

The Indian Veterinary Journal

(The Journal of the All-India Veterinary Association)

Vol. 35

FEBRUARY, 1958

No. 2

CONTENTS

I. Editorial	PAGE
Beware of Aid Programmes ...	E-5
II. General Articles	
Anti-Epidemic of Cutaneous Anthrax Among Bovines in North Kanara District (Mysore State).—By Dr. Syed Mohiyuddeen and Dr. N. S. Krishna Rao ...	55
Rickettsia canis in Hyderabad.—By K. Raghavachari and A. Madhava Krishna Reddy ...	63
Effect of Tropical Climate on body temperature and semen qualities in Jersey bulls.—By D. S. Bhatnagar ...	68
Feeding value of Akra (<i>Viscia Sativa</i>) in growing and adult poultry.—By A. K. Pal ...	72
Carcinoma of the horn and the eye in bovines.—By H. V. Kulkarni ...	76
III. Clinical Article	
Foreign body in the stomach of a dog.—By M. Ranganathan ...	83
IV. Abstracts	
Organic Fertilisers as a source of Salmonella Infection ...	86
Milk Fever, Post-parturient Paralysis and Lactation Tetany ...	86
Chlorpromazine in the treatment of Tetanus in the horse ...	87
V. News and Views ...	88
VI. Block Development Corner	
Mixed Farming—III—Animal Husbandry—Selective Breeding.—By T. Vinayaka Mudaliar ...	89
VII. Memoir	
Late Dr. D. S. Laud ...	91
„ Dr. Sarajal Haque ...	91
VIII. Association News	
Departmental Officers' Conference, Madras.—Rao Sahib N. Murugesu Mudaliar's inaugural speech ...	92
IX. Review	
The Infectious Diseases of Domestic Animals.—By W. A. Hagan and D. W. Bruner ...	95

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Editorial

BEWARE OF AID PROGRAMMES

This good old world does not seem to grow wiser with all its experience in the several fields of its activities. Could it be that it has developed a certain amount of resistance to experience and is thus immune to it! Otherwise it is difficult to understand the ways of men though history keeps on repeating itself and spot-lighting cause and effect to the benefit of the humanity at large. But the humanity does not seem to care two hoots for the lessons of history. Man persists in his folly and revels in its consequences.

We are provoked into such thoughts when we find, poor old India being subjected to various aid programmes from foreign countries. Several countries seem to be competing with one another to render us, what they consider to be highly necessary for our welfare and progress! We feel we are being slowly weaned away from our ancient culture and character, which gave India an individuality of her own and which has stood the test of time and stress. It is one thing to go and learn higher science in advanced countries but quite a different thing to walk into their parlour to study their systems of education, their systems of administration, their social structure, etc. These slowly but surely sow the seeds of proselytisation to new methods and ideas quite unsuited to the genius of this ancient land. That is what is happening through the so-called 'Aid-Programmes'. They are so alluring, so generous, so captivating that even best of our men fall a prey consciously or unconsciously to this new non-violent weapon and fail to notice the ideological changes that are bound to follow in due course of time. They say it is only an aid in the economic field and has nothing to do in socio-religious or political field. But

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we are aware of the well known maxim "Power over a man's support (livelihood) is power over his will". Foreign aids came to us in the past in the form of merchandise, trade, etc., ending finally in political conquest. The lessons of history are there as an open book. Let us therefore be wary of all such help.

Our men when they return back, talk in strange language decrying every thing that is Indian and praising all that is foreign. They must have big University Campus, stately Colleges, multiplication of courses of studies, creation of more and more offices, launching of plans and more plans, etc. All these are suggested absolutely unmindful of the naked poverty that stalks the land. *Old and tried methods are discarded over-night and new ones are heralded with all the aids of the present day publicity.* Some say professional colleges are far too widely distributed and that they should be all brought together in jutka position in a remote corner of this sub-continent. What is to happen to students from several tracts of this huge country is no concern of theirs and at what cost. Others suggest it is enough if we institute an Integrated course of studies in one college, of Agriculture, Animal Science, Co-operation, Dairying, Home Science, Social Welfare and what not. We feel dazed when we read such suggestions from persons who ought to know better. Luckily the Prime Minister of India never loses his balance and does not easily give in to such novel ideas. He condemned recently all attempts at aping foreign methods and means and suggested that we should stick on to what is best suited to the genius and economic position of this land. Let us hope this wholesome advice will be strictly adhered to by all those who are called upon to shape the course of events in this country.

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General Articles

AN EPIDEMIC OF CUTANEOUS ANTHRAX AMONG BOVINES IN NORTH KANARA DISTRICT (MYSORE STATE)

By

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and

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Anthrax is probably one of the oldest and most interesting of diseases of animals communicable to man. It is a disease of all warm blooded animals and is distributed widely all over the world. It occurs in peracute, acute, subacute and chronic forms. Though peracute form of Anthrax is not uncommon in cattle, it is very common in sheep wherein the animal dies suddenly without any indication of a previous ailment. In the acute type, the disease terminates in death in a day or two with symptoms of high temperature, respiratory distress, staggering and convulsions and bleeding from natural orifices after death and characterised by enlargement of spleen. In subacute type of Anthrax the symptoms and lesions are the same but lesions like oedematous swellings of the dependent parts are very common. Besides the course of the disease extends from 3 to 7 days. In chronic form, the disease is mild and the animal suffers for a considerable time and finally recovers.

Anthrax in animals is caused not only by the ingestion of the specific organisms or their spores but it is also transmitted from one animal to another by the biting flies. According to Jones (1956), Anthrax would rarely disappear in areas where blood sucking insects exist and when biting flies become very active during warm climate a cutaneous form of anthrax with subacute or chronic course, characterised by infiltrative swellings of the dependent parts of body is common. He has stated that cutaneous form results from the biting of flies and also after vaccination, if vaccines contain attenuated spores capable of producing localised Anthrax. According to the same author many outbreaks in recent years have been attributed to the use of live vaccines. Anthrax though usually sporadic even in endemic areas, very rarely assumes a virulent epidemic form. Boquin (1950) from France recorded an epidemic of Anthrax in animals and man in marshy area during dry summer, though Anthrax in the area had been known to be endemic. Failure to diagnose the first few cases resulted

in the slaughter of affected animals and spread of the disease. Minett (1952) reported the annual and seasonal incidence of Anthrax in various countries with reference to climatic effects source of infection etc., and had stated that in cooler northern countries like Britain, Belgium, Holland, Denmark, Norway, Switzerland and Germany, the highest incidence of Anthrax was in winter months and in countries with warm weather it was the highest in summer months. Minett (1951) also stated that certain combinations of temperature and humidity favour the sporulation and spread of Anthrax. Gupta (1928) reported Anthrax epidemic in the Minbyin Reserve Forest among wild animals like Samburs, bisons etc. followed by infection in elephants of the reserve forest area. Blood smears from 20% of the ailing elephants did not reveal Anthrax bacilli. The epidemic during the later stages was less virulent and the disease was more amenable to treatment with Salversan and carbolic acid. Viswanathan & Ayyar (1946) reported an unusual outbreak of subacute Anthrax in cattle in Madras, the course of the disease extending from 1 to 6 days. The disease was checked by the use of spore vaccine while Anthrax Anti-serum had no effect. Wessel, and DeCock (1947) recorded an unusual outbreak of Anthrax among cattle in two forms in Natal due to vaccine getting contaminated locally, while the same batch of vaccine used in other parts of the country on a large number of animals was without untoward incidents. Goret *et al* (1948) recorded cases of Anthrax with severe bacteraemia which were cured by Penicillin therapy. Penicillin itself was found very effective and combination of Penicillin and Anthrax Anti-serum had no advantage. Mohan and Ali (1948) reported that the incidence of Anthrax reached maximum during April to July when the mean temperature and humidity were moderately high. Stein (1943) in his observations on the laboratory diagnosis of Anthrax stated that the use of sterile cotton swabs for collection of specimen in the field was the most convenient method and it was considered necessary to confirm tentative diagnosis based on microscopic and cultural examination by animal inoculation tests. A case of Anthrax bacteraemia in a cow, 48 hours before death was recorded with the possibility of blood sucking insects spreading the disease. The same author recovered virulent Anthrax organisms from the house-flies and blow flies, from the spleen of dog that had fed upon anthrax carcasses, and from the muscle tissues of the carcass of a beef animal that had been vaccinated against Anthrax sometime before slaughter. It was also found that Anthrax spores in dried blood and spleen material collected on cotton swab from field cases and held at room temperature for more than 4 years were both viable and virulent. Weinstein and Oliver (1948) recorded three cases of human cutaneous Anthrax with malignant pustules on the face, neck and fore-arm. Bacteraemia occurred in one

person and the organisms were found in the spinal fluid also. All the three cases recovered after Penicillin treatment and according to those authors Penicillin seemed to be the drug of choice in the treatment of cutaneous Anthrax. Stein (1944) during the comparative studies with regard to cultural, biochemical and pathogenic characteristics of 53 strains of *Bacillus anthracis* and 64 strains of non-pathogenic anthracoid organisms found that the stock cultures of *Bacillus anthracis* maintained on plain agar for eleven years remained fully virulent for guinea-pigs when injected in 0.25 c.c. doses. Stein (1948) in his report on the incidence of Anthrax in livestock during 1945-1947 with special reference to control measures in U.S.A. had stated that active educational campaign in recognized Anthrax areas, with emphasis on the value of annual pre-seasonal vaccinations and on the importance of strict quarantine, proper carcass disposal and active co-operation of livestock owners, had resulted in a better control of the disease. Though many outbreaks reported were of a sporadic nature, one widespread virulent outbreak of Anthrax occurred in Louisiana State in the form of an epidemic. Most of the outbreaks occurred in areas long recognized as Anthrax districts and on farms where owners had neglected to immunize against the disease. Gochenour *et al* (1935) conducted experiments on the efficacy of anthrax biologicals in producing immunity in previously unexposed animals and found that biologicals like Anthrax spore vaccine (intradermic), Anthrax spore vaccine in saponin solution and Anthrax bacterin (washed culture), produced well marked immunity while Anthrax aggressin produced a lesser degree of immunity and Anthrax bacterin (whole culture) produced comparatively very little.

Present outbreak

An outbreak of a contagious disease among bovines was reported on 14.5.1957 in one village of Supa Taluka of North Kanara District (Mysore State) and soon after reports of a similar disease were received from two or three adjacent villages. The local Veterinary Officer, on clinical manifestation such as, swellings of the brisket extending to the throat and prescapular region diagnosed the disease as Haemorrhagic Septicaemia and protective inoculations were carried out accordingly. As these inoculations did not produce the desired result and the disease began to spread, the services of the Disease Investigation Officer were requisitioned for detailed investigation. On 26.5.1957 the Disease Investigation Officer visited the place and after examining suitable pathological materials microscopically and culturally diagnosed the disease as Anthrax and indicated protective inoculations against Anthrax but the disease continued to spread. The routine measures of control adopted by the local staff did not produce the desired effect. Therefore the Disease Investigation Officer and the Parasitologist stayed on

in the area for more than a fortnight to find out not only the various factors involved in the dissemination of the disease, but also quick methods for its control.

The disease had spread to several villages of Supa and Yellapur taluks of North Kanara district. More than twenty five villages in Supa taluk alone were visited and several cases were examined. The clinical manifestations of the disease were almost similar in every village. In the majority of cases the disease was subacute and invariably of a cutaneous type. Rise in temperature and gelatinous infiltrative and oedematous swellings of the dependent parts of the body such as throat, dewlap, prescapular region, brisket, sheath, flank and perineal region were the most common characteristic features, while enlargement of spleen and bleeding from anus with prolapse of rectum were observed in the majority of cases. The course of the disease, usually extended from 2 to 7 days but in a few cases it was chronic, running upto 15 to 20 days. Pathological materials such as heart blood and spleen smears from fresh carcasses and cultures of the same in broth, plain agar and blood agar media revealed typical Anthrax bacilli. Peripheral blood smears and smears from infiltrative swellings from ailing cases in various stages of the disease were found positive for Anthrax bacilli. As suggested by Stein, (1943) the diagnosis based on microscopic and cultural tests was confirmed by animal inoculation tests. A seventy-two hour old Anthrax culture obtained from the field material when injected into guinea-pigs intraperitoneally in 0.25 c.c. doses, was found virulent, and killed the experimental animals within 48 hours and Anthrax bacilli were isolated from heart blood cultures of the guinea-pigs.

The entire Supa and Yellapur taluks of North Kanara district are situated on the slopes of Western Ghats containing dense forest with an average rainfall of 90 to 100 inches annually. Throughout this area the blood-sucking flies like *Tabanus* and *Crysozona* species exist in abundance. Failure to diagnose the first few cases, improper disposal of carcasses in the beginning and the huge number of blood sucking flies in the area, which became very active during summer months, resulted in the quick dissemination of Anthrax to several villages of Supa, Yellapur, Ankola and Karwar taluks of the District. The outbreak in its severity and widespread nature seemed to be unprecedented. There was no history of Anthrax in the area for the past several years and in all likelihood the animals were highly susceptible thereby. As buffaloes formed the majority of animals used for ploughing in the area, they were in a greater number in the bovine population and therefore 75% of the total mortality was among them.

It was observed that Anthrax anti-serum did not produce the desired effect in ailing cases but Penicillin worked miraculously and

most of the cases treated with Penicillin recovered. Penicillin varying from 30 to 80 lakhs units (crystalline and procaine combined) was injected into each animal and found very effective. In some cases this initial dose was followed by 20 lakhs units for subsequent one or two days. The Veterinary staff in the field reported that Penicillin was more effective than Anti-serum in ailing cases and their records revealed that Penicillin alone gave better results than a combination of Penicillin and Anti-serum.

Anthrax saponin vaccine used in clean villages did not produce any untoward results and the disease subsided but in the affected villages and a few cases of attacks among the vaccinated animals were observed invariably even 14 days after vaccination. Another interesting observation was that the results of vaccinations in villages situated in dense forests were less satisfactory than those in the clear areas. This might have been due to the great density of Tabanid flies in the forests which acted as mechanical transmitters of the disease and constantly infected the animals without allowing sufficient time for the animals to develop immunity. In some of the interior villages of Supa taluk about 40 biting flies were observed on a single animal and it was a horrible sight to find an animal bleeding through several spots on the body. The swellings were found usually on the brisket, lower part of the abdomen, sheath and flank since the blood sucking flies were observed to attack usually those parts of the body. Anthrax bacilli were found even in the smears made from the crushed mouth parts of blood-sucking flies, caught while biting the affected animals. As the warmer months of May and June formed the favourable season for the biting flies to be most active, their number was so large that it was not possible to control the fly menace. The only way to control the flies was to deforest the whole area which was not a practicable proposition.

It was interesting to observe that blood smears of ailing cases among the vaccinated animals usually did not reveal Anthrax bacilli, except, in cases when smears were taken one or two hours prior to death. But in those cases, the smears taken from the swellings of the dependent parts were found positive for Anthrax bacilli. These findings indicated that the organisms were localised in the swellings and appeared in the general circulation only just before death. In this epidemic along with cases of Anthrax a few cases of Surra were also encountered in the area and *Trypanosoma evansi* organisms were identified microscopically in the blood smears. A few cases of Anthrax in animals exhibited peculiar nervous symptoms which did not respond to Penicillin treatment satisfactorily and those were found to be cases of exacerbation of Surra due to Anthrax infection, and the treatment with Penicillin and Antrycide in such cases was effective.

Human Cases

Six cases of Human Anthrax in Supa area were brought to our notice by the local Medical Officer during the investigation of this epidemic of cutaneous Anthrax in animals. The first case of human Anthrax was detected by the Medical Officer in Supa Dispensary on 10th June 1957 about one month after the outbreak of Anthrax in cattle. All the six cases of human Anthrax treated in Supa Dispensary were of cutaneous type and the exposed parts of the body were affected. The source of infection was from the affected cattle and the carriers of infection were tabanus flies. Among the six cases, three persons gave a definite history of a sting by a tabanus fly while carrying Anthrax carcasses for burial.

All the six human cases were adult male agriculturists and the incubation period of the disease varied from six hours to three days. There was an intense itching at the site of the sting followed by the appearance of a papule which subsequently became vesicular gradually. The coalescence of the surrounding tiny vesicles resulted in the encrustation of the original central vesicle. The whole eruption which was about the size of a rupee, became umbilicated and this was surrounded by a zone of tense reddish induration which in its turn was surrounded by an extensive soft oedema of the entire affected part. In one case where the eruption was on the right elbow, not only the whole arm was swollen but the entire right side of the chest was prominent and swollen up. In five out of six cases there was fever and the lymph-nodes draining the affected area were also enlarged and sometimes tender.

The skin lesion of umbilicated eruption, surrounded by a zone of tense reddish induration with enormous and extensive oedema of the affected part, commonly known as malignant pustule, did not reveal pus in any of the six cases observed. Even in the case which turned up for treatment a fortnight after the eruption appeared, pus was not seen in the lesion. Therefore the term Malignant Pustule did not seem to be appropriate whereas Malignant Vesicle appeared a more appropriate term for description of these lesions. The vesicles contained viscid sero-sanguinous material and smears of the sero-sanguinous material from the malignant vesicles of the two cases were found positive for organisms morphologically identical with *Anthrax bacilli*.

In the six cases of human cutaneous Anthrax observed in Supa, the malignant skin lesions in the form of umbilicated eruptions were present on the following regions of the body.

1. Left fore-arm with swelling all round, associated with fever. (Fig. 1.)

An Epidemic of Cutaneous Anthrax among Bovines in North Kanara District (Mysore State)

By

DR. SYED MOHIYUDDIN, and DR. N. S. KRISHNA RAO



Fig. 1.

Man aged 35 years from Kunang village, seen on 10-6-1957, had a sting by a tabanus fly fortnight before while burying his buffalo died of anthrax.

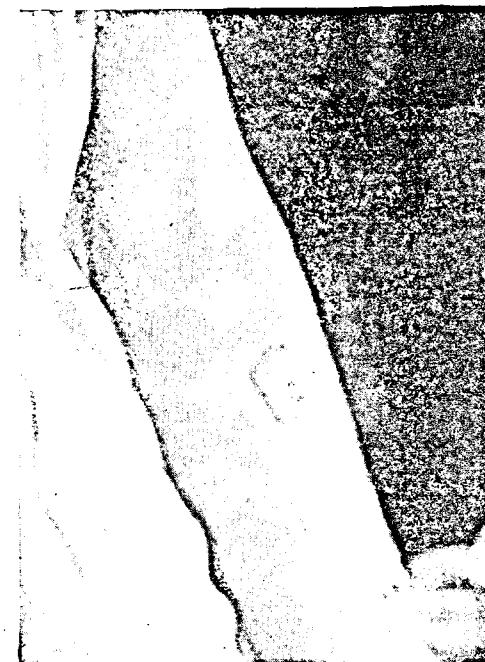


Fig. 1-(a)

Same with enlarged lesion and swelling.

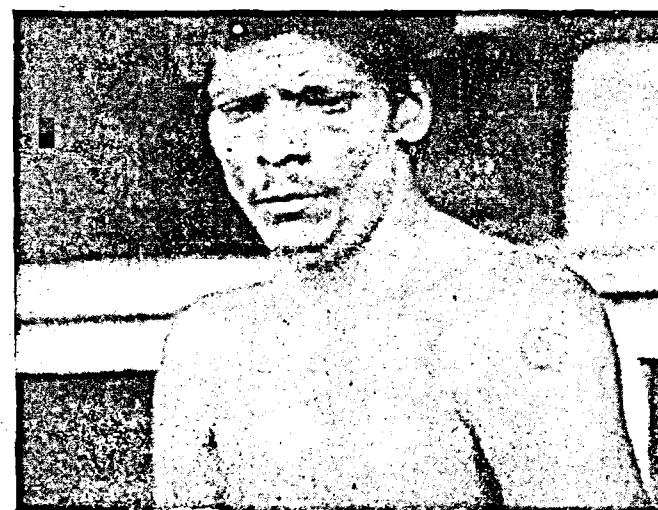


Fig. 2.

Man aged 36 years, from Ambeli village, seen on 10-6-1957. His cattle died of anthrax but no definite history of sting from a tabanus fly.

An Epidemic of Cutaneous Anthrax among Bovines in North Kanara District (Mysore State)

By

DR. SYED MOHIYUDDIN and DR. N. S. KRISHNA RAO

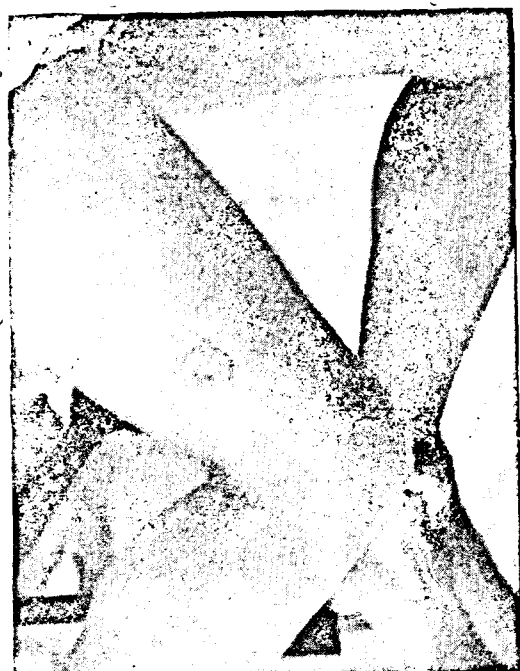


Fig. 3.

Man aged 65 years from Ambeli village seen on 11-6-1957. His cattle died of anthrax and had a sting by a tabanus fly 3 days ago.



Fig. 4.

Man aged 45 years from Bhambarde village, seen on 13-6-1957. His cattle died of anthrax but no definite history of sting by tabanus fly.

Rickettsia canis in Hyderabad

By

K. RAGHAVACHARI

and

A. MADHAVA KRISHNA REDDY



Photograph of camera lucida drawings of a few cells infected with *Rickettsia canis*.

1. Elementary bodies.
2. Morulae.

[To face page 63]

AN EPIDEMIC OF CUTANEOUS ANTHRAX AMONG BOVINES

61

2. Left deltoid region with the swelling of left arm and chest associated with fever, body pain, headache and moderate toxæmia. (Fig. II.)

3. Right thigh with swelling of the whole right lower extremity associated with high fever and severe body-ache. (Fig. III.)

4. Left leg with swelling of the entire leg portion gradually enlarging but no fever. (Fig. IV.)

5. Left lower extremity with the swelling of the whole area associated with fever.

6. Right elbow with swelling of right arm, axilla and right side of the chest; Right axillary lymph-node was markedly enlarged and tender.

It was reported to us by the local Medical Officer that in four of the six cases pneumonia was present and in two cases Central Nervous system was involved as manifested by their semi-unconscious condition.

All the six cases reported were cured with Pencillin treatment. But it had to be administered in heavy doses depending on the degree of toxæmia and severity of the disease. In one case of severe toxæmia, 28 lakh units of Pencillin within 24 hours time for three days brought down the temperature to normal and the toxæmic symptoms disappeared.

Summary

1. Anthrax when transmitted through biting flies appeared mostly in a cutaneous form.

2. Bacteraemia was not observed in all affected animals at all stages of the disease but toxæmic symptoms were observed in several affected animals although blood smears were found negative for *Anthrax bacilli*.

3. Anthrax Anti-serum was not effective in ailing cases while Penicillin proved to be the drug of choice.

4. Anthrax saponin vaccine in clean villages yielded satisfactory results while in affected villages some failures after vaccinations were recorded.

5. Smears of the affected animals among the vaccinated usually did not reveal *Anthrax bacilli*.

6. Cases which had both Anthrax and Surra infection were not easily amenable to treatment.

7. Six cases of human Anthrax with Malignant skin lesions were recorded in Supa area during this investigation and smears from skin lesion of two cases revealed *Anthrax bacilli*. All the six human cases of Anthrax responded well to Penicillin treatment.

8. Anthrax bacilli were identified in the crushed biting flies collected from the body of the affected animals.

Acknowledgements

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REFERENCES

1. Boquin, M. (1950) ... An Epidemic of Anthrax in Animals and Man in France.
Bull. Acad. Med. Paris, **134**: 585-589 pp.
2. W. S. Gochenour, H. W. Schoening, C. D. Stein, W. M. Mohler (1935) ... Efficacy of Anthrax biologicals in producing immunity in previously unexposed animals.
Technical Bulletin No. 468 of United State Department of Agriculture, April 1935.
3. Goret, P., Collet, P., Peres G. Goubert, L and Courouble G. (1948) ... Enzootic Anthrax in cattle in Lyon District and Penicillin treatment.
Rev. Med. Vet. Lyon et Toulouse **99**: 241-252.
4. M. C. Gupta (1928) ... Anthrax epidemic in the Minbyin Reserve. *Indian Vet. J.* **4**: 216-228 pp.
5. Minett, F. C. (1951) ... The use of climatological data for assessing the regional distribution of Anthrax in India.
Bull. Off. Int. Epiz. **35**: 266-295 pp.
6. Minett, F. C. (1952) ... The annual and seasonal incidence of Anthrax in various countries, climatic effects and sources of infection.
Bull. Off. Int. Epiz. **37**: 238-300 pp.
7. Mohan, R. N., Ali S. M. (1948) ... Some aspects of Anthrax in Bengal. *Indian J. Vet. Sci.* **18**: 1-15 pp.
8. Stein C. D. (1943) ... Studies and observations on the Laboratory diagnosis of Anthrax.
Vet. Med. **38**: 130-139 pp.
9. Stein C. D. (1944) ... Differentiation of *Bacillus Anthracis* from non-pathogenic Aerobic spore forming *Bacilli*.
American Jour. of Vet. Research **5**: 38-54 pp.

10. Stein C. D. (1948) ... Incidence of Anthrax in Livestock during 1945-1946-1947 with special reference to control measures in the various States.
Vet. Med. **43**: 315-320 pp.
11. Thomas J. Jones (1956) ... "Diseases of Cattle" published by American Veterinary Publications (1956)
12. Viswanathan, G. R. and Ayyar, S. V. (1946) ... Subacute Anthrax in cattle in Madras. *Indian J. Vet. Sci.* **16**: 232-234 pp.
13. Weinstein, L., Oliver C. S. (1948) ... The treatment of human Anthrax with Penicillin.
Amer Practitioner **2**: 533-pp.
14. Wessels C. C. and De Kock J. A. (1947) ... An unusual outbreak of Anthrax in cattle with special reference to treatment with Penicillin.
J. S. Afr. Vet. Med. Ass. **18**: 163-164 pp.

RICKETTSIA CANIS IN HYDERABAD

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Historical.—Donatien and Lestoquard (1935-36) studied a virulent disease in dogs, exposed to infestation with *Rhipicephalus sanguineus* in Algeria. They encountered a parasite in the monocytes of the blood of such dogs and named the parasite *Rickettsia canis*. Durand in 1932 successfully infected dogs with *Rickettsia conori* of the human origin in the mediterranean basin. Although the dogs showed the parasite ten days after the receipt of the infective dose, the disease produced was inapparent and mild in nature. *Rickettsia canis* infection as studied by Donatien and Lestoquard was a more virulent malady and often terminated in the death of the affected dog. The latter authors proved that the parasites were entirely different serologically. Neitz and Thomas (1938) came across in South Africa a virulent disease in canines and the cause of the trouble was found to be *Rickettsia canis* (Donatien and Lestoquard 1935). Meanwhile Danks (1937) from Kenya described this disease in dogs. This disease has a wide distribution and has been recorded in the Union of South Africa, Rhodesia, French Belgian Congo and India. The disease probably is prevalent in other parts of the world also where the tick *Rhipicephalus sanguineus* is present.

Mudaliar (1944) reported in a preliminary note this disease for the first time in India according to the available literature. The authors of this paper had occasion to encounter this disease only in pure bred Alsatian and Golden Retriever dogs in Hyderabad and the object of this paper is to record the incidence of this disease for the first time in Hyderabad.

Materials and Methods.—During the year 1956 and the later part of 1955 we had occasion to examine the blood smears forwarded to this laboratory by the officers working in the field from about a dozen cases of canines with persistent fever. The cases were suspected for Piroplasmosis. The smears were examined and found negative for Piroplasmosis, Surra and Bacterial infections. Anaemic changes in the blood smears of these animals, together with a considerable increase in the blood count of the mono-nuclear leucocytes and lack of response to symptomatic treatment indicated to us that there must be some infection. This necessitated prolonged examination of the specimens which resulted in the finding of *Rickettsia canis* in a few monocytes. We got in touch with the cases and made smears in such a way that all the leucocytes were concentrated along the edges of the smears. This facilitated easy detection of the infection. The blood smears were stained by either Giemsa or Leishman method or a combination of both. The parasite appeared, when stained by these methods, either as a darkly stained compact colony containing about 50 or more small granular coccoid elements, or as a collection of 10 to 15 irregular bodies, in the cytoplasm or the monocytes. No other leucocyte was found infected. As the disease was encountered by us for the first time we sent our preparations to South Africa to Professor Henning who confirmed our findings. Through his kind courtesy we received positive smears of the South African strain of *Rickettsia canis*. We made a comparative morphological study of the specimen of the parasite received from South Africa with that of the Indian strain and found them morphologically indistinguishable from each other.

Morphology.—The parasite usually occurs in small aggregates in the monocytes. The size of the colony varies considerably from 2 to 10 microns. In our preparations we met with 2 types of colonies (see plate). One type of colony consisted of very small spherical coccobacillary elementary bodies each measuring between 0.2 to 0.3 microns and numbering between 50 to 60 and such colonies were as strongly stained as the nucleus of the host cell itself. The other type of colony encountered was loose in consistency and contained about 25 to 30 granules (Morulae). The entire colony when compared with the other type was found to be lightly stained. The specimens we examined were not very rich and we encountered only about 6 to 8 parasitised cells per

preparation. We met with yet another type of colony of the size of 3 to 5 microns in diameter stained uniformly very black without any differentiation. These colonies compare well with those described by Donatien and Lestoquard (1938), in the smears of dogs, made from liver and blood and taken from the small ducts of the piamater. Such colonies were only seen during the pyrexial period of the subinoculated dogs.

Symptoms.—According to the literature 3 forms of the disease are described namely, the cutaneous form, the septicaemic and the nervous form. The cases we examined fall under the cutaneous and septicaemic forms. In the cutaneous form we encountered circular necrotic ulcers with undermined edges measuring 8 to 10 m.m. in diameter. These lesions were present on the abdominal wall and numbered about half a dozen. The lesions appeared to be of a chronic nature with a very thin layer of pus-like material covering the surface of the ulcer. The lesions simulated those of cutaneous form of distemper in dogs and from the history it was learnt that they were not yielding to local treatment. We encountered only one such case. The blood smears of this case were positive for *Rickettsia canis* and showed the typical blood changes associated with the disease. This case ultimately died and was not available for post-mortem examination.

The other form that we encountered was the septicaemic form as described in literature. Most of the dogs diagnosed in the laboratory as positive for *Rickettsia canis* numbering over a dozen fell under this category. The history pointed out that the animals had run a course of high fever, were off feed and showed a rapid fall in bodily condition with alimentary disturbances. Such of those animals we happened to examine were found to be very weak in condition. All bones were seen sticking out prominently with a staring coat, and a dull and depressed look. The visible mucous membranes were found injected during pyrexial period and were very pale when fever subsided. The affected dog was very dull, drowsy and unwilling to move about. When forced to walk the animal would go only a few feet and lie down with an increased rate of shallow respiration. There was usually a mucoid or mucopurulent discharge from eyes and nose. The eyes lost their lustre and the eye-balls are sunken deep. There was a peculiar foetid odour about the animal's breath and its surroundings.

We had no occasion to meet with the nervous form of this disease reported in literature.

Since all the positive cases recovered with treatment, we had no chance to do any post-mortem examination.

Transmission Experiments.—We collected 5 c.c. of blood from an ailing case at the time when the animal showed parasite in the peripheral

circulation, and subinoculated direct into a month old pup subcutaneously and kept the pup under observation. After an incubation period of about 2 weeks the pup became slightly indisposed but did not show any evidence of fever or any other discomfort. Blood smears were collected and examined daily and about the 10th day after inoculation, change in the leucocytic count became manifest, and the parasites were found very rare on the 15th day after inoculation. The observation was continued over a period of 2 to 3 months. During this period the parasite was only visible in the peripheral smears off and on and except for the stunted growth of the animal, there was no evidence of its suffering from any serious trouble. The experiment was repeated on another pup but much older than the first one. This case also behaved similarly and the parasite was seen for the first time on the 18th day after subinoculation and subsequently on the 20th, 24th, 32nd and 48th day and remained negative afterwards. Even in natural cases we encountered the parasite off and on although the disease was progressing. We kept this female pup and it became an adult and whelped after one year. But the disease did not resuscitate even after whelping. Unlike the natural cases which suffered severely, these experimental pups did not show any signs of apparent sickness.

According to literature dogs of all breeds suffer from the disease equally but our experience had been that the disease is severe in pure breeds like Alsations and Golden Retrievers in which we studied natural cases. The disease is inapparent in non-descript street dogs which we used in our experimental transmission by the syringe passage method. Prof. Henning in a private communication opined that *Piroplasma canis* is a primary infection which opens up the way for *Rickettsia canis* to invade tissues. This perhaps explains the inapparent syndrome of the disease in our experimental pups as they were free from other infections.

Vectors.—We could not undertake any tick transmission work so far but the ticks collected off the ailing animals were identified by Zoological Survey of India, Calcutta as *Rhipicephalus sanguineus* Latreille, 1804.

Treatment.—In the early part of our investigation positive cases were recommended to be treated with sulpha drugs which have been reported in literature to have given encouraging results in foreign countries. But we learnt from the field officer that the response to Sulpha drugs or Penicillin was not satisfactory. So we recommended Aureomycin to be tried as it was reported to be good for Rickettsial infections. Although the cases were responding to the treatment with this drug we recommended treatment of a few cases with Terramycin also. Terramycin is now the drug of choice with us for the treatment

of canine Rickettsiosis, because after one or two days following treatment the cases become normal in all respects except for weakness and no relapses are encountered.

Summary

Rickettsia canis infection in dogs is recorded for the first time in Hyderabad.

Morphology of the parasite involved is described in detail and the Indian strain of the parasite is found to be identical with the South African strain of the parasite with which it was compared morphologically.

Symptoms of the disease in naturally infected animals are described.

Animals showing symptoms suggestive of distemper and found refractory to treatment for the same and negative for infection by Piro but at the same time showing severe monocytosis were all found positive for *Rickettsia canis* infection.

Ticks collected off infected animals were identified as *Rhipicephalus sanguineus* Latreille, 1804.

Treatment with Aureomycin and Terramycin was effective. Terramycin is found more efficacious than Aureomycin.

Rickettsiosis in canines can be transmitted to healthy animals by inoculation of blood and the disease was found to be less acute in young local non-descript pups used for experimental transmission.

Acknowledgments

The authors wish to thank the field officers posted at Veterinary Hospitals at Narayanguda, Pathergatti, Sitarampet and Secunderabad for forwarding blood smears from infected dogs for examination at this laboratory and also for presenting the cases for our inspection.

We are very grateful to Professor Henning of Pretoria University, South Africa for confirming our findings and for making available to us a positive smear of *Rickettsia canis* from a South African dog.

We are thankful to the Principal, College of Veterinary Science and Animal Husbandry, Osmania University, Hyderabad for the photographs of the camera lucida drawings.

Thanks are also due to the Director, Zoological Survey of India, Calcutta for identifying our specimens of ticks.

REFERENCES

1. Danks, W. B. C. (1937) ... *Annual Report Veterinary Department Kenya* 64, (as quoted by Henning).
2. Donatien, A and Lestoquard, F. (1935) ... *Bull. Soc. Path. Exot.* 28, 418.
3. " ... *Ibid.* 29, 378.
4. " ... *Ibid.* 25, 1052.
5. Durand, P. (1932) ... *C. R. Acad. Sc.*, 194, 918 *Vet. Bull.* 3, 360.
6. Henning, M. W. (1949) ... *Animal diseases in South Africa.*
7. Mudaliar, S. V. (1944) ... *Ind. Vet. J.* 20, 163.
8. Neitz, W. O. and Thomas, A. D. (1938) ... *J.S.A. V.M.A.* 9, 166.
9. Richardson, U. F. (1948) ... *Veterinary Protozoology.*
10. Steinhans, E. A. (1947) ... *Insect microbiology.*

EFFECT OF TROPICAL CLIMATE ON BODY TEMPERATURE AND SEMEN QUALITIES IN JERSEY BULLS

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1. Introduction

Various authors (Gaalaas, 1945; Brody, 1948; Bonsma, 1949; Beakley and Findlay, 1955 and others) have reported the effects of high air temperature on body temperature of several European breeds of cattle. Similarly the deleterious effects of temperature on semen qualities of farm animals have been recorded (Mackenzie and Berliner 1937; Mukherji and Bhattacharya, 1952; Erb and Waldó, 1952; and others) in the Indian as well as in the foreign breeds. However, our knowledge about the effects of high air temperature and humidity on semen qualities and body temperature of European breeds under tropical conditions is still lacking. In view of that the present investigation was undertaken to report the findings.

2. Materials

(a) *Animals*:—Observations were made on two Jersey bulls (Nos. 69 and 506), approximately 2½ years old, which were imported into India from New Zealand in the month of May 1955 and brought to the Artificial Insemination Centre, Patna in June 1955 in an attempt to improve the local crossbred Taylor cows (Jersey × local). In the month of June they were vaccinated against Black quarter, Haemorrhagic Septicaemia, Rinderpest and Foot and Mouth disease. These animals weighed 760 lbs and 837 lbs respectively on their arrival at Patna.

(b) *Management*:—Animals used to have daily three mile walk in the morning and were stall fed. They were fed on green grass, hay and/or bhusa. Besides this, four seers of concentrates per day per head were also provided. The concentrate mixture consisted of gram, maize, oats, groundnut cake and wheat bran. Mineral mixture was also given in their ration. Anthelmintic in the form of Phenothiazine was given once a month.

3. Methods

The body temperature was recorded by with a clinical thermometer by inserting it about four inches into the rectum. The observations were made thrice a day at 7 A.M., 11 A.M. and 5 P.M.

Semen samples were collected from these bulls once a week on an average. It was examined for volume, motility, sperm concentration, total number of spermatozoa per ejaculate, hydrogn-ion-concentration and reaction time.

Data on atmospheric temperature and humidity were obtained for the period under study from the civil aerodrome located close to the Artificial Insemination centre. The data used were the averages of the previous six days observations.

4. Experimental

Correlation co-efficients between atmospheric factors, semen characteristics and Body temperature of the two Jersey bulls Nos. 69 and 506.

	Air temperature		Relative humidity		Body temperature	
	69	506	69	506	69	506
Humidity	— 0.60*	— 0.59*				
Body temp.	+ 0.71**	+ 0.90**	— 0.43	— 0.11		
Volume of semen	— 0.40	— 0.02	— 0.66*	— 0.34	— 0.49	— 0.30
Motility	— 0.55	+ 0.12	+ 0.04	+ 0.45	— 0.79**	— 0.51*
Sperm density	— 0.61*	— 0.28	+ 0.31	— 0.35	— 0.88**	— 0.62*
Total sperm	— 0.65*	— 0.21	+ 0.47	— 0.02	— 0.87**	— 0.55*
pH	— 0.09	+ 0.02	— 0.25	— 0.37	— 0.57	+ 0.07

* Significant at 5% level.

** Significant at 1% level.

Results for bull No. 69 indicate that:—

(1) Air temperature is negatively correlated with the semen characteristics studied. The association of air temperature with the volume of semen and the motility is however not significant although the figure approaches appreciably to the 5% level of significance. There is a highly significant positive correlation between air temperature and body temperature. Negative significant correlation between air temperature and humidity is also observed.

(2) Humidity has no significant correlation with all the semen characteristics except that of volume of semen.

(3) Positive correlation between body temperature and air temperature is highly significant but however the humidity has little effect. High atmospheric temperature raises the body temperature while humidity has a tendency to lower it down. Body temperature is negatively correlated with semen characteristics studied. Motility, sperm density, total spermatozoa have been highly significantly associated with body temperature while the volume of semen and pH are not as much related.

Results for bull No. 506 indicate that:—

(1) Atmospheric temperature and humidity are negatively correlated. The air temperature influences the body temperature significantly. No significant relationship between atmospheric temperature and semen characteristics can be established.

(2) There is no correlation between humidity and body temperature and between humidity and semen characteristics.

(3) Body temperature is found to be negatively correlated with motility, sperm density and total spermatozoa per ejaculate.

5. Discussion

The reaction of the animal at a particular time is a complex function of the environment over several hours and probably even days before hand (Hutchison and Mabon, 1954). In view of that in the present study the Meteorological data and the observations on rectal temperatures were averaged for the previous six days of the experiment.

Anderson (1945) has reviewed the deleterious effect of heat on male fertility. Moore (1932) showed the natural occurrence of cryptorchidism by artificial induction of increased temperature. Phillips and Mackenzi (1934) have experimentally demonstrated of the high summer atmosphere temperature lowering the vitality of spermatozoa of rams resulting in sterility. Similar reports have been made by Mckenzi and Berliner, (1937); Gunn, Sanders and Granger, (1942) and others. Reports are also there that lower environmental temperature during summer months improves apparently the fertility of rams (Dutt and Simpson, 1954; Dutt and Bush 1955). Increased testicular temperature influences spermatogenesis (Lagerlof, 1934). Casady, Myres and Legatas (1953) concluded that "under chamber conditions spermatogenesis in the young dairy bull may be impaired when the animal is continuously exposed to temperature exceeding 85°F. for period exceeding five weeks". In this study bull No. 69 also showed a decline in spermatogenesis associated with high body temperature caused by the rise in the atmospheric temperature.

When the average body temperature, averaged for six days, reached about 103°F, the semen collected from this bull did not indicate any spermatozoa. As the body temperature gradually came down, the sperm could be seen in the semen with the high percentage of abnormalities and immaturity. Apparently the atmospheric conditions adversely affected the reproductive functions to a greater extent in bull No. 69 than in bull No. 506. The relatively more severe effect of high air temperature on the semen qualities of bull No. 69 may be due to the febrile state of the animal in addition to modification in level of gonadotrophin, thyroxine resulting from the high environmental temperature.

Some characteristics indicative of heat tolerance have been studied but the most valuable analyses of differences between the two species are those made at Missouri (Worstell and Brody 1953). Rhoad (1940) and Bonsma (1949) have demonstrated the differences between breeds and between animals within breeds which are associated with thrift and good performance. The difference between two bulls No. 69 and 506 observed may be a genetical difference and therefore a source of error in physiological studies. Therefore experimental group cannot be validly compared with controls and each animal, must serve as its own control in a time dimension.

6. Conclusion

The effects of high air temperature on body temperature and semen qualities were studied on two Jersey bulls imported into India. Analyses of data indicate the deleterious effects of tropical climate on semen qualities and body temperature.

REFERENCES

- | | | |
|---|-----|---|
| Anderson, J. (1945) | ... | Imperial Bureau of Animal Breeding and Genetics Tech. Communication. |
| Beakley, W. R. and Findlay, J. D. (1955) | ... | <i>J. Agri. Sci.</i> 45 : 339. |
| Bonsma, J. C. (1949) | ... | <i>J. Agri. Sci.</i> 39 : 204 |
| Brody, S. (1948) | ... | <i>M. O. Agri. Exp. Res. Bull</i> No. 423. |
| Casady, R. B., Myres, R. M. and Legates, J. E. (1953) | ... | <i>J. Dairy Sci.</i> 36 : 14. |
| Dutt, R. C. and Simpson, E. C. (1954) | ... | <i>J. Ani. Sci.</i> 13 : 1019 |
| Dutt, R. C. and Bush, L. F. (1955) | ... | <i>J. Ani. Sci.</i> 14 : 835. |
| Erb, B. E. and Waldo, D. R. (1952) | ... | <i>J. Dairy Sci.</i> 35 : 245. |
| Gaalaas, R. F. (1945) | ... | <i>J. Dairy Sci.</i> 28 : 555. |
| Gunn, R. M. C., Sanders, R. N. and Granger, W. (1942) | ... | <i>Coun. Sci. Indust. Res. Aust. Bull</i> No. 148. |
| Hutchison, H. G. and Mabon, R. M. (1954) | ... | <i>J. Agri. Sci.</i> 44 : 1. |
| Lagerlof, N. (1934) | ... | <i>Acta. Path. Microbial. Scand. Suppl.</i> 19 (quoted by Anderson, (1945)) |
| MacKenzie, F. F. and Berliner, V. (1937) | ... | <i>M. O. Agri. Expl. Sta. Res. Bull</i> No. 265. |

- Moore, C. R. (1932) ... Sex and internal secretion. Ed. by Edjar Allen, Williams & Wilkins Co., Baltimore.
- Mukherji, D. P. and Bhattacharya, P. (1952) ... *Ind. J. Vet. Sci.* 22(2): 73.
- Phillips, R. W. and Mackenzie, F. F. ... *M. O. Agri. Exp. Stn. Res. Bull* No. 217. (1934)
- Rhoad, A. O. (1940) ... *Emp. J. Eapt. Agri.* 8: 190.
- Worstell, D. M. and Brody, S. (1955) ... *M. O. Agri. Exp. Stn. Res. Bull* No. 515.

FEEDING VALUE OF AKRA (*Viscia Sativa*) FOR GROWING AND ADULT POULTRY *

By

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Introduction

In recent years, various experiments have been planned to minimise the cost of feeding of poultry. To this end, many of the less costly cereals and bye-products have been substituted for costlier cereals. Akra has been found to be the sole constituent of pigeon feed as extensively practised in this region of India. On routine chemical analysis, Akra, a leguminous cereal, also yielded a high percentage of crude protein (nearly 30% crude protein). Since crude protein supply always presents an acute problem in economical livestock rations it was considered necessary to undertake this experiment to examine the feasibility of incorporating Akra in poultry ration with economic advantage under the existing field conditions. This was also considered a special necessity because of a lack of data and reference in literature on the subject.

Experimental

The experiment was planned to consist of two parts to determine:—

Part I (a) The preliminary effect of feeding Akra as the sole ration to day-old chicks for the period of first two weeks of growth. The ration was supplemented by *ad lib* supply of skimmed milk and grits.

(b) The effect of feeding Akra as the sole feed to male birds of 12 weeks of age.

* Courtesy Indian Science Congress.

Part II The effect on growth rate of feeding 50% Akra in a standard all-mash-ration to growing male birds. The standard mash was as follows:—

	Parts
Ground maize meal	43
Wheat bran	25
Wheat meal	10
Ground oats	5
Ground barley	5
Ground-nut cake meal	11.5
Salt	0.5

Finally 7 parts of fish were added to this mixture to yield the standard all-mash ration. This constituted the ration for the control birds.

In the case of experimental birds, half of the mash was substituted by an equal quantity of crushed Akra. Water, greens and limestone grits were allowed *ad lib* to both the groups.

Results

Part I. (a) This portion of the experiment was carried out with 150 chicks of the popular breeds — White Leghorn and Rhode Island Red housed in brooder houses with proper light and heating arrangements. The ration consisted solely of uncrushed Akra. Although it was noticed that the palatability was not unsatisfactory, the chicks in huge numbers were found to indulge in bath in milk fountains with consequent pneumonia as revealed by pathological examination. This experiment, was, therefore, discontinued.

(b) This portion of the experiment was carried out with eight healthy male growing cross-bred birds of about 12 weeks of age.

After two months it was observed that the birds became anaemic and much reduced in weight. On post-mortem examination of six birds of this group it was found that apart from signs of malnutrition the spleens and livers were smaller than normal, the hearts showing signs of fatty degeneration and gall bladders distended with bile.

Part II. The experiment was conducted with male White Leghorn birds of 12 weeks of age, housed separately in laying battery from 4—11—54 to 12—2—55. Six birds were under experimental diet while the other six of equal average body weight, housed side by side in the same laying battery, were used as controls. The growth rate was determined by average body weight every week for 17 weeks.

CARCINOMA OF THE HORN AND THE EYE IN BOVINES

By

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The object of this note is to place on record the observations made on the cancer of the horn in bovines of the erstwhile Baroda State, with special reference to some factors associated with its causation. The results of clinical field work, microscopical, cultural and histopathological examinations of the materials collected from a good number of cases of cancer of the horn, have been incorporated. Results obtained from materials collected from a few cases of cancer of the horn and of the eye in bovines of the State of Bombay have been also recorded.

Carcinoma in bovines has been noticed in all the districts of the Bombay State. It has been found to be prevailing in two forms (a) Cancer of the horn and (b) Cancer of the eye.

The disease is of economic importance as it usually affects draught bullocks.

I. Cancer of the horn

Incidence and Breed:—Carcinoma of the horn has been found to be more common in the Kankrej breed than in the other breeds of the State. The incidence is much less in cows and practically nil among buffaloes.

Colour:—From the observations made so far, it may be said that colour does not play any significant part in the production of cancer as, irrespective of any colour, animals are seen to have been affected with cancer of horn.

Age:—Common age of affection is above five years and the proportion of affected animals is more in older animals. Adult oxen, especially draught bullocks, have been found to be affected.

Seasonal and regional incidence:—There is no seasonal incidence of this affection, as throughout the year cases are admitted for treatment, though more number of cases have been recorded in the winter and summer seasons than in the rainy season, probably due to inability on the part of the cattle owners to bring their affected animals during the rainy season on account of their being busy in the field with their cattle. The disease condition was observed to have been prevalent in all the four districts of the erstwhile Baroda State, but the Mehsana,

CARCINOMA OF THE HORN AND THE EYE IN BOVINES

77

Baroda and Amreli districts appeared to be more vulnerable when compared with the bovine population and number of dispensaries in each district, as will be seen from the table given below:—

Table showing incidence of Cancer of Horn in each district.

S. No.	District	Bovine population	No. of dispensaries	No. of cases of Cancer of Horn in bovines		
				Treated	Cured	Discontinued or died
1	Navsari	2,35,452	8	123	53	70
2	Baroda	3,03,831	10	432	123	309
3	Mehsana	7,01,830	12	680	220	460
4	Amreli	1,25,237	4	171	119	60
Total		13,66,350	34	1,414	515 36 %	899

Out of 1,414 animals admitted and treated at 34 dispensaries of the erstwhile Baroda State during the year 1949, 515 animals (36%) were cured; rest of the animals either died or were sent to Panjarpoles. The percentage of cure had been mainly observed in animals that were brought for treatment in the primary stage of the disease *i.e.* when the base of the horn was not seriously affected. Out of the total number of cases treated, about 95% cases were recorded in bullocks and about 5% in cows.

Horns:—Majority of animals having long, big and massive horns were generally found affected.

Probable and Predisposing Factors:—With a view to get big and long horns of beautiful and uniform shape and size, the professional cattle breeders of the Gujrath and Saurashtra such as Rabaris and Bharwads, etc., are in the habit of removing the external layer of the horns of bull-calves when they are about 12 months old. More than once, maximum upto two to three times, outer layer of the horns is removed at an interval of about 12 months. Heifers are also sometimes subjected to the said practice upto their first pregnancy. This mal-practice weakens the natural resisting power of the horns and exposes them to the ill effects of injuries.

The origin of this condition appears to be of a traumatic nature, direct or indirect caused by fighting, rubbing and striking against any hard object such as wall, mangers, yokes, central poles, companion animal's horns, etc. While in yoke, either for road, plough or

During the preliminary feeding of 4 days, it was observed that the consumption of the feed in experimental birds was considerably lower in comparison to the control group. Occasionally during the whole period of the experiment the average consumption of feed was determined and it was always observed that the consumption in the "Akra group" was always a little lower. The results of feeding Akra plus mash on the growth rate of birds is given in Table No. I.

Discussion

The heavy mortality and the mode of developing pneumonia in day-old chicks may be accounted due to the fact that Akra has a high percentage of crude protein and classed as a rather high protein concentrate which cannot be fed as a sole cereal to growing chicks, without causing excessive accumulation of heat in the body. The tendency of the chicks to dip in water or milk under the circumstances can, therefore, be understandable. It is also presumed that considerable strain will be brought to bear on liver and kidney when Akra forms the sole cereal ration. Perhaps in the case of pigeons a more efficient physiological system to cope up with this higher percentage of protein in feed is obtainable and remains to be investigated.

In the adult growing birds also Akra is not advisable to be fed as the sole cereal ration. It will be seen from the pathological findings that the birds died mostly of negative nitrogen balance and subsequent malnutrition. The birds became anaemic, lost weight rapidly and died. The oesophagus and other parts showed signs of avitaminosis and the birds died of general malnutrition. The proteins present in Akra therefore are not available to system, when fed as a sole feed, since there is not enough carbohydrate for proper utilization. On a high protein ration, a complication of liver and kidney is reasonable to suspect. Although on the present series no indication of damage to kidney (an indication of gout which is usual to suspect), there was definite affection of gall bladder indicating defective liver.

In subsequent experiments to determine the growth rate in six male birds of 12 weeks of age, therefore, it was thought desirable to replace only about half of the mash with Akra. This was found not only to increase the appetite and fairly maintain the health of the birds but also induce a steady growth, only a little lower than the growth rate of controls. There was no significant ill effect from the inclusion of Akra as regards the rate of growth as evidenced in Table No. 1, although the rate of growth might have been a little slower till the 17th week. As the birds were kept under experiment for a sufficient length of period from 4-11-54 to 12-2-55 during the winter months, it was concluded that the stock male birds not needed for breeding purposes could be reared on

almost half the cost of feeding for this period, before being disposed for table purposes. It was noticed that the inclusion of Akra could reduce the cost of feeding considerably. It is also revealed that with Akra as one of the constituents in feed, costlier proteins like fish meal or ground-nut cake may even be subject to curtailment in practical rations.

TABLE I

Growth rate of birds (12-29) weeks of age on including Akra (50%) in Poultry ration — Body weights (in ounces).

Weeks of experiments	0	4	8	12	17
Experimental birds (Average of six)	27.2	35.3	44.5	51.2	58.5
Control birds (Average of six)	30.8	48.7	62.7	67.5	62.8

Summary

On routine chemical analysis in the laboratory Akra (*Viscia sativa*) yielded a high percentage of crude protein, nearly 30%. It was observed that Akra alone could not constitute a satisfactory ration for chicks or for growing birds. It was also observed that when 50% of mash is replaced by Akra, the stock male birds not needed for breeding purposes could be reared on almost half the cost of feeding from 12 weeks to 29 weeks of age before being disposed of for table purposes. Considerable economy in feeding can be effected when Akra is included in the poultry ration to the extent of 50 per cent.

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other purposes, the middle portion of the horn is liable to get more strikes than the base or at the tip of the horn. During action, the yoke rises up and down and the yoke and sometimes the central pole strikes against the middle portion of the horn as well as against the base of the horn. The repeated strikes lead to irritation and inflammation, terminating probably in the production of neoplastic growths inside. Careless driving during acute turnings may also lead to frequent strikes against the horns, more frequently at the base and the middle portion of the horns. The horn itself remains intact apparently and the injury is not suspected until the animal is noticed bleeding from the nostril of the side of the injured horn. The horny core may have been injured or cracked or fractured from inside and as a result of it, the blood, serum or lymph passes into the hollow cavities of the horn, which communicate to the sinuses of the head and these in turn lead into the nasal passage of the same side.

Study of deficiency of Calcium Salts:—Samples of blood sera collected from 11 adult bullocks of the Kankrej breed affected with cancer of horn as well as from 11 adult bullocks of the same breed free from cancer of horn were forwarded to the Indian Veterinary Research Institute for determining calcium and phosphorus contents. The samples in both the cases revealed the inorganic phosphorus and calcium contents in normal quantity.

Symptoms — Ante and Post-Amputation:—Symptoms observed have been explained in my article published in the *I.V.J.* Vol. XXIX, March 1953.

Microscopical Examination:—Materials such as nasal discharge, blood, urine, faeces and impression, contact and scraping smears made from tumour masses in their different stages, from several cases of cancer of horn, on microscopical examination, did not reveal the presence of any parasitic, bacterial and helminthic infection. A few specimens of the above materials sent to the Indian Veterinary Research Institute did not reveal anything significant.

Histopathological Examination:—In all 31 cases (26 bullocks, 4 cows and 1 buffalo) of cancer of horn in different stages were studied in detail and 48 specimens including those of cancerous growths collected from them, were forwarded to the Indian Veterinary Research Institute, for histopathological study and examination. The following are the extracts from the results received from the Indian Veterinary Research Institute:—

S. No.	Nature of specimens	No. of specimens	Remarks
1	Whitish and yellowish-grey mucoid bodies (bladder like)	4	The bladder like body was covered with a thick layer of ciliated epithelium rich in blood vessels and in early stages of organisation. The cancerous growth perhaps starts as these bladder like bodies enclosing granulomatous tissue in which cancer cells arrive at a later stage. The picture is one of myxoma. The growth is covered by a layer of ciliated epithelium which in parts has undergone clear transformation into a squamous epithelial type by losing the cilia, becoming spherical and forming more than one layer.
2	Cancerous growths attached to the mucoid bodies.	4	Myxomata covered by a fine layer of ciliated epithelium. At the base of these bodies are found islets of carcinomatous tissue. There is evidence of surface ulceration in some parts. Fibromyxoma with small islets of cancer masses. Myxomata covered by a ciliated epithelium. There is evidence to show that the involuted portion of the epithelial covering becomes cancerous in nature. Myxomatous growth with the presence of an occasional epithelial cell. This is perhaps the next stage of cancer horn after the bladder stage. Towards the attached border small islets of cancer cells are present which increase in size with commencing cell nest bodies at the attached end. This tissue shows that cancer masses always start growing at the base of the polypoidal growths only and that these myxomatous growths are the precursors of the disease 'Cancer horn'.
3	Growth found on amputation. (First and second stage)	5	Rapidly growing Haemendothelioma. Myxomatous degeneration of the tissues. No cancer lesions are yet present in the lesions. A few adenomatous structures from which perhaps the malignant growths arises.
4	Growth one month after amputation.	1	Young squamous celled carcinoma with small islets of tumour colonies. Real example of the recurrence of the tumour after surgical removal.
5	Cancerous growths (Second advanced stage)	20	Typical features of squamous celled carcinoma with the presence of cell nest bodies. Adeno-carcinoma surrounded by myxomatous tissue and covered by ciliated epithelium.
6	Cancerous growths (Third stage)	9	Advanced lesions of squamous celled carcinoma with infiltrating cancer colonies around, evidence of calcifications indicating their chronic nature and age. Epidermoid carcinoma.
7	Thick slimy albuminous jelly like material.	1	Mucin mixed with blood.
8	Saw dust like caseous material.	2	Degenerating bony and horny materials, decalcified bone tissue with calcareous foci in which necrotic and myxomatous changes have supervened; Decalcified osseous tissue.
9	A piece of affected horn (Buffalo)	1	A mass of degenerating horn and bone tissue. No evidence of malignancy in the lesions.
		48	

"Tissues so far examined from the horn cancer materials show that the condition can be caused by (1) Squamous celled carcinoma, (2) Myxomatous growth (Polypus) and (3) Endothelioma. The ciliated epithelial covering seen in all the three conditions may have a significant pathological relationship with these growths. These growths are peculiar to Indian cattle and not much work has been done on them.

The sections were examined for Rhinosporidia with negative results".

Study of cases of cancer of horn in the State of Bombay:—Four cases of Cancer of the Horn, three in bullocks and one in a cow detected in the districts of Satara and Dharwar were studied and the material collected from each case was sent to the Bombay Veterinary College and it was classified as 'epidermoid carcinoma' in each case on histopathological examination.

Cultural examination:—Swabs from cauliflower growths prepared from 2 cases of cancer of horn, forwarded to the Indian Veterinary Research Institute revealed (1) Corynebacteria and micro-cocci, which may have no pathological significance.

Post-mortem examination:—Post-mortem examination was conducted on five bullocks and one cow that had died of cancer of horn. Out of these 6 cases, post-mortem findings in two cases, one in a cow and the other in a bullock, were important and interesting. Materials from these two cases sent to the Indian Veterinary Research Institute, revealed the following:—

S. No.	Class of animal	Nature of specimens	Results
1	Bullock	Cauli-flower like growths found in the lungs.	Features of a squamous celled carcinoma with typical cell nest bodies. A genuine case of Metastasis from the horn to the lungs.
2	Cow	Carcinomatous growths found in the liver.	Lesions are verminous in origin. They are degenerated echinococcus hydatid cysts.
		Pieces of affected brain.	Evidence of Meningitis. No changes in the brain parenchyma.
		Necrosed portion of frontal and temporal bones and of the air sinuses.	Advanced squamous celled carcinoma with the presence of excellent Bird's nest bodies. This is a clear case of the extension of the cancerous lesions from the horn base to the air sinuses.
		Pieces of bones of cranial cavity.	Congestion and rarefaction.

Summary

(1) In all 31 cases (26 bullocks, 4 cows and 1 buffalo) of cancer of horn in different stages were studied and 48 specimens collected from them were forwarded to the Indian Veterinary Research Institute, for histopathological examination. The histopathological examination has revealed the cancerous growths to be in majority of specimens "A squamous celled carcinoma with the presence of cell nest bodies."

(2) Cultural examination of the materials collected from cases of cancer of horn did not reveal the presence of any organisms of pathological significance.

(3) Post-mortem examination conducted on a bullock and a cow revealed Metastasis of growth from the horn to the lungs and sinuses.

(4) Microscopic examination of materials such as nasal discharge, blood, urine, faeces and impression, contact and scraping smears made from tumour masses in different stages, did not reveal anything significant.

(5) It has been found that injury of the horns directly or indirectly is responsible for the production of cancer though in majority of the cases, history of the injury was not available.

(6) The practice of removing the external layer of the horns of bull-calves when they are about 12 months old, weakens the natural resisting power of the horns and exposes them to the ill effects of the injury.

(7) The period between the injury and the appearance of the cancer, though difficult to determine, may be between 3 to 12 months depending upon the nature of injury.

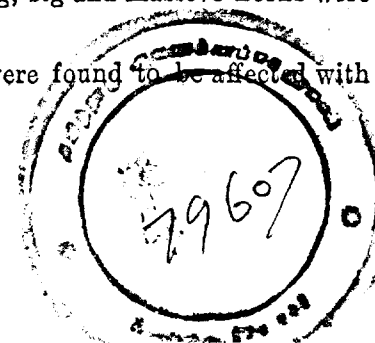
(8) It has been observed that cases that had been admitted in the advanced second and third stage of the disease, the appearance of the cancer was almost certain in majority of them, whereas cases in the first stage or in the beginning of the second stage when amputated and treated with usual antiseptic dressings, prevent cancer formation and are cured.

(9) In certain cases recurrence of cancerous growths was noticed inspite of repeated surgical removals.

(10) Majority of animals having long, big and massive horns were generally found affected.

(11) In rare cases both the horns were found to be affected with cancer simultaneously.

52
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(12) The inorganic Phosphorus and Calcium level of blood of the affected and non-affected animals was found practically to be normal.

(13) As regards causation of this condition, nothing could be said definitely at this stage. The condition as it is seen to-day appears to be due to irritation set up as a result of injury to the horns directly or indirectly.

II. Cancer of the Eye

Two cases of Cancer of the eye in bullocks of the Amrit-Mahal breed were studied.

Symptoms observed :—To begin with there is profuse lachrymation followed by conjunctivitis. The membrana nictitans gets inflamed and develops exuberant growth which in course of time fills up the socket of the eye, pressing the eye ball to a side or deep into the orbital fossa where it degenerates. The growth steadily increases presenting a cauliflower like appearance and practically all the inner structures of the orbital fossa become involved. There is profuse watery discharge evincing a very offensive smell. Enucleation of the eye ball or removal of the visible neoplasm does not materially produce any beneficial result. As the disease progresses deep into the orbital structures, the affected animal begins to lose condition and ultimately dies showing extreme emaciation and prostration.

Histopathological Examination :—Material collected from the two cases revealed typical histopathological feature of squamous celled carcinoma with surface ulceration (a highly malignant epithelial neoplasm).

Clinical Article

FOREIGN BODY IN THE STOMACH OF A DOG *

By

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History :—On the morning of 10-11-57 a two and a half year old black Labrador dog (D. W. O. P. 6041) was brought to the out-patient department of the Small Animal Clinic with the history that the animal had swallowed a coin the previous evening.

* Read at the General Body Meeting of the Madras Branch of the Madras Veterinary Assistant Surgeons' Service Association, on 27-11-57.

On enquiry it was learnt that the owner has been training the dog to pick up articles thrown by him and was giving exercises with tennis ball, small stones, coins etc., and on this occasion the object was a nickel coated Coronation souvenir about the size of a rupee.

Examination of the patient and findings :—On physical examination the animal was found to be apparently normal without any symptoms suggestive of an obstruction.

On fluoroscopic examination a circular foreign body opaque to X-rays was noticed in the stomach. When the dog was lying on its left lateral side the shadow of the foreign body was larger and when the dog was put on the right lateral side the shadow was comparatively smaller. When the dog was examined on the dorsal recumbent position, the shadow was elliptical and was seen very near the diaphragm on the left half of the abdominal cavity.

A stiff dose of Liquid paraffin (2 oz.) was administered and the owner was advised to give only liquid diet and report for further examination on the following day.

On 11-11-57, the dog was screened again and the foreign body was found to be situated still in the stomach. As it was considered that it might not pass through the intestines, an attempt at giving the dog a chance to vomit the same was made. The dog was given a liberal quantity of milk to drink and immediately after this, the following was administered by hypodermic injection :

R

Apomorphine hydrochloride — gr. 1/10

Aqua distillata — 2 c. c.

Mft. Injectio Sig. now.

Within about five minutes after the injection, the dog vomited thrice in quick succession, the vomit consisting mostly of milk, mucous and bile respectively but the foreign body did not come along with the vomit. The dog was again screened and the foreign body was found to be still in the same location. (*Vide* Skiagram).

The owner was advised to admit the dog in the hospital as an in-patient as it was considered that recourse to surgery was necessary to remove the foreign body. Accordingly it was done on 12-11-57.

The animal was prepared for the operation in the usual way.

Anaesthesia :—A freshly prepared solution of 10 grs. of Nembutal in 20 c.c. of distilled water was taken in the syringe to be used intravenously for inducing general anaesthesia. Of this 15 c.c. was required to induce deep anaesthesia, as the weight of the dog was 50 lbs. An Oro-tracheal airway was introduced as soon as the animal entered the