learns that treatment by the "short-gun" approach without accurate diagnosis is in the last analysis "quackery". Must each poultryman and hatcheryman learn this lesson the hard way? Would it not be far better for the industry to be aroused to the opportunity of investment in accurate differential diagnosis and subsequent hygienic practices in the light of autopsy findings?

I boldly condemn the practice of free diagnosis which is so frequently followed by the sale of an "intestinal antiseptic" or general tonic. The poultry industry realizes that it will get what it pays for and stands ready to invest in the services of a practitioner who "knows his poultry pathology". He ponders more deeply the diagnosis and suggestions for which he has paid, than he does the results of a "free" diagnosis.

There is no one more strategically located to perform the diagnostic service and guide the poultryman in the health problems of his flocks than the local veterinarian. I bespeak of you, co-operation in this matter, and I want you to know that many educational workers are constantly "dinning" the ears of the poultrymen and hatcherymen in regard to what they should gain if they, too, would accept the co-operation and services of their local veterinarian.

NUTRITIONAL DISEASES OF THE EQUINE*

BY

W. W. DIMOCK, D.V.M.,

AND

B. J. ERRINGTON, D.V.M.,

Kentucky Agriculture Experiment Station, Lexington, Kentucky.

Results of nutritional research in the past few years and their practical application are making us more and more conscious of the nutritional deficiencies from which man and domestic animals suffer. It is to be regretted that we have less factual knowledge concerning the nutritional requirements of horses than any other species of domestic animals. This is due partly to the high cost of conducting nutritional experiments with horses, to the gradual reduction in the horse and mule population, and to the fact that nutritional deficiencies have not been so obvious in farm horses as in other domestic animals. The extent of the problem is indicated by the evidence that many nutritional deficiencies of man and domestic animals are the result of a depletion or primary deficiency in the soils on which our foodstuffs are produced and it might well be added that so many horses and mules are not fed a hay and grain ration in quantity known from long years of experience to be required for normal health.

Minerals

The relation of calcium and phosphorus in the animal's ration and in its blood to those pathological formations of the osseous system such as ringbone, sidebone, spavin, and navicular disease, has received considerable attention. Many of the experiments, which have been conducted since 1907, have shown that a low calcium intake causes a general skeletal disease. The ratio of calcium to phosphorus in the feed has been found at fault more frequently than the actual amount of either mineral. A wide calcium-phosphorus ratio has been considered more harmful to horses than some other species of domestic animals.

In the United States, many of the recent observations on the calcium-phosphorus requirements of horses have been made on army animals. Greenlee[1] noted marked improvement in horses suffering from lamenesses after approximately one-third of the low calcium, native hay was replaced with alfalfa hay.

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* Presented at the joint meeting of the Southern Veterinary Medical Association and the Florida State Veterinary Medical Association, Jacksonville, Fla., October 27-29, 1941.

Reprinted from the "North American Veterinarian," March 1942.

To Kintner[2], who analysed the reports of others and last reported his own work in 1940, it appeared that the quality, density, or strength of the bones of horses is based on their mineral or ash content and that the mineral or ash content is influenced by the proportion of calcium to phosphorus in the animal's ration.

A wide calcium-phosphorus ratio has not always been found to produce skeletal alterations. Howell, Hart and Ittner[2] kept horses on a vitamin-A deficient ration, with varying amounts of calcium and phosphorus, for more than a year. They found that marked individual alteration occurs in horses but concluded that a calcium-phosphorus ratio as wide as 1 : 7 was not a serious factor in preventing normal calcium-phosphorus utilization and skeletal development.

The blood-serum calcium and phosphorus of horses vary but little from normal, even with quite wide variations in the intake of these minerals. In only a small percentage of cases can we detect faults in the amounts of calcium or phosphorus in the feed of horses, or pick out cases of lameness that are associated with abnormal amounts of calcium or phosphorus in the ratio as by blood analyses. Even with an unbalance in the calcium and phosphorus of the ration, these elements tend to stay within the normal range in the blood stream. Following abrupt changes in the amounts of these minerals in the ration, abnormal blood levels have been found.[4] The blood level then tends to return to normal on the same intake of calcium and phosphorus. The greatest danger appears to be in feeding an excess of either calcium or phosphorus, in which case the one in excess may cause a precipitation and consequent deficiency of the other element.

In acute skeletal diseases and in some special circumstances, both low serum calcium and inorganic phosphorus have been found.[4-6] Chronic cases of lameness due to skeletal defects are seldom associated with low levels of calcium or inorganic phosphorus in the blood serum.

As time goes on, no doubt, more accurate methods of measuring the effects of different levels of minerals and vitamins in the ration and in the body tissues will be developed. It should be remembered, however, that blood analyses are not always dependable in detecting calcium or phosphorus deficiencies of horses to the extent of their being the sole diagnostic evidence of disease. If the blood serum reveals a normal calcium and phosphorus, it does not necessarily mean that the animal's intake is absolutely correct, or that some of the tissues are not suffering from an unbalance of these elements. Normal variations often overly findings reported on recognised, abnormal cases. In many instances our knowledge of the blood chemistry of normal and abnormal horses is to-day not such, in

itself, as to enable an accurate, conclusive interpretation. Therefore, the clinician still has the responsibility of making the diagnosis and recommending the treatment.

As regards bone disease — examples, ringbone, spavins and sidebone — it might be well, in passing, to mention the fact that by many they have long been considered as hereditary. The U. S. Army Remount breeding stations, some state stallion registratian boards, and many breeders disqualify such individuals.

Vitamins

Reports on the vitamin requirements give little information regarding the needs of horses. In California, Howell *et al*[3] experimented with horses on a vitamin-A deficient diet. It required over one year on this diet to produce a characteristic syndrome of nightblindness, followed by keratinization of the cornea, respiratory symptoms, capricious appetite, weakness and death. Arthritis, with lameness, occurred in all cases. They considered that they did not have positive evidence that the joint involvement was primarily due to vitamin-A deficiency. If the ration does not contain yellow corn, succulent pasture, or properly cured hay, it is apt to be deficient in vitamin A. There is some evidence that vitamin A acts as a sort of precursor of vitamin C, especially in these animals that synthesize their own vitamin C. Horses are in this class of animals. The vitamin-C content of the blood cannot be increased by feeding ascorbic acid. At the Kentucky Experiment Station we have four horses that have been on a vitamin-A deficient diet for more than one year. Three of them produced foals the past spring. One foal died of pneumonia at 30 days of age. There is some possibility that this foal developed pneumonia through lack of vitamin A. One foal is very thin in flesh and small of bone, yet, in general, it appears healthy. The other foal has developed to fair size, considering the ration he and his dam have received. As all four of these animals were mares, they were bred last spring and three of them are now in foal. Only one has developed nightblindness after approximately one year on the vitamin-A deficient diet. This animal has remained in excellent flesh throughout the year. None of them have shown symptoms of ill health, although one of them is now rather thin in flesh.

Vitamin C

There is, as you know, a chemical test for vitamin C. There have been some reports (Phillips *et al*[1]) of good results in the treatment of bulls of low fertility with ascorbic acid content of the semen or blood in stallions known to be so-called "shy-breeders." In each of three instances, in which we analysed the semen and blood from groups of stallions in a stud where there was a "shy-breeder," the ascorbic acid content of some of those of high

fertility was high, while others in the same group were lower than the stallion of low fertility.

In our work on periodic ophthalmia, we have been examining the fluids of the eyes for vitamin C, and the spinal fluid of wobblers for vitamin C, in connection with our work on that disease.

From our work it is clear that the average, normal vitamin-C content of the aqueous fluid of the eyes is approximately 22 mg. per cent. In cases of periodic ophthalmia, the average vitamin-C content of the aqueous fluid was 9·19 mg. per cent. It is supposed to be responsible for some cases of cataracts in horses, the same as reported in man.

We feel that there is a possibility that the low vitamin-C content might explain the recurrence of ophthalmia, as vitamin C has directly to do with the permeability of blood vessels. The frequency of cataracts in periodic ophthalmia may be due to the low vitamin-C content of the eye fluids and the consequent upset in metabolism of the lens. This would further upset physiological functioning or metabolism of the eye. In as much as the vitamin-C content of the aqueous fluid apparently does not return to normal following an attack of periodic ophthalmia, the metabolism of the entire eye may suffer as a result. In some cases, where there is a change in the permeability of the blood vessels, as in purpura in the human, vitamin C has not effected cures, but vitamin P or citrin, which occurs naturally with ascorbic acid in citrus fruits, has effected cures.

In examining the spinal fluid for vitamin-C content nine normal horses gave an average of 2·22 mg. per cent. The average for eight wobblers was 1·19 mg. per cent. While the averages of the nine normal cases and the eight diseased animals are quite different, the spinal fluid of wobblers has not been consistently low in vitamin C. Some cases have been within what is considered the normal range. This is in agreement with findings in man. In medical literature low vitamin C has been correlated with infection. From our work it would seem to be correlated with inflammation but not necessarily with infection.

Intricate Relationships

Judging from information so far available, there is undoubtedly a very direct relation between minerals, vitamins, proteins and the endocrine glands and the more intricate metabolic processes of the animal body. The oldest known example is iodine and the thyroid gland. Thus, upon information which we now have, it is safe to conclude that in many of the clinically-apparent deficiency diseases of horses, a solution is not going to be brought about through the administration of any one particular element but rather that we are going to keep animals in a state of health through

the use of natural foodstuffs of a quality and quantity that will furnish the animal all the essential nutritive elements from the food which he eats. At least that should be the basis upon which we proceed wherever possible.

It is recognised that there are areas in the United States where certain essential elements are lacking in the soil; hence they are lacking in the hays and grains grown on these soils. In all such cases, it may be the most practical and economical procedure to furnish the missing elements in pure, concentrated form. There is a large area in the North Central portion of the United States, where animals suffer from an iodine deficiency. In Florida, Cobalt has been found to be one of the essential elements in which animals become deficient; also lime and phosphorus. In many other parts of the country—Texas, Michigan and Minnesota—the disease known as "pica" and "stump-sucking disease" is observed.

One of the first evidences of a nutritional disturbance in domestic animals is a depraved appetite. When horses gnaw the bark of trees, eat up board fences, such as we have in Kentucky, or chew the rails and fence posts in other parts of the country, it invariably means that the animals are not receiving a hay and grain ration that satisfies their every requirement from a nutritional standpoint.

I have always felt that horses that are heavily parasitized have a tendency to develop a depraved appetite. However, parasitism and malnutrition are so intimately associated that it is often difficult to tell where one leaves off and the other begins.

It is appreciated that essential factors, including minerals, vitamins, proteins and carbohydrates, may be deficient in the available foodstuffs in particular areas or that the best natural foods are not produced in these areas, and thus the only solution in such cases is to supply the factors lacking as a supplement to the foods that are available.

Adequate Natural Feeds

Nevertheless, as far as the animal industry of this country is concerned, the real and only satisfactory way to make sure that our domestic animals are properly and adequately nourished is to feed them on the natural foodstuffs grown on land that contains all the essential elements required by plants and animals. From what I have been able to observe and from what I have learned from others, I cannot help but feel that large areas in the south-eastern portion of the United States will never do well in the production of horses and mules and will never do too well in the maintenance of mature horses and mules until they have better pastures and grow more feed.

It seems to me that the most serious problem of nutrition of horses and mules in the greater portion of the south is the lack of feed, in both quantity

and quality. A horse should have good mixed hay, 50 per cent of which is clover or some other good legume. As a grain ration, horses should have yellow corn, oats and bran, with the addition of linseed oil meal, soyabean meal, or even cotton seed meal, so that the supply of protein will be adequate. There are many roughages other than hay that may be used to a good advantage. Increased production of those that can be raised most economically and the purchase from other sections of what is needed to balance the ration would be my idea of a practical solution of the major nutritional disease problem met in equine practice.

Where horses are on fairly good pasture during the grazing season of the year, they will be fairly well fortified to go through the winter on a more or less inadequate ration. When the common mineral elements (calcium and phosphorus) are deficient in the food available, they can be supplied very economically. Other elements, such as iodine, iron, copper, cobalt, sulphur and manganese, are also relatively inexpensive. Certain of the vitamins are now available in pure concentrated form or in products fortified with them. Their cost to-day may be somewhat high in proportion to animal values; however, with new developments for their production in quantity they will become cheaper.

Correct Diagnosis Important

As veterinarians, we are duty-bound to render such assistance as the condition seems to warrant when we find animals that are sick and in a run-down condition because of some nutritional disturbance. Most of the minerals and vitamins that are known to be essential for animals are available for use in those cases where they seem to be indicated. However interested as we are in the livestock industry of the country, we must not be satisfied to go on indefinitely and continuously, treating animals through the recommending of mineral supplements and the administration of vitamin concentrates and mixed bacterins when natural food will give better results. From the information gained in the years when autopsies were held in horses, it is well known how often horses harbour parasites in kinds and numbers as to cause one to wonder how the hosts could have remained alive as long as they did. One would dare say that horses and mules in the South are no exception to the rule.

In a case of ill health that appears to be of nutritional origin, our first duty is to make sure that the animal is as nearly free of parasites of the digestive tract as science and our personal ability enables us to make him. This will go a long way towards improving nutrition. Further, we should keep in touch with the results of those who are working on soil conservation and fertility and studying experimentally the nutritional requirements of animals. Those of you who are members of the Horse and Mule Association of America will know of the paper presented last year by Professor William A. Albrecht, of the Missouri Experiment Station, Columbia, Missouri,

under the title, Good Horses Require "Good Soils"; also, the paper by Dr. F. B. Morrison, of Cornell University, "The New Developments in the Feeding and Nutrition of Horses and Mules".

Treatment of Deficiencies

Horses on a hay-oat ration that are kept in a stable or dry lot when not in use, no doubt, suffer from a nutritional upset. This most often occurs in the lighter breeds of horses at army posts and in horses that are used for racing and show purposes. It is well known that many stallions that are kept in the stable frequently show symptoms of unthriftiness that are quite evident to the person in charge of the animals and to the veterinarian. While such animals may show a low calcium content of the blood, the clinical symptoms are quite as reliable evidence of the animal's condition as the results of the blood examination. Horses in training, especially runners and trotters, have been given injections of calcium gluconate, cal-dextrose, or straight glucose and have immediately shown improvement; however, such improvement is usually temporary.

To correct the condition requires the feeding of a ration that supplies all the essential, nutritive elements. It may be advisable in some cases to give calcium and phosphorus as a supplement; however, more natural and lasting results will come from supplying vitamins D, A and B complex from their natural sources. More recently vitamin C has come to be considered essential in general health as well as in certain specific conditions. There have been opportunities to make suggestions, particularly in regard to a number of young stallions, and in most instances the feeding of a variety of natural foodstuffs has brought about a material improvement. In some instances supplementary food elements may be advisable. We have recommended adding to the regular grain ration a small quantity of "baby chick starter mash". If this mash is purchased from a company that puts out a standard product of known vitamin content, you may be sure it will prove very beneficial.

We have had an opportunity to observe a good many colts and young horses being raised in central Kentucky and have conducted many blood examinations. On those farms where the weanlings and yearlings were out in good pasture and were being fed good mixed hay, yellow corn, and oats, the calcium-phosphorus level in the blood was found to be high and these elements in the proper proportion. This is mentioned to bring out the fact that, after all, where horses can have natural foodstuffs, they will not, as a rule, suffer from nutritional disease.

During the last ten years, many blood samples from horses have been examined for calcium and phosphorus. Eighteen weanlings on bluegrass pasture, clover timothy hay, oats and yellow corn, examined in November, showed an average serum calcium of 13·12 and

phosphorus 4·62. Eight horses, all young except one, examined in July, showed an average calcium of 12·8 and phosphous 4·81. These animals were on pasture, clover-timothy hay and a mixed grain ration. All were in excellent physical condition. Such results show definitely that when horses are on good pasture, and are receiving grain and hay, the serum calcium and phosphorus have always been found to be at the normal maximum.

In a few instances we have found, for example, a group of weanlings that were on pasture and were being fed a liberal hay grain ration, plus a supplementary feeding of calcium and fish oils, rich in vitamins. Six of some 20 colts showed clinical evidence of defective leg development. As the condition became worse, the natural tendency was to increase the supplement. However, our recommendation was to discontinue *all* supplements. Improvement was soon evident and in the end all of the colts were clinically normal.

We have had occasion to study a number of cases of abortion in mares that would appear to be of nutritional origin. There have been a number of foals dead at birth (full term) that, from all available evidence, were attributable to some nutritional disturbance. In most of these cases the mares had been fed on a sub-maintenance ration. In a few cases, the nutritional defect was apparently due to the lack of some one particular nutritional element.

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THE POULTRY UNIT AT THE VETERINARY HOSPITAL, RAJAHMUNDRY

By

C. N. Subbaraman, G.M.V.C.,

Veterinary Assistant Surgeon, Rajahmundry, Madras.

Introduction: — Poultry Units have been recently started in some of the major veterinary institutions in the Presidency, and the following particulars of the unit at the Veterinary Hospital, Rajahmundry, have been written with the hope that they will be found interesting to readers of the *Indian Veterinary Journal*.

Date of starting: — The unit which was started on 27-9-40, is maintained chiefly for demonstration and propaganda purposes. The model house, feeding, rearing methods, and hygienic principles adopted in its management are all intended to serve as a demonstration to the public.

Number of poultry received, casualties and additions: — One cock and six hens, all of "Rhode Island Red" variety, were received from the Livestock Development Officer, Hosur, on 27-9-40. The cock received on 27-9-40 died on 20-1-41 and in its place another cock was received on 22-2-41. The second cock died on 22-4-41 and in its place another was received on 24-7-41. The third cock became unserviceable and it was auctioned on 20-11-41. Another cock was received on 24-11-41. Two hens died on 20-10-40 and 30-8-41 respectively. The balance on 30-11-41 was 1 cock and 4 hens, *viz.*, cock No. 269, hen Nos. 699, 700, 702 and 710.

Particulars of eggs laid by the hens :—

During the period Hen No. 699 laid 179 eggs.

,,	700	,,	172	,,
,,	702	,,	230	,,
,,	710	,,	204	,,

Setting.—This was done four times during the period, on 1-10-40, 5-11-40, 15-8-41 and 29-10-41. 39 eggs were set for hatching and 29 chicks were hatched out. The percentage of hatch obtained was 74 per cent, which may be considered good. 16 chicks were sold to the public, 8 chicks on 4-11-40 and 8 chicks on 17-12-40. 762 eggs were sold for table purposes and 114 eggs were sold for hatching purposes.

Expenses and receipts.—A sum of Rs. 48-12-4 was spent towards the feeding and upkeep of the unit and a sum of Rs. 69 was realised by the sale of chicks, eggs etc. Thus, it will be seen, a profit of Rs. 20-3-8 was realised during the period.

Feeding and management.—Feed and feeding routine :— Adult birds, 6 A M. A mixture of the following is given for the birds to scratch and pick up.—Paddy, cholam and cumbu, about a handful for 2 birds.

11 A.M. Mash consisting of wheat bran, ragi flour and mineral mixture, with cut onion and greens, about a handful for two birds.

2 P.M. Cooked rice and meat, wheat bran and cut greens, on alternate days, about a handful for 3 birds.

5-30 P.M. Grain feed as in the morning, but a little more in quantity is given, about a handful for each bird.

Drink.—Clean water with a little Permanganate of Potassium is always kept in a covered mud basin. The water is changed at 7 A.M., 11 A.M., and 3 P.M. daily. The receptacle is daily scrubbed, cleaned and kept dry.

Grit and charcoal.—Shell grit and small pieces of charcoal are kept in the hopper and are available for the use of the birds, at all times.

Fish meal and groundnut oil cake were found to cause digestive disorders.

Conclusion.—In my experience of this unit, I find the work very interesting, and it does not in any way interfere with my normal duties of the hospital. I wish many more veterinary assistant surgeons could gladly take up this interesting work. After all, it would require a little care and attention, provided there is the interest and willingness to do it.

I am greatly indebted to Sri H. Viswanath, G.M.V.C., District Veterinary Officer, Rajahmundry, for kindly going through this article and giving me valuable suggestions.

OBSERVATIONS ON COCCIDIOSIS IN CATTLE

BY

B. RAMIAH, G.M.V.C.,

Veterinary Assistant Surgeon, Bobbili, Madras.

Occurrence

Out of 128 specimens of fæces examined and confirmed for Coccidiosis, 85 were from cow and bull calves, 13 from buffalo calves and 30 from adult cattle. The disease is, therefore, more frequent in calves than in adults and more common in cow and bull calves than buffalo calves. Incidentally, I have compared the occurrence of Ascariasis in calves with that of Coccidiosis in calves and found that the latter is a more common affection.

Coccidiosis is a disease of calves more than of adults.

Age of Susceptibility

1 to 3 months.	4 to 6 months.	7 to 12 months.	Total.
24	9	4	37

Out of 37 calves in which the ages were carefully recorded as above, it was found that calves of 1 to 3 months old are highly susceptible.

Sex

Out of 28 calves in which sex was noted 14 were males and 14 females. The disease occurs equally in both sexes.

Seasonal Distribution

January	20	July	6
February	15	August	5
March	9	September	11
April	8	October	11
May	7	November	11
June	2	December	10
		Total ...	115

The disease exists throughout the year but more cases occur from September to February 78/115. I believe this is so because more calves are born from September onwards to February during which season more of ghee and curds are also available.

Breed and Colour

The breeds commonly available here are the local breeds and cross Ongoles; Australian and Sindhi cross are very few. They are white brown, black and a mixture of these in colour. All are equally susceptible.

Mode of Infection

It is not the practice in these parts to let calves graze along with the mothers at pasture. They are tied up at home lest they should empty the mother's milk. So the question of these calves picking up the infection at pasture does not arise. It is from the soil of the byres or the contaminated udders that the calves catch the infection while sucking the milk. The infection may also occur from mothers which may be the carriers of the disease. It is probably the existence of these carriers which is responsible for the occurrence of the disease throughout the year.

Symptoms and Duration

The disese ushers in with a slight rise of temperature from 102° to 103°F. without the appetite being much impaired. For a day or two, liquid dark

green fetid fæces are passed without much pain. Later, they are coated with mucus and blood clots. Pain and strain are particularly noticed in cases where the quantity ejected is small and contains masses of mucus or mucus and blood clots. The appetite then becomes slightly impaired, while there may be grinding of the teeth in some. As the diarrhœa advances, the animal becomes weaker and weaker day after day, the respirations and pulse slightly increase, rapid wasting and prostration set in and the animal dies. In some there may be no blood, only liquid green faeces being voided, while in others the first symptoms of the disease may be the expulsion of mucus and blood clots accompanied by straining. Rarely one may meet with cases which is ushered in with temperature and shooting diarrhœa containing pure blood.

The duration of the disease varies from one to three weeks after which the disease progresses towards recovery or death. In the per-acute forms, death may result in one or two days due to heavy loss of blood.

Diagnosis

Since Coccidiosis is a disease of calves, the presence of diarrhœa in a calf with mucus and blood clots is sufficient to enable one to establish a diagnosis. However, a certain diagnosis can only be made by microscopic examination of the fæces—a thin film of fresh fæces being examined under the microscope when both fertilised and unfertilised oocysts could be detected.

Prognosis

If early treatment is resorted to, I believe the chances of recovery are admittedly greater except in per-acute cases. Out of 20 calves treated I have met with only one death. In untreated cases there is bound to be a greater amount of mortality due to emaciation and prostration.

Lesions

I have had only one opportunity of conducting a post-mortem in a calf dead of this disease and the changes were confined to the rectum, the mucous membrane of which was congested and the epithelium detached in many points dotted over with haemorrhagic spots. The contents of the rectum contained mucus and blood clots. The intestines showed patches of congestion contained green liquid fæces but no blood clots.

Treatment

The drugs which I have used are: (i) Copper Sulph, (ii) Ferri Sulph and Acid Sulphuric dil., (iii) Tr. Catechu and Camphor Co., and (iv) Izal.

Copper Sulph. in doses of 5 to 8 grains dissolved in 4 oz. of water given once a day has given a cure. The discharge of blood stops in a couple of days and in another two or three days the fæces gets hard and this may be followed by a few tonic powders. I first used 10 grains of copper sulph. in calves but found the diarrhoea increased though the haemorrhage was arrested. I discontinued the drug and gave Tr. Camphor Co and Catechu in 2 drachm doses and this cured the animal. I have subsequently found that even 10 grains of Copper Sulphate was too much and it increased the diarrhoea. So the size and condition of the animal should be carefully noted in using this drug. If the doses are carefully regulated, this is a reliable drug; and administered once daily will check the disease in 5 or 6 days. Should it, however, fail, Tr. Catechu and Camphor Co., will complete the cure. In adult cattle copper sulphate acts like a specific when administered in half dram doses once daily; the diarrhoea is checked in about 5 or 6 days.

Ferri Sulph. and Acid Sulphuric dil., 10 gr. of the former and 1 drachm of the latter in 4 oz. of water were administered once daily and a cure was effected but took a longer time (in calves) to heal.

Izal. Half a drachm of this in a little kanji or syrup given once daily has also given a cure (in calves).

Castor Oil emulsion with 2 drachms each of Tr. Catechu and camphor co., with 2 to 3 minims of Oleum Menthal given twice daily has checked the diarrhoea in a couple of days.

I believe it is not good to check the diarrhoea at once unless the animal is already prostrated as a result of too many evacuations. It is better to check the diarrhoea slowly so that as many oocysts as possible may get out of the body. In short, any simple treatment like the above will save many calves.

The condition of the calves here is very poor and they are often undersized. Hence very small doses had to be computed.

As for prevention, since these calves are kept indoors, the flooring should be disinfected and kept dry and the affected calves should be isolated and the discharges removed and burnt. The udders of the cows should be well cleaned and wiped before allowing the calves to suckle.

THE ELEPHANT'S TEARS

[In his delightful Tamil book—*Nallurikovai*, Part IV — the late Mahamahopadyaya Dr. Swaminatha Ayyar has recorded the following incident in the life of the late Seshayya Sastrigal when he was Dewan of Pudukottah, as an example of his (Dewan's) keen power of observation and love of the dumb animals. The following free translation of it may be found interesting to our professional brothren.—*Ed. I. V. J.*].

The State elephant was once reported to have gone mad. He was refusing all food given to it, was yelling and crying often and would not allow any one to approach it. So the Dewan sent for the Mahout and asked him about it. The mahout said that the old mahout had died some days previously, that he had been appointed newly in his place and that he had tried all possible ways and tricks to make the animal eat but with no effect. He further opined that the animal was in the early stages of madness and that in a few days it would become uncontrollable and even dangerous. To avoid it, he said, he had chained it very carefully.

On hearing this, the Dewan said he will inspect the animal and decide what to do. With a bundle of sugarcanes and grass, the Dewan went to see the animal. A crowd had already collected there. He ordered the sugarcanes to be given to the animal. The elephant received them but simply threw them away and trampled them with its feet. On close observation, the Dewan noticed tears streaming down the eyes of the animal. Suddenly, the animal turned to a side, lifted up its trunk and started yelling. Looking in that direction, the Dewan observed in the crowd a woman sobbing and crying. He sent for her and asked her the reason for her sorrow. She explained that she was the wife of the old mahout, that she and her husband used to look after the elephant like their child, that on hearing the animal had gone mad she came to see it and that she could not contain herself on seeing its pitiable condition. Guessing there may be some relation between the tears of the elephant and the tears of the woman, the Dewan asked her to give the animal some sugarcanes with her own hand. She did so at once. The elephant received them, smelt them and immediately took them into its mouth, crushed and ate them. More canes and grass were given, and all of them were taken in very readily and with a relish.

The Dewan said that the case was an extraordinary one of an animal pining for its dead master and ordered the old mahout's wife to look after the animal. She agreed and very soon the elephant became its usual old self.

The new mahout also got himself slowly introduced to the ways of the animal and in due course became the real mahout.

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Editorial

UNFAIR AND UNJUST

We have in these pages repeatedly drawn attention to the extremely poor recognition of the Veterinary Services by the Madras Government and have often pleaded for a better and more adequate standard of emoluments to the Veterinary Assistant Surgeons employed by that Government. We have also been stressing the point that for the improvement of Agricultural and Animal Husbandry work so necessary for the prosperity of the country, it is absolutely essential to have an efficient Veterinary Service to look after the welfare of the cow and bull, which, to use the words of H. E. the Viceroy, bear on their patient backs the whole burden of the rural economy. We have further emphasised the fact that the Veterinary Service should be considered as one of the essential services and that the men employed in that Department should be placed on the same or even better standard than those employed in the allied Departments like Agriculture, Medical and Public Health, in consideration of the high standard of their initial qualification and the elaborate, costly and lengthy course they have to undergo. Our appeals have long gone unheeded. And now we are given to understand that the Government of Madras have been pleased to have the scales of pay revised and that the revised

rates will be as follows : II Grade Rs. 60-7/2-95-5/2-120 ; I Grade Rs. 125-10/2-155. We must candidly admit that we are extremely disappointed at this so-called revision and we entirely agree with an esteemed colleague of ours that it is very retrograde and that the Madras Government have been very unfair and unjust to their Veterinary Services. The new rates are worse than what obtained in 1922, about which, even at that time, representations had been made for betterment. Then, the course of education was only three years : now, it is four years for the Diploma course. Then, the initial entrance qualifying standard was only S.S.L.C. ; while now it is the Intermediate in Arts. And yet, the present Government have thought it fit to offer the Veterinary Graduates a start of only Rs. 60/-, with the glorious prospect of reaching a maximum of Rs. 155/- after 25 years of service ! Is it any wonder, therefore, that the services are getting more and more discontented ? Is it any wonder, that the youths of the country are not attracted to the Veterinary profession and that the admissions to the Veterinary College are getting poorer and poorer ? We understand that the admissions to that institution this year are far below the required number in spite of the fact that practically every applicant was given admission.

If Veterinary Science is to progress satisfactorily, and if the multifarious vital problems of Animal Husbandry are to be studied on correct lines, then it is very important that the profession should attract the right type of men. But as long as the Madras Government (which is the only agency in that Presidency to utilise the services of Veterinary Graduates) treats the Veterinary Department as the Cindrella of the services and offers its men meagre and inadequate scales of remuneration and keep them on a temporary basis for years on end, as though the Department had reached its surfeit, so long will the Department, we are afraid, remain in a state of stagnation or suspended animation. It would really be too much to expect any real progress under these depressing circumstances.

There are also other serious defects and shortcomings in this revision order as, for instance, the difference that is made

between a B.V.Sc., and a B.V.Sc., because one was under the old regulations and the other under the new regulations. This is very surprising ; because, for one thing, the B.V.Sc., under the new regulations is only a spread-out one of the old regulations without any addition to the subjects taught ; for another, the Madras University would, we are sure, make no distinction as between the graduates under the old and under the new regulations. Probably, we must be thankful that the Madras Government have not gone a step further and drawn a distinction between a G.M.V.C., under the old regulations and a G.M.V.C., under the new regulations. Oh ! We live in strange days and the ways of men and Government are stranger still !

We would strongly urge that there be no difference in the initial pay of a veterinary graduate whether he be a Diploma holder or a B.V.Sc., whether under the old or under the new regulations. All should be started on a minimum pay of at least Rs. 85 and go on to at least Rs. 200, so that those who have to retire without preferments or promotions to higher grades may look forward to a pension which will keep body and soul together after 25 or 30 years of service under Government.

HACKNEY CARRIAGE ANIMALS

Among the various provisions made by the Government for the care and well-being of the dumb animals, the Hackney Carriage Act is a very important one. It is an act intended to ensure a certain standard of fitness or working capacity on the part of the animals kept for plying for hire. It is also intended to prevent any suffering to the animals. A still further object is to see that the public who use these hired vehicles are not put to any unnecessary inconvenience and annoyance by reason of the unfitness, ill-health or debility of the animals drawing these vehicles. Such a good and beneficial act is very unfortunately nullified and made useless in its actual working. Under this act, every animal-drawn vehicle used for public hire must be registered and licensed as fit for

the purpose. Generally it is the Police that enforce the Act; in some places the Chief Executive Officers of the Municipalities do it. These Officers assume the role of Veterinary Surgeons, proceed to examine the animals for soundness and then reject or accept them for registration and licensing. To any thinking person this sounds absurd and ridiculous. But according to Law, it is quite legal and correct. Under the Hackney Carriage Act or according to any local ruling under it, it is not obligatory on the part of the licensing authority to have the hackney animals examined by a competent authority. There is no specific provision to that effect in that Act. And, therefore, it is left entirely to the discretion of the licensing and registering authorities to demand a Veterinary Surgeon's certificate about the fitness of the animal or not. If he considers that he himself is competent enough to do that duty, there is nothing to prevent him from doing it. As a result of this, any Tom, Dick and Harry assumes the role of a Veterinary Surgeon the moment he is entrusted with licensing powers. Such a procedure which is obtaining in almost all places both in British India and Indian India (States) leads to very serious undesirable consequences. In Cities and Towns, it is not at all uncommon to see many debilitated and unfit animals exposed and kept for plying for hire. The poor animals undergo a good deal of suffering and distress in their forced service to the public. And latterly, owing to the shortage of petrol and its drastic rationing, horse-drawn vehicles are getting to be greatly in demand and are being requisitioned for services irrespective of their fitness for work or not.

We therefore draw the attention of the Governments to this lacuna in this act so that a suitable amendment may be made making it obligatory on the part of every licensing authority to insist on a certificate of soundness from a competent Veterinary Surgeon before issuing a licence. This is necessary not only from a humanitarian point of view (in the interest of the dumb suffering animal) but also in the interest of the public using the animal-drawn vehicles.

King's Birthday Honours

We heartily congratulate the following gentlemen on the distinction conferred on them on the occasion of the King's Birthday.

RAO BAHADUR on Mr. B. K. Badami, G.B.V.C.,
Director, H. E. H. the Nizam's Civil Veterinary Department, Hyderabad-Dn.

RAO SAHIB on Mr. Ponnayya, G.M.V.C.,
District Veterinary Officer, Coimbatore, Madras.

Clinical Articles

CHOREA AS A SEQUEL OF FOOT AND MOUTH DISEASE IN A BULLOCK

BY

P. MATHEW KURUVILLA, G.M.V.C.,
Veterinary Assistant Surgeon, Piler, Madras.

Subject:—A bullock, six years old, local breed.

History:—About a month back this animal got foot and mouth disease and recovered in 15 days time. Ten days after recovery it got chorea of the left fore leg. The spasms were becoming progressive and the animal was brought to the dispensary on 29-1-42.

Symptoms:—Muscular twitching of the whole leg from shoulder down to the foot was present. The spasms were clonic and were occurring whether the animal was lying down or standing up, awake or asleep. Consciousness was not affected and the appetite was maintained.

Examination and diagnosis:—Examination of the mouth and foot showed healed lesions of foot and mouth disease. Chorea was diagnosed as a probable sequel to foot and mouth disease.

Prognosis :—Unfavourable.

Treatment:—The animal attended the dispensary for a week. All possible treatment was tried but was of no avail. The spasms gradually became worse and resulted in constant nodding and spasmodic shaking of the affected limb and also of the head. The animal lost condition and stopped attending the dispensary.

Remarks:—This is the second case that I have come across where a bullock developed chorea as a sequel to foot and mouth disease. In the previous case a bullock of local breed developed chorea of the left hind leg. It attended the dispensary for ten days and stopped away as there was no improvement in its condition.

UNILATERAL PARALYSIS OF THE FACIAL NERVE IN A BULLOCK

BY

T. RAM MOHAN RAO, G.M.V.C.,

Veterinary Assistant Surgeon, Razole, Madras.

A bullock (of Ongole cross breed) aged six years was brought to the dispensary on 16-10-41, with the history that it had stopped feeding suddenly since the previous day and was having violent fits of cough.

A careful examination revealed the following symptoms. The general condition of the animal fair; temperature, defication and urination normal; both the eyelids of the right eye, the right nostril, the right halves of both lips and the right ear were drooping and these parts had lost all sensation. The animal was not able to move any of them. The right eye had become blind without any visible changes. The gait of the animal was only slightly unsteady. The animal was trying its best to take food, but, with the first morsel swallowed, got a violent fit of cough which forced the animal to desist from taking food. Also the animal was not able to drink any liquid due to being unable to use the lips.

Microscopical examination of blood and dung revealed no organisms or parasites.

Diagnosis:—As there were no signs of any traumatic lesion or tumour or abscess in the region of the head and neck or anywhere on the body it was concluded (as per the suggestions made in the article "Surgical affections of the head" by Prof. J. J. O'Connor, M.R.C.V.S., in G. H. Wooldrige's Encyclopædia of Veterinary Medicine, Surgery and

Obstetrics), that the paralysis was due to a lesion (*i e*. a tumour pressing on the facial nerve) in the intratemporal region.

Treatment:—As suggested by the above-mentioned author a course of Potassium Iodide was decided upon and a drench consisting of two drams of Pot. Iodide and six ounces of water was given twice daily morning and evening from 17-10-41 to 25-10-41.

By 19-10-41, it was found that the patient was able to chew some fodder and swallow without the violent fits of cough, though there was slight coughing and some difficulty in deglutition. The gait of the animal had become steady and normal.

On 20-10-41, the bullock was observed to be taking in small quantities of water by sipping.

The next day it was noted with satisfaction that the right ear was in a raised position (of about 30 degrees from the cheek) and having slight movements and the whole affected skin including the ear regained enough sensation to feel a pin-prick.

On 22-10-41, the animal was taking fodder, bran mash, and drinking water fairly well; but there was no improvement at all in the sight of the affected eye.

During the next two days, there was steady progress but on 25-10-41, the animal stopped drinking water.

By the morning of 26-10-41, definite symptoms of Iodism developed. The animal completely abstained from drinking water though it was taking small quantities of fodder; the skin became tucked up throughout the body with staring coat and puckered at the joints, around the eyes, ears and lips. It had become dark on the back and face. Potassium Iodide was immediately stopped and the animal was kept on an abundance of rice-gruel with fine rice bran and plenty of green fodder. After four days the symptoms of Iodism began to abate and completely disappeared by the second week of November.

The animal regained its fair condition by 16-11-41 but paralysis of the face remained stationary at the stage when Pot. Iodide was stopped. Then the temporal region was blistered on 16-11-41, but there was no change in the paralysis even by 1-12-41, though the general condition of the animal improved greatly. Treatment with Pot. Iodide was again commenced from 3-12-41, with a much smaller dose *i.e.*, one dram of Pot. Iodide in 6 ounces of water only once a day. This treatment was continued till 13-12-41, without appreciable change in the condition of paralysis. On 13-12-41, the first symptoms of Iodism—abstinance from drinking water and staring coat—were observed and the treatment discontinued. This time the symptoms of

Iodism did not go beyond the above mentioned stage and the animal also completely recovered from it within six days.

Though the animal completely regained its condition there was no improvement in the paralysis of the face beyond the stage noted on 25-10-1941. The animal was therefore discharged on 20-12-41.

Conclusion :—It is interesting to note the ready and satisfactory response of the condition to Pot. Iodide in the first course of treatment, though it failed to give any good results in the second course. Perhaps this is due to the small dosage of the drug. As the animal was showing symptoms of Iodism even for the small doses of the drug given in the second course, it was decided not to risk an increased dose. Probably a higher dose after a long interval of six or seven months would do good.

[A still smaller dose of the drug given for a longer period might have been tried with advantage. The symptoms as given out by the author though not in accordance with the classical symptoms of Iodism are very interesting.—*Ed., I. V. J.*]

ULCERATIVE CONJUNCTIVITIS CAUSED BY MOTH FLIES

BY

B. V. Chalapati Rao, G.M.V.C.,
Veterinary Assistant Surgeon, Markapur, Madras.

It was reported that cattle in Nalla Malais had eye trouble and were losing their sight gradually. I went to the Gudem in the forest area and examined the animals. In all the affected animals there was conjunctivitis with lachrymation. In some there were corneal ulcers also. The cause could not be decided from the statements of the owners.

The time was during occasional rains when the forest was green with tender shoots and stems of grass were harbouring varieties of flies. During night time I noticed some white flies surrounding my hurricane lantern. This led me to watch the cattle which were penned very near my halting place. The same sort of flies were worrying the animals at their eyes as they were shining in the dark night. On examination they were found to have delicate bodies and a sort of white powder at the postero-ventral part of the abdomen which was sticky to the touch. I suspected that this powder may be responsible for the ailment causing irritation to the sensitive structures of the eye.

A collection of the flies planted on a camphorated candle was submitted to the Principal, Madras Veterinary College, for favour of identification.

He was pleased to inform me that they were Moth Flies belonging to the order Lepidoptira.

To mention briefly, this order Lepidoptira stands next to the beetles and includes the numerous forms of Moths and Butterflies. The most important of the family of economic importance in the subdivision of Moths (Heterocera) is the family of stout Moths (Noctidæ). The members of this order are nocturnal in habits and are characterised by four wings and scaly covering of the body with characterised structure of the feeding apparatus which is a long tube remaining curled up like a watch spring under the head. During the act of feeding the tube unwinds and reaches the food material and pumps up the liquid nutrition. The powder on the postero-ventral part of the abdomen combined with the peculiar feeding habit of the flies appear to be responsible for the ailment.

The affected animals were treated with success by irrigation of eyes with 1 in 200 Boric Lotion followed by installation of weak solution (1 in 2000) Hydrargyri Perchloride in the eyes for a few days. Precautionary methods were also suggested to the owners of cattle in the Gudem to set up small fires around the cattle-yard during nights to divert the flies to the light of the fire.

URINARY CALCULI IN THE SHEATH OF A BULLOCK

BY

P. Mathew Kuruvilla, G.M.V.C.,
Veterinary Assistant Surgeon, Piler, Madras.

Subject :—A bullock, eight years old, local breed.

History :—The bullock was purchased by the present owner about a year back. At the time of the purchase the animal had a slight swelling at the prepuce. The owner did not pay any attention to it and neglected it. In due course the swelling began to enlarge, and the urine instead of flowing out in a jet, began to dribble. The penis was incapable of being protruded from the sheath. These symptoms attracted the attention of the owner and the animal was brought to the veterinary dispensary, Piler, for treatment on 14-2-42.

Symptoms and examination :—As there was no complete interference with micturition there were no aggravating symptoms. Phimosis and swelling of the sheath were present. The animal was dull and depressed. The prepuce was found to be partially blocked by a sandy or gritty deposit permitting small quantities of urine to be voided. The sheath had strong uriniferous odour from decomposition of retained urine. A hard mass about

three inches long could be felt inside about an inch from the opening of the sheath. The free end of the penis could be felt further away from the obstruction. A metalic click could be heard and felt when a metal probe was passed into the preputial orifice. The case was diagnosed as one of urinary calculi in the sheath. No other calculi could be felt anywhere in the urethra.

Treatment :—The prepuce was washed with soap and warm water, the long hair in front of the sheath was clipped and collections of sebaceous material and dirt in the prepuce was removed with forceps. The calculi could now be felt with the finger. With the aid of a scoop successive layers of small calculi or calcareous granules of a greyish white crystalline nature were first removed ; and then a calculus about two inches long, and half an inch wide, having a rough surface was removed with the forceps. The sheath was irrigated with a weak antiseptic solution. The animal attended the dispensary for three days more and was discharged cured.

Probable cause :—Accumulation of smegma and dirt at the prepuce must have set up irritation and inflammation of the sheath. Owing to the difficulty of free flow of urine and resulting stagnation, the salts in the urine must have collected round this nucleus. By the deposition of successive layers, the small stones or calcareous granules, slowly increased in size and number.

In the bull urinary calculi are generally found at the ischial arch or at the S. curve of the penis. The narrow double-curved urethra renders the passage of even small stones difficult or impossible. The formation of calculi in the sheath is very rare and may be attributed to causes at the prepuce itself.

ATYPICAL STRANGLLS IN A MARE

BY

B. RAMIAH, G.M.V.C.,

Veterinary Assistant Surgeon, Bobbili, Madras.

Subject :—A chestnut, Kathiawar mare, age four off.

History :—This mare was brought from Northern India about the middle of October, 1941. On 31-10-41, it was admitted into the hospital as an in-patient for an attack of Nasal catarrh. The temperature was ranging from 99·8°F to 100·4°F. There was no enlargement of the sub-maxillary lymph glands. The case was treated on the usual lines and discharged cured on 12-11-41.

Symptoms :—On 21-11-41, this mare suddenly developed an acute attack of hæmaturia due to Nephritis and went totally off its feed. The temperature was 101° to 102°F. The urine was bright red in colour and long round blood clots were ejected coiled up like a rope at the end of micturition every time, and the animal was losing large quantity of blood. A week later *i.e.*, on 27-11-41, the following symptoms were observed :—Enlargement of the sub-maxillary lymph gland of the near side, frequent hacking cough, serous discharge from the nostrils, conjunctiva injected, temperature 103° to 104°F. followed by complete inappetence, the animal refusing to take even barley water. Four days later the gland ripened, the discharge from the nose grew more copious and muco-purulent, and the cough more frequent. But the animal took to feeding.

Treatment :—For the fever Hexamine and Soda Salicylas were given as an electuary followed by Mag. Sulph, Ammon. chlor. and Pot. Acetas in drinking water.

To control the renal hæmorrhage two drachms of Calcium chloride was given intravenously in 10% sol. for two days but had no effect. The dose was therefore increased to half an ounce daily and two such injections had the desired effect.

The cough was treated on the usual lines with antiseptic inhalations. The abscess was opened and dressed antiseptically. The renal hæmorrhage which was considerable did give much anxiety but the mare had an uneventful recovery.

The smears from the nasal discharge and the pus from the gland revealed no organisms and the urine contained albumin and blood cells and the specific gravity was 1022.

CAESAREAN SECTION IN A BITCH

BY

B. RAMIAH, G.M.V.C.,

Veterinary Assistant Surgeon, Bobbili, Madras.

A terrier bitch was brought to the hospital on 17-12-41, for dystokia. It littered one pup and could not deliver the other one which she had. I tried all means to deliver it in the usual way, but for want of a bitch delivery forceps I could not do it. So I decided to extract the foetus by laparotomy.

The bitch was given 30 minims of liquor morphia hypodermically. The abdomen was thoroughly cleansed with soap water and well swabbed with spirit. The seat of operation was painted with Tr. Iodine. An incision, four inches long parallel to and half an inch away from the linea alba was made on the right side of the abdomen. Then the muscles and the peritoneum were incised. The bladder which was very full first forced its way through the wound. This was emptied by slight manipulation. The uterus was then incised and a live pup was removed. The placenta and discharges were removed very carefully without contaminating the peritoneal cavity. The uterus was sponged with an antiseptic and was closed with a continuous suture of catgut. The muscles and peritoneum were brought in apposition by interrupted sutures of catgut. The skin was sutured with silk. The wound was treated antiseptically and bandaged. On the seventh day the skin sutures showed suppuration. The sutures were removed and the wound was treated antiseptically with iodine and boro-iodoform powder. This was done for a fortnight and the abdomen bandaged. The wound healed and the bitch made an uneventful recovery. The bitch did not show any temperature beyond 102·4°F. and ate and drank well from the next day of operation. The pup survived for ten days and died for want of care as it was not allowed to suckle the mother lest the operation wounds should be disturbed.

The point of importance in the case is that even though the animal was not chloroformed, it gave the least trouble and the operation was conducted very peacefully.

SCHISTOSOMIASIS IN DOGS

BY

P. VEDA BHAT, G.M.V.C., P.G. (Mad.),
Veterinary Surgeon, Bangalore.

Shistosomes are also known as 'Blood Flukes'. They as adults prefer to live always in the blood vessels of the body of their hosts, the most common sites being portal vessels, mesenteric veins, cystic or renal veins, deep or superficial capillaries of the mucous or submucous layer of the intestines. These parasites are peculiar in that, there is a difference of sex, male and female. The male and the female are very rarely found apart, but are usually found together, the female lying in a groove formed by the incurved edges of the male and being carried by it to the thinnest capillary possible. There are various schistosomes found in animals and men, but this paper is restricted to the incidence of *S. spindalis* in dogs.

Infection of *Schistosoma spindalis* is a rare occurrence among dogs. Prof. H. O. Monnig describes the infection among cattle, goats, sheep and zebu in India and Sumatra and does not mention infection in dogs. A case has been recorded from a man in South Africa.

The egg of *Schistosoma spindalis* is greatly elongated and flattened on one side with a bulge on the other. One end (anterior) is straight and blunt pointed like a handle, while the other end (posterior) is a straight slender pointed spine which greatly facilitates the eggs to get out of the thinnest capillaries by burrowing through the walls of the vessels. This is the cause of heavy haemorrhage, dysentry, anaemia, etc. As the lesions are produced by the eggs, the severity of the symptoms will essentially depend upon the number of parasites present and the accumulation of eggs.

It is probable that the infection takes place from contaminated water in pools or other sources of drinking water. Water snails act as intermediary hosts for the larva (miracidum) that come out of the egg of the parasite which is usually passed in the faeces of the infected animals to attain its infective stage which is the only ultimate larval stage (cercaria) for the final host. At times, the infection is also got by ingesting contaminated fish, snails, frog, etc., wherein the cercaria grows up to a certain stage (Metacercaria).

Dogs have a special habit of jumping into pools to play about in the water and there they may catch the infection either through skin or by mouth. The chief site of infection in dogs seems to be the gastro-intestinal tract.

The following two cases are recorded as being of great professional interest.

Case No. 1

Subject:—On 24-11-40, a pedigree, male, Spanial dog, aged about 4 years was presented for treatment.

History:—The animal was reported to be ill for nearly six months and gradually losing condition and weight. It was getting dull and listless and not feeding well. Its mouth was smelling offensive while the bowels were highly constipated, but had occasionally diarrhoea and dysentry. The dog had been treated with worm mixtures once or twice without any definite improvement in its condition.

Clinical Examination:—Animal weak and emaciated, visible mucous membranes pale and anaemic, mouth was ulcerated with bleeding gums and offensive breath. Temperature normal. On palpation, animal evinced pain over the abdominal region.

Without any definite diagnosis, systematic treatment was adopted; such as mouth wash, Boro-glycerine with Thymol to the bleeding gums and internally triple carb with salol in honey, etc.

Advised the owner to send some faeces for microscopical examination the next day.

25-11-40. Microscopical examination of the faeces by the sedimentation method showed ova of *Schistosoma spindalis*.

27-11-40. Owner was advised to give injection of Antimosan to the dog. As the owner had given a full dose of castor oil that day injections were postponed for a day or two.

29-11-40. The ownerr presented the dog saying that it was having loose dysentric motions, intense thirst with frequent vomitations and inability to retain even milk or any other food. Animal was very weak and unable to move and walk about. Temperature sub-normal. Advised application of hot water bag to the abdominal region. Administered gastric sedative powders internally and an injection of Colloidal Calcium.

30-11-40. Dog died. Post-mortem was not allowed by the owner of the dog as it was his pet.

Case No. 2

Subject : - A male Spaniel dog, aged about 9 years.

History :—Dog not taking food properly, irregular bowels, at times loose and dysentric, otherwise constipated, gradually going down in condition, very dull and foul breath from the mouth.

25-1-41. Microscopical examination of faeces revealed ova of Anchylostomum caninum and ova of *Schistosoma spindalis* in huge numbers. Advised Nema Capsule treatment for hookworm infection and later injections of Antimosan for *Schistosoma spindalis* infection.

27-1-41. Examined urine and found negative for ova of *Schistosoma spindalis.*

6-2-41. Microscopical examination of faeces after treatment with Nema Capsule was negative for ova of Anchylostomum caninum, but showed a few isolated ova of *Schistosoma spindalis.* The owner reported that the dog looked more cheerful and was eating slightly better, though the motions were not completely formed.

5-3-41. Another sample of faeces examined showed a few isolated ova of *Schistosoma spindalis* and was negative for ova of Anchylostomum caninum.

7-3-41. Gave 2 c.c. of 2 per cent. solution of Sodium Antimony Tartaratum intravenously (as Antimosan was not available). No reaction was observed after the injection.

12-3-41. Gave 2·5. c.c. of 2 per cent. solution of Sodium Antimony Tartaratum intravenously without any subsequent ill effect. The owner reported that the animal was feeding better after the first injection. Although he observed slight dysentric motions for a day or two after the first injection, it stopped without any treatment. However, some powders containing Bismuth Carb. Pulvis Creta Aromaticus, etc., were supplied to be given to the dog in case of dysentric motions.

17-3-41. Gave 3 c.c. of 2 per cent. solution of Sodium Antimony Tartaratum intravenously.

24-3-41. A sample of faeces examined proved negative for ova of *Schistosoma spindalis.*

26-3-41. Another sample of faeces examined was also negative. It was decided not to repeat the injections further. The owner was asked to send another sample of faeces and urine after a few days for examination.

Case No. 2 had a combined infection of *Schistosoma Spindalis* and hookworm. After the Nema Capsule treatment, the sample of faeces examined proved negative for hookworm ova and on extensive search only few isolated ova of *Schistosoma spindalis* were noticed. Nema capsule treatment seems to have decidedly reduced the infection of *Schistosoma spindalis.* To have a parasiticide effect the drug must have come directly in contact with the parasites moving freely in the intestines or living in the superficial capillaries of the ulcerated portions of the mucous membrane of the intestines. It could also be presumed that those parasites that lived very deep were not affected by the drug given orally. Since this is a rare occurrence among dogs the pathology regarding the infection could be said as imperfect at this stage.

NECROSIS OF HORN IN BULLOCKS

BY

KARTAR CHAND ASSI, G.B.V.C.,

Veterinary Assistant Surgeon, Barwani State, C.I.

Barwani is a small state in Central India. It has comparatively a splendid veterinary hospital. From the time I took charge of the hospital in 1936, I came across a surprisingly large number of cases of Necrosis of horn. Many of them came to this hospital for treatment. I have been treating them in a number of ways with little or no success.

On 9th August 1940, a bullock suffering from Necrosis of the horn was brought to this hospital for treatment from village Padlia (about 24 miles from this hospital), Holkar State, C. I.

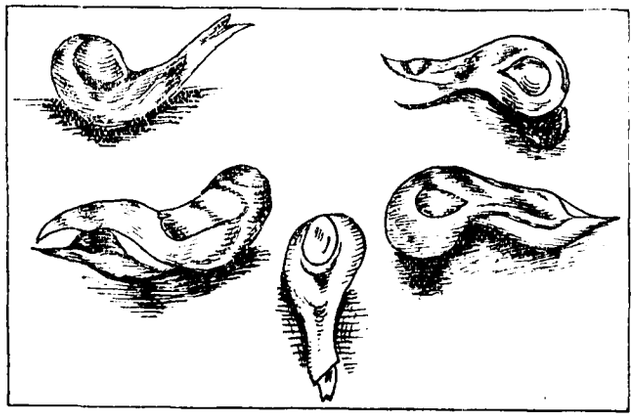


Photo of foreign bodies in the necrosed horn of the bullock.

The bullock was about 14 years old. He was in a deplorable condition, and was admitted on the very day as in-patient. On the 10th August 1940. I amputated the horn from its lower third. Dressed the wound with antiseptic pad and bandaged. On 12th August 1940, when I opened the bandage, I noticed that something was moving in the horn. I took out the moving body by means of a dressing forceps. The body resembled a shell ¾" long, with its head towards the brain and flagellum outside. It is shown in figures above in different poses. It was sent to the Director, Plant Institute, Indore, for further investigation. The result shall be published later on, as soon as I get information from the Director, Plant Institute, Indore.

Among 300 cases of this disease which were brought to me for treatment, I have observed that all the victims were bullocks and not cows or buffaloes.

Symptoms:—In the beginning there is swelling at the base of the horn, painful and hot to the touch. Afterwards, it becomes white and soft and horn begins to bend. In the third stage, the animal starts kicking, sometimes the base of horn becomes doughy yielding pus or blood and the horn starts shaking by the animal's head movements.

In some cases due to violent kicking by the animal, the horn gets detached from its base by itself.

Treatment:—Every sort of treatment was tried, but always with little success.

Prognosis:—Generally all cases succumbed to the disease on account of septicaemia in spite of the best treatment and utmost care.

I shall be most grateful if some one would suggest to me any successful treatment for Necrosis of horn in bullocks, so that my humble self may be able to bring down the high role of mortality among the poor dumb creatures.

BHONGARRA AND THEIR BITES

BY

V. M. DAKSHINAMURTHY, G.M.V.C.,

State Veterinary Surgeon, Kanker, C. P.

In the forests of this State the big size dung betels called 'Bhongarra' in Hindi are often found in large numbers. They live on dung and are often found in bushes and sometimes in holes on the land. If they are disturbed in any way they attack the animal or man whosoever it may be and if two or three of them attack a man he is sure to die, and they say that there were cases like that.

Generally animals do not die, unless bitten on some vital parts, but only a swelling at the site of the sting will occur with a wound which generally in the forests gets maggoted (fly flown) due to the flies.

Animals in these parts are sent to the forests for grazing where they stay throughout the open season. In the night they are driven into an enclosure where they are not even tied up. They graze together and drink water in a small pond nearby. Under the above conditions a contagious disease is a serious problem to deal with. Isolation, etc., is difficult and further the water source and grazing area would have already been infected.

In the month of October 1940, six animals are reported to have died one night due to swelling of the throat. I got the report a week after the incident and when I visited the area I found the rest of the animals quite healthy and no fresh cases were reported in the locality.

On enquiry from the man in charge of the animals the history was given as follows:— The animals had been to the forest for grazing in the morning as usual aud they were healthy at that time. In the evening when they returned he found the throat of six animals swollen and the head was stiff. The swelling was very hot and painful. He tried some local treatment but all the animals died in the night

In view of the fact that they grazed and drank together in the same area and died suddenly, it was considered as highly probable that the disease was Hæmorrhagic Septicæmia. Accidental or malicious poisoning was also considered possible and so the owner was instructed to keep a special watch on the animals.

A fortnight after, one evening the animals were found running in a confused manner. The watcher, suspecting that a tiger had come, got up at once to look out; but found only the dung betels attacking the animals. He was astonished to see how the animals were afraid of the insects and when he went near the animals he found them very restless. On returning home with them, he found swellings on different parts of their bodies—all due to the stings of the insects. The swellings were chiefly in the throat and inside the thigh. I was informed of this immediately, and when I visited the area I found the animals dead. On post-mortem, I found that they had died of asphyxia. Smears of blood and the discharge from the swellings were examined and the results were negative. Thus the lesions caused by these insects could be easily mistaken for those of hæmorrhagic septiçœmia.

In the month of July 1941, I had a report from a village about the incidence of some unknown disease. I visited the area and the kisans narrated the history that the animals had swellings on their thighs and they died in 4 days. I examined the living ones and found swellings on the inside of the thighs. It was very similar to the swelling caused by the sting of the bhongarra and therefore a paste of acetic acid and chalk was applied. The next day the swellings extended outwards and upwards in all the four living animals and on further examination they revealed a crepitus which was very suspicious of Black-quarter. In one case, surgical treatment was started by incising the swellings and dressing them with corrosive sublimate. However, this animal died after 36 hours, while the untreated ones died after 29 hours from the onset of crepitus. Search was made for any abrasions on the body of the animals but nothing except the sting of the insect was found.

Out of the total eight deaths, 6 were buffaloes and 2 cows. All of them were young stock with the exception of one buffalo which was aged.

With a view to find out the nature of the disease and the cause of death, a smear was taken from the exudate in the swelling and 5 c.c. of it was injected intramuscularly into the quarters of a deer bought for the purpose. The smear was positive for Black-quarter and the deer died within 80 hours with characteristic symptoms of Black-quarter. Smears from the deer were taken and on examination were positive to Black-quarter. It may here be stated that the deer though immune to natural infection is susceptible to artificial inoculation.

A doubt arose whether the bhongarras were responsible for infecting these animals with Black-quarter. Therefore a few of these betels from the locality were procured. Their mouth parts were triturated in water and examined, but no Black-quarter organism was found in the smears.

College News

EXAMINATION RESULTS

BENGAL VETERINARY COLLEGE

The undermentioned students have passed in order of merit the Diploma Examination of the Bengal Veterinary College for the session 1941-42, held in March 1942 :—

Sl. No.	*Name.*	*Place of origin.*
1.	R. S. Singh	United Provinces
2.	M. S. Menon	Madras
3.	D. N. Bhatt	United Provinces
4.	D. P. Verma	United Provinces
5.	S. N. Mathur	United Provinces
6.	M. T. Ali	Bengal
	A. B. M. F. Wahed	Bengal
7.	J. P. Choudhury	United Provinces
8.	S. L. Isser	N. W. F. P.
9.	M. A. Rashid	Bengal
10.	Md. M. Ali Khan	Bengal
11.	C. W. Broach	United Provinces
	J. Nath	Port Blair
	G. Hyder	Bengal
12.	S. K. Sen Gupta	Bengal
	P. Chakrabarty	Bengal
13.	Q. S. Balyan	United Provinces
14.	P. Mukherjee	Bengal
15.	A. Y. Ali	Bengal
16.	K. M. Biswas	Bengal
17.	G. K. Ghosh	Bengal
18.	B. N. Sinha	Bengal
19.	S. K. De	Bengal
	K. Lall	Punjab
20.	C. S. Saxena	United Provinces
	B. Hossain	Bengal
21.	K. K. Banerjee	Bengal
22.	Md. Saifuddahar	Bengal
22.	A. A. Sakider	Bengal
24.	S. N. Manna	Bengal
25.	N. B. Mukherji	Bengal
	H. L. Roy	Bengal

Sl. No.	*Name.*	*Place of origin.*
26.	G. Kibria	Bengal
27.	N. C. Saha	Bengal
28.	Md. S. U. Ahmed	Bengal
29.	S. Ahmed	Bengal
30.	M. Rashid	Iraq
31.	A. K. Sen Gupta	Bengal
32.	T. P. Banerjee	Bengal
33.	M. Ahmed	Bengal
34.	I. B. Majumder	Bengal
35.	S. K. Mitra	Bengal
36.	B. S. Sarkar	Bengal
37.	A. P. Zibouni	Iraq
38.	H. B. Saha	Bengal
39.	M. S. Khan	Delhi
40.	J. R. Soroj	Delhi
41.	Md. M. R. Talukder	Bengal
42.	N. Islam (I)	Assam
43.	S. K. Roy	Bengal
44.	A. Rahim	Bengal
45.	S. Pramanik	Bengal
46.	A. Hossain	Bengal
47.	N. K. Ghosh	Bengal

(*Sd.*) A. D. MACGREGOR, F.R.C.V.S., F.Z.S.,
Principal.

BIHAR VETERINARY COLLEGE, PATNA.

The following students are declared to have passed the Diploma Annual Examination for the Session 1941-42, held in March and April, 1942.

1. S. D. Bharadwaj.
2. B. P. Sanyal.
3. T. B. Singh.
4. S. N. Sinha.
5. J. B. Mathur.
6. H. P. Srivastava.
7. J. S. Saxena.
8. Y. V. Thattey.
9. R. A. P. Singh.
10. M. M. Mundu.
11. G. Singh.
12. S. F. Deane.
13. A. K. Rustogi.
14. Lakhan Sinha.
15. G. S. Bist.
16. C. M. S. Tirkey.
17. Jibananda Das.
18. Syed Jamil Ahmad.
19. Md. Afzal.
20. Ghulam Hassan.
21. Sukhbir.
22. C. S. Lal.
23. J. L. Govil.
24. B. M. L. Dikshit.
25. Raviraj Singh.
26. Kedar Nath Sinha.
27. Chandradhar Roy.
28. G. P. Srivastava.
29. G. P. Barthwal.
30. J. S. Srivastava.
31. Maheshwar Prasad.
32. Raghunath Mahanty.
33. Manzarul Haque.
34. Abdul Qayum.
35. B. S. Massey.
36. H. E. Charles.
37. Rahmatullah Khan.

(*Sd.*) P. G. MALKANI, B.A., B.SC., M.R.C.V.S.
Principal.

BOMBAY VETERINARY COLLEGE

List of Students who passed Class C (Final year)

1. R. G. Moghe.
2. K. B. Mankad.
3. V. M. Kotbagi.
4. J. H. Solanki.
5. S. K. Naik.
6. W. P. Joshi.
7. L. S. D'Costa.
8. B. G. Waghmare.
9. K. V. Divekar.
10. A. M. Ursani.
11. G. G. Palnitkar.
12. M. K. Havaldar.
13. C. S. Kanwar.
14. A. K. Agha.
15. N. G. Kalgaonkar.
16. S. N. Luktuke.
17. G. B. Jadgouda.
18. A. E. Kulkarni.
19. R. M. Patil.
20. V. N. Vaishnav.
21. M. B. Subhedar.
22. A. Y. Shete.
23. Y. G. Mantri.
24. V. E. Nikumbh.
25. A. K. Menon.
26. N. A. Acharya.
27. K. B. Vyas.
28. T. S. Gulrajani.
29. B. K. Kathuria.

Bombay,
22—6—1942.

(*Sd.*) M. MOHEY DEEN, M.R.C.V.S., J.P.,
Principal,
Bombay Veterinary College.

MADRAS VETERINARY COLLEGE

List of candidates who passed out in the Final Examination held at the Madras Veterinary College, in March, 1942.

III Year Class (Three year course).

1. Panduranga Rao, V.
2. Mg. Ba Lwin.

IV Year Class (Four year course)

1. Alwar, V. S.
2. Baij Nath Gupta.
3. Balasubramaniam, G.
4. Damodaran Nair, K. P.
7. Narayanan, M.
8. Sankarankutty, K.
9. Syed Mohiyuddeen.
10. Venkatarathnam, G.

5. Krishnamoorti, D.
6. Krishna Rao, C.
11. Venkateswara Rao, C.

List of candidates who have passed out in the B.V.Sc. Degree Examinations (University) held in October 1941.

B.V.Sc. PRELIMINARY.

Second Class.

1. Chandran, K.
2. Krishnamoorti Vasanth, J.
3. Narayanaswami, S.
4. Panduranga Pillai, I. N.
5. Ramaswami, N.
6. Vadivelu, N. S.

B.V.Sc. INTERMEDIATE, PART I.

Second Class.

1. Sambasiva Rao, C.
2. Michael, R. D.
3. Ramamurti, V. P.
4. Ranganathan, M.
5. Suryaprakasa Rao, A.
6. Venkataramanan, K.
7. Venkateswara Rao, S.

B.V.Sc. INTERMEDIATE, PART II.

Second Class.

1. Sankarankutti, K.
2. Krishnaswami, S.
3. Dandapani, M. N.
4. Venkatesan, C. S.

B.V.Sc. INTERMEDIATE (OLD REGULATIONS).

Second Class.

1. Charles Victor, J.
2. Panduranga Rao, J.

B.V.Sc. FINAL (OLD REGULATIONS).

Second Class.

1. Visvanatha Menon, P.
2. Sivaramasubrahmanian, S.
3. Albert D'Souza.
4. Kariappa, K. K.
5. Kuppuswami, P. B.
6. Pandurangam, G.
7. Sitaraman, C.

List of successful candidates at the B.V.Sc. Degree Final, Old Regulations Examination held in January, 1942.

Second Class

Rank.	Register number and name of candidate.	
1	12. Ravi Varma Hegde, V.	7. Mahamed Mirzar Hug, K. A.
	4. Kuruvilla, I.	14. Srinivasan R.
	5. Madhava Menon, P.	16. Victor, D. A.
	6. Mantra Murti, I. D.	

(*Sd.*) K. S. NAIR, M.R.C.V.S., D.T.V.M.
Principal.

Names of Veterinary Graduates undergoing P. G. Course in the Madras Veterinary College, during 1942--1943.

1. Sri K. Shanta Naik, G.M.V.C.
2. ,, P. Viswanatha Pillay, G.M.V.C.
3. ,, T. N. Kristnaji Rao, G.M.V.C.
4. ,, B. Seetharama Rao, G.M.V.C.
5. ,, V. Shanmugasundaram Pillay, G.M.V.C.
6. ,, K. Gopala Nair, G.M.V.C.
7. Subedar T. V. Manickraj, G.M.V.C. (Mysore).

Correspondence

From

The President,
The Bombay Veterinary Medical Association,
Veterinary College, Parel, Bombay.

To

The Officer In-charge,
I. A. V. C. Records, Ambala Cantt.

Subject :—Inadequacy of pay, rank, etc., of Assistant Veterinary Surgeons, when compared with those of the Indian Medical Department.

Sir,

I have the honour to forward the following resolution passed at a meeting of the Managing Committee of the Bombay Veterinary Medical Association on 25th January 1942, and trust that Government will be pleased to give this matter a favourable consideration :—

"That a representation be submitted to the Gevernment about the inadequacy and difference of pay, rank, etc., of Veterinary Graduates required for enrolment as Veterinary Assistant Surgeons in the Indian Army Veterinary Corps for the War, when compared with those of the Medical Licentiates for the emergency branch of the Indian Medical Department (Indian Cadre) and request the Government to grant the Veterinary Assistant Surgeons all the concessions with regard to pay, rank, etc., as those sanctioned for the Medical Licentiates".

In this connection I beg to enclose for the information of the Government two cuttings from newspapers pertaining to the conditions etc., advertised for the information of those wishing to apply for the Veterinary or Medical Services. It will be observed that the initial pay of a Veterinary Jamedar is Rs. 75/- plus emergency allowances of a Rs. 100/- whereas that of Medical

Jamedar is Rs. 200/- to Rs. 275/- and that of a Subedar is Rs. 275/- to Rs. 300/-.

There is also a Sub-charge pay of Rs. 15/- to Rs. 40/- when in Sub-charge of Military Hospital.

My Committee do not understand the reason why these differences in pay, etc., of these two services should be kept, and therefore request that if Government wish to induce our Graduates to apply for services in the Indian Army Veterinary Corps, Government may be pleased to place them on the same footing as regards pay, rank, etc., as those of the Medical Licentiates.

I have the honour to be,
Sir,
Your most obedient servant,
(*Sd.*) N. D. DHAKMARVALA,
President,
Bombay Veterinary Medical Association.

Forwarded with compliments to the *Editor, Indian Veterinary Journal* Madras, for publication in the *Journal*.

(*Sd.*) P. G. DATE,
Joint Honorary Secretary,
B.V.M.A.

[Orders passed on this memorial, is published elsewhere in this issue of the *journol*, under 'Notification' *Ed., G. V. J.*]

Notification

INDIAN ARMY VETERINARY CORPS

Veterinary Assistant Surgeons are required for recruitment to the Indian Army Veterinary Corps.

Qualifications.

(*a*) Must be a graduate of a recognised Veterinary College in India.

(*b*) Be under 35 years of age.

Duration of appointment.

For the duration of war and for so long therefater as services may be required.

Emoluments.

Jemedar	...	Rs. 200 – 5 – 270
Risaldar	...	Rs. 285 – 5 – 300

Charge or Sub-Charge Pay—Rs. 10 to Rs. 30.

Rations.—Free rations including messing or compensation in lieu as admissible under existing rules.

Free fuel for warming and drying purposes.

Accommodation. Free accommodation or compensation in lieu thereof; free water and lighting. The family of a V. A. S. who proceeds on Field Service will be entitled to free accommodation or compensation, in lieu, free water and lighting.

Clothing.—Free issue of clothing and necessaries.

Medical Attendance.—Free medical aid.

Military disability and family pensions, gratuities etc.—Individuals and their dependants will be eligible for these benefits under the relevant military rules.

Travelling.—Free conveyance will be admissible under the rules in Passage Regulations as for permanent V. A. Ss. of the I A.V.C.

Applications should be addressed to the Officer-in-Charge, I.A.V.C. Records, Ambala Cantt.

SIMLA,
2nd June, 1942.

GENERAL HEAD QUARTERS, INDIA,
Quartermaster General's Office.

Reviews

Annual Report of the Imperial Council of Agricultural Research for the year 1940-41.

The report is a very interesting record of the activities of the Imperial Council of Agricultural Research. Some of these activities have helped to solve a few of the war problems and incidentally helped the development of local industries in this country itself.

We are glad to note that research had been undertaken to assist the local manufacture of drugs. By chemical and biological tests, it has been established that pyrethrum cultivated in the hills of Northern India compares favourably with the imported commodity. Another investigation establishes that Antrypol, a British product, is a good substitute for Naganol, a German product extensively used in veterinary practice. A detailed distribution of medicinal plants growing in India is being worked out which will help in the supply of good vegetable products and stimulate the cultivation of medicinal plants.

The question of producing fish liver oil containing vitamins A and D for both military and medicinal purposes has been examined. In the different fish curing yards of the Madras Fisheries Department, an oil of vary high

potency is extracted from the livers of sharks and saw-fishes. It is expected that this industry will soon be organised on a commercial role.

Annual Report of the Civil Veterinary Department, Barwani State, for the Year 1938-39.

There was only one Veterinary Hospital and one touring Dispensary as in the previous year.

The staff consisted of a Veterinary Assistant Surgeon, a Salutry, a Compounder, two Vaccinators and a Peon. The State Surgeon was the controlling authority. In the absence of permanent Veterinary Assistant Surgeon, on leave or otherwise, the Salutry was in charge of the Hospital as Officiating Veterinary Assistant Surgeon.

The Veterinary Section continued to be a branch of the State Medical Department.

12,805 cases were treated including 126 in-patients (in the hospital and on tour) as against 7,933 in the previous year. 448 castrations and 214 surgical operations were performed as against 292 and 289 respectively in the previous year. Reports received from the interior of the State were 50 (Rinderpest 3, Anthrax 5, Foot and Mouth 42). 1,019 animals were inoculated against Rinderpest and Anthrax during the year.

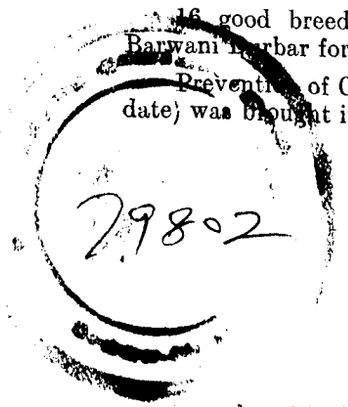
A few Durbar distinguished guests visited this institution and one of them, Mr. S. T. Low, the Director of Plant Institute, Indore, writes on the 5th January, 1939 :—

"I was shown round the recently opened Veterinary Hospital this morning. This establishment is admirably designed and equipped both for the treatment of In and Out patients and will, I am sure, fill a long felt want in an agricultural State such as Barwani. I was very interested in two forms of diseases that the Veterinary Officer informed were particularly prevalent in the State, *i.e.*, Necrosis of the horn in bullocks and the appearance of Cysts in the Thyroid region in cattle. The latter appears to be more or less confined to the Narbada valley area of the State. Both these diseases cause considerable loss and I shall be very pleased to send specimens up to the Imperial Veterinary Institute at Mukhtesar for examination if the Veterinary Assistant will let me have them. The castration figures that the Veterinary Assistant gave me were encouraging and show that the importance of good bulls is beginning to be realised. Rinderpest inoculation, both prophylactic and curative, is also carried out as part of the Hospital routine.

In conclusion it gives me great pleasure to be the first to write in this book as I am convinced that in enterprises such as these that are of real assistance and help to the subjects of the State and in the establishment of this Veterinary Hospital, Barwani State has once again shown us appreciation of this fact."

16 good breeding bulls were let loose in 16 villages at the cost of Barwani Durbar for the improvement of the indigenous stock.

Prevention of Cruelty to Animals Act No. xi of 1890 (as amended up to date) was brought in force in the State during this year.



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