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(The Journal of the All-India Veterinary Association)

*A Bi-Monthly Record of
Veterinary Science*



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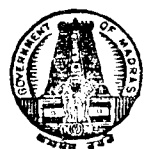
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Devoted to the cause of the
Veterinary Profession

EDITOR

Rao Sahib T. VINAYAKA MUDALIAR, G.M.V.C.,

Office:—23, First Street, Vidyodaya East, T'Nagar,
Madras - 17, (S. India)

✱

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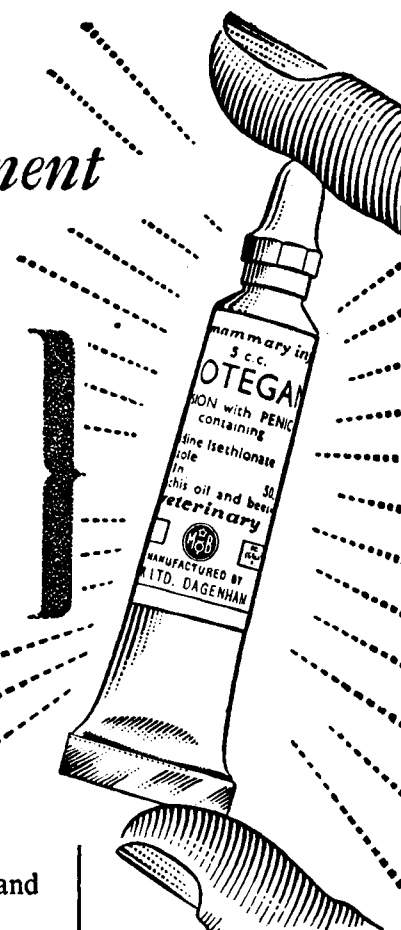
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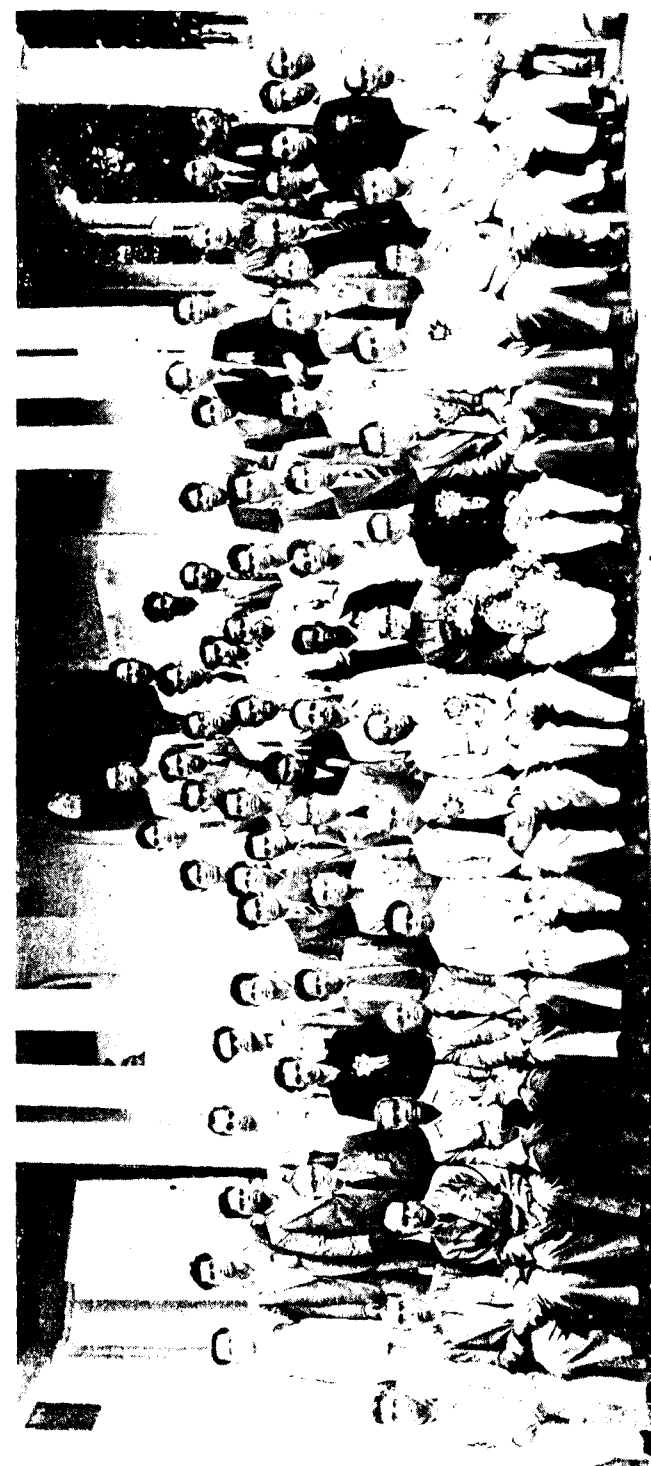
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S. B. V. RAO, L.V.P. (Hons.) Punjab,
Research Officer, Poultry Research Div., I.V.R.I.,
who was on deputation under 'Colombo-Plan',
returned recently after specialisation in Poultry Viruses
at ADRI, Hull and typing of Salmonella and its
Serology at the Laboratory of Hygiene and National
Welfare Department, Ottawa.



Dr. Chusaburo Shoho,
Colombo-Plan, Veterinary Expert on Cerebro-Spinal
Nematodiasis in animals, working at the
Government Research Institute, Peradeniya, Ceylon.

THE Indian Veterinary Journal

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Editorial

NATIVE TO THE SOIL

Every land develops a genius of its own. It is a special faculty or a natural disposition towards men and matters. It is a quality that is born with the soil and grows in the peculiar environmental conditions found in every country. It permeates all levels of society and saturates the individual. It is not easy therefore to up-root it and implant anything new or foreign, however laudable the latter might be. This basic factor should not be lost sight of in planning for progress. Anything that goes against the genius of the people is bound to meet with failure.

Of late we have been hearing of Teams of Experts from foreign lands being entrusted with the task of chalking out a programme of studies or of expansion of departmental activities. We have no quarrel with the *idea* behind such an attempt. It is to bring about a rapid progress. But the foreign Experts cannot be expected to understand the genius of the people or the peculiar conditions prevailing in this land. Naturally their planning is bound to be defective in essentials.

We begin to wonder, if India with her intellectual eminence so loudly acclaimed by all nations of the world, has real need to depend on foreign advice, even on such elementary subjects as drawing up the syllabuses of Colleges or defining the course of studies *that is needed for this country* and what is worse even expecting advice in the matter of development of departmental

activities, involving the peculiar conditions of rural India! Are the sons of the soil so bereft of imagination and capacity as to require to look up to other lands for such advice and guidance? We believe not. It is high time we cry halt to such attempts, whether sought or imposed. We can understand our getting such help, in industrial expansion, where we may need the 'know-how' technical people of other lands for sometime at least. But to go and ask other people to prescribe what is good for us even in the matter of education, organisation, administration, etc., is something that does not appeal to us.

"If Doctors take what they give and Lawyers give what they take the millinium will not be far off". Foreign advice can only be compared to this *obiter dictum*, more particularly when it is tendered without sufficient knowledge of the land, her people and their genius. Perhaps a Committee of Experts, both officials and non-officials, seasoned in such work in our own country would have been better for the purpose.

We are lead into such thoughts when we go through the letter of Mr. K. S. Nair, Principal, Veterinary College, Travancore and Cochin State, which we publish elsewhere in this issue. We agree with him when he says, "the Veterinary Education of the U.S.A. is not in tune with the needs of this country". Any system proposed, should be congenial to the soil and in tune with the genius of the people. None can dispute the fact when he says "A succession of first rate men of Animal Husbandry Commissioners, have done yeoman service to the domestic animals of this country". Let not that good work be undone by creating water-tight compartments, which will only lead to disintegration and ultimate destruction.

In recent years, India has seen enough and suffered enough from the results of division in the political field. Let not that folly be repeated in scientific professions as well. Animal health, their breeding and management and their care and treatment while sick, all constitute one indivisible whole. One is complementary to the other. That is how India has

understood it from the days of Palkapya, Salihotra, Nakula and others. Even to-day the Indian ryot looks up only to the Veterinarian for help and guidance on *all* matters connected with the animal. Let not that confidence be undermined. The results may prove disastrous.

We have been trying to get at the final report of the Indo-American Team; but we have not succeeded so far. We are sure at Governmental level, wiser counsel will prevail and nothing detrimental to the present progress of Animal Husbandry work, will be given effect to.

A MINISTER'S ILLUMINATING ADDRESS

Shri Gopal Rao Ekbote, Minister for Education, Local Government and Assembly Affairs, Hyderabad State, gave expression to a very illuminating address, full of understanding and extremely encouraging to the profession. We publish elsewhere copious extracts from that thoughtful address, delivered on the occasion of the inauguration of the Hyderabad Branch of the All-India Veterinary Association, on the 18th December 1955.

Paying a tribute to the All-India Veterinary Association, he referred to it as "That great Association, which I understand has done so much and continues to do yeoman service to the Indian Veterinarians and through them to the country for its emancipation from poverty, economic distress and disease." He added "It needs no emphasis to impress on you about the importance and utility of such Associations as yours—not only to further the cause and consolidate your noble profession but also to be of immense help and guidance to the Government in chalking out policies and programmes, in launching any schemes for the national development and prosperity of our country. Viewed in this context, it would not fail to surpass one's comprehension as to why this Association of yours was not formed in Hyderabad even earlier than this—despite the fact that with adequate number of professional staff, the Veterinary Department has been in existence in Hyderabad also for nearly half a century. Anyway I congratulate Dr. Shetty and his band of trusted

lieutenants of the profession for forming this Association at a time when it is most needed."

As regards Planning and allocation of funds, the Hon'ble Minister makes no mistake in saying what he terms "the philosophy of action" which should inspire us all in our developmental activities. Here is what he says "This is an age of planning and development. Plans that are said to be the greatest ever attempted in human history are now being drawn up in India for eradication of poverty and disease on the one hand and ignorance and illiteracy on the other. On this eve of great historic importance it is necessary that we should be clear in our minds what philosophy of action should inspire us to undertake each one of these developmental activities. Cattle development being the next biggest industry to agriculture in India necessarily needs immediate attention".

Stressing the importance of the Veterinary profession, the Hon'ble Minister pays a very graceful tribute by saying "In the chain of Nation building activities of Government of a welfare State, the Veterinary and Animal Husbandry Department plays an important part. It is the strongest link connecting Agriculture on one side, Medicine and Public Health on the other. Thus the contribution of Veterinarians to human welfare and happiness is inestimable. It is said that there is no other single profession or Department that bears so much all round importance to humanity as Veterinary profession or Department."

On Animal Nutrition, his remarks are pungent and must make all concerned to start thinking. "The knowledge of Animal Nutrition in our country has been one of academic interest. The farmer knows nothing about this subject except what has been handed down to him as a tradition." We are thankful to the Hon'ble Minister for such candid expression of opinion.

We congratulate Hyderabad on the very successful start she has made. We wish the Branch every success under its inspiring President Dr. K. S. Shetty!

Dr. C. SHOHÔ

The name of Dr. C. Shoho is all too familiar now in the Veterinary world. The mention of his name brings back to memory the names of his two other co-workers, Dr. J. R. M. Innes and Dr. C. Perumal Pillai, who worked so hard to unravel the mystery of that condition called "Lumbar Paralysis" and which they subsequently named as "Cerebro-spinal Nematodiasis," articles on which had appeared in *B.V.J.* of March 1952 and the *I.V.J.* of September 1952. Coming as he does in that long line of eminent Japanese Veterinarians about whose work Dr. Innes has said "was of superlative nature", his devotion to science has brought him to Ceylon at the invitation of that Government to study the condition of paralysis in goats and horses in that country. He is now working at the Government Veterinary Research Institute at Peradeniya and will be there for 18 months. He will be happy to contact Veterinary Research workers in India doing similar work on paralysis in goats and "Kumri" in horses. We wish Dr. Shoho all success in his inestimable work!

MEMOIR

SARDAR SAHIB SARDAR MOOL SINGH, G.P.V.C., P.V.S., Class I.

We deeply regret to record the sad demise of Sardar Sahib Sardar Mool Singh, G.P.V.C., P.V.S., Class I, Retired Professor of Materia Medica, Pharmacology and Veterinary Therapeutics, Punjab Veterinary College, Lahore, of heart failure at his home 6, Bagh Ramanand, Amritsar, on 25th December 1955. He was 68 years of age.

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

Original Articles

THE ANATOMY OF A FOETAL INDIAN ELEPHANT

PART III

The Bones and Joints of the Hind-limb.

By

D. MARIAPPA, G.M.V.C.,
Professor of Anatomy, Madras Veterinary College.

The Bones of the Hind-limb

The bones show some of the features of the bones of the adult. The shafts of long bones and their epiphyses are partly ossified. The terminal phalanges and proximal sesamoids are cartilagenous. Of the tarsal bones, larger ones are ossified, whereas the smaller ones are cartilagenous.

Os Coxae

After completing the study of pelvis a full account of the bone and its articulations with the axial skeleton will be given.

The Femur

The femur is well developed showing some of the features of the bone of the adult and measures 27.5 cms. in length. The head is large and spherical, standing 2 cms. above the trochanter. The trochanter is expanded above and curved behind to deepen the trochanteric fossa. The lateral border of the trochanter is prolonged vertically downward to form the trochanteric ridge. A small rough area represents the medial trochanter of the bone of the adult. The trochlea is vertical and largely cartilagenous and its lips are of equal height. The condyles are large and ovoid, medial one being larger. They show depressions for the lateral ligaments of the stifle and the origin of the tendon of popliteus. Trochanter tertius, supracondyloid fossa and crests of other larger animals are absent.

The Patella

The patella is a thin elongated oval bone measuring 3.75 cms. in its vertical and 2.5 cms. in its transverse dimensions. Articular face has two facets—medial one elongated and large and the lateral one, small and semilunar. Cartilago patella of larger animals is not present.

The Tibia

The tibia is comparatively short measuring 17.5 cms. in length. The tibial tuberosity is deeply grooved for the straight ligaments of patella. The upper end has above a small tibial spine and two glenoid cavities for the femoral condyles. Posterolaterally it presents a small

oval facet for the fibula. The lateral border furnishes attachment to the tibia-fibula membrane. The posterior face medial to the attachment of the membrane has a large vascular groove running the whole length of the bone for the tibial artery. The medial malleolus is grooved obliquely behind for tendon. The lower end has below two glenoid cavities for astragalus and an elongated facet laterally for the lateral malleolus.

The Fibula

The fibula measures 16.25 cms. in length and its cylindrical shaft furnishes attachment medially to the tibio-fibular membrane. The upper end has a small oval facet for tibia. Its lower end—the lateral malleolus is very large and is grooved obliquely behind for tendon. It shows medially three facets for tibia, astragalus and os calcis.

The Tarsal Bones

The tarsus consists of seven short bones arranged in three rows—two in the proximal row, four in the distal row and one in between them. Astragalus, os calcis and cuboid are partly ossified whereas the scaphoid and the three tarsal (cunieforms) are cartilagenous. Their arrangement is indicated below.

medial.	{	Proximal row.				}	lateral.
		Astragalus.		Oscalcis.			
		Scaphoid. (middle)					
		Distal row.					
		I tarsal.	II tarsal	III. tarsal.	Cuboid.		

The astragalus is greatly compressed from above downwards. It has two condyles above for tibia and a small facet laterally for the lateral malleolus. Its lower end forms a condyle for the scaphoid. Behind it has two facets for the os calcis.

The os calcis is very irregular and is the largest. It has a thick body with a small sustentaculum tali. The tuber calcis is short, thick and curved laterally. The sustentaculum has in front a facet for astragalus. The body has in front two facets—one large and the other small for astragalus and lateral malleolus respectively. Below it has a large facet for the cuboid.

The scaphoid is a thin curved plate of cartilage and oval sideways. It has above, a glenoid cavity for the astragalus; below four elongated facets for the three tarsals (cunieforms) and the cuboid.

The I tarsal (cunieform) is quadrilateral being larger in its vertical dimension. It has above, a facet for scaphoid; laterally two small facets—upper one for II tarsal and the lower one for the II metatarsal; below and behind an oval facet for I metatarsal. Its posterior face above has an oval facet for the prehallux.

The II *tarsal* is a thin wedge with the base in front. Above and below it has elongated facets for the scaphoid and the II metatarsal; medially a small facet for the I tarsal; and laterally two small facets for the III tarsal.

The III *tarsal* is a thin wedge placed like the II. Above and below it has elongated facets for the scaphoid and III metatarsal; medially two small facets for the II tarsal; and laterally a small facet for the cuboid.

The *cuboid* is large, thin and triangular with the apex in front. Above it has two facets—large one behind for os calcis and small one in front for scaphoid; and below two large facets for IV and V metatarsals.

The *pes* measures 13.75 cms. from the tarsus to the terminal phalynx of the III digit.

The Metatarsal Bones

There are five metatarsal bones. Their shafts are cylindrical constricted in the middle and expanded at the ends and are well ossified. Their relative lengths are indicated by the formula.

$3 > 4 > 2 > 5 > 1$ and their relative thickness by the formula.
 $4 > 3 > 2 > 5 > 1$

The I *metatarsal* measures 1.2 cms. in length and is directed obliquely downward and backward from the I tarsal. It articulates above by a facet with I tarsal; posteriorly with the prehallux; and below by a small facet with the terminal phalynx.

The II *metatarsal* measures 3.1 cms. in length. It articulates above by an elongated facet with II tarsal; medially by a small facet with the I tarsal; below with two small *condyles* with the I phalynx; and behind with the fused pair of proximal sesamoids.

The III *metatarsal* measures 4 cms. in length. It articulates above by an elongated facet with III tarsal; below by two *condyles* with the I phalynx; and behind with a pair of proximal sesamoids.

The IV *metatarsal* measures 3.75 cms. in length and 1.9 cms. in thickness. It articulates above by a triangular facet with the cuboid; below by two *condyles* with the I phalynx; and behind with a pair of proximal sesamoids.

The V *metatarsal* measures 2.5 cms. in length. It articulates above by an oval facet with the cuboid; below by a *condyle* with the I phalynx; and behind with a pair of proximal sesamoids.

The Digits

There are *five digits* of which the II, III and IV are the most prominent each consisting of three phalanges and a pair of proximal

The Anatomy of a Foetal Indian Elephant The Bones and Joints of the Hind-limb.

By

D. Mariappa, G.M.V.C.

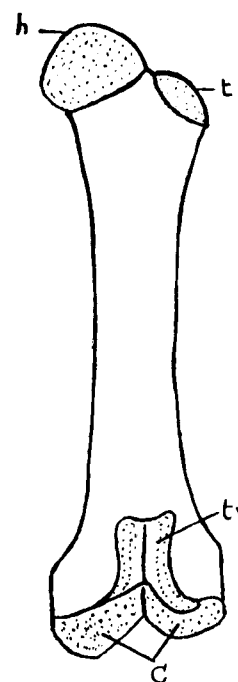


Fig. 1

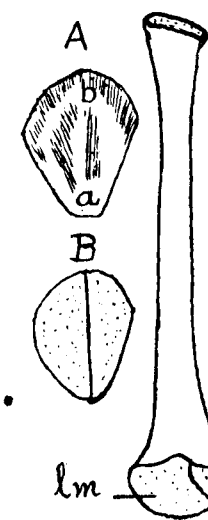


Fig. 2

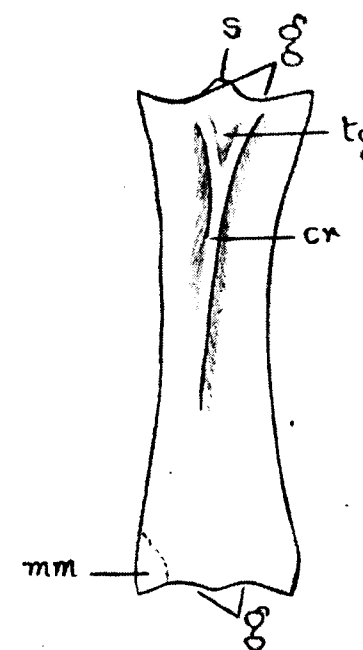


Fig. 3

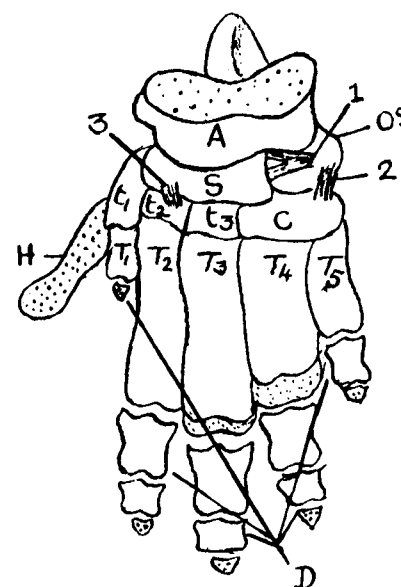


Fig. 4

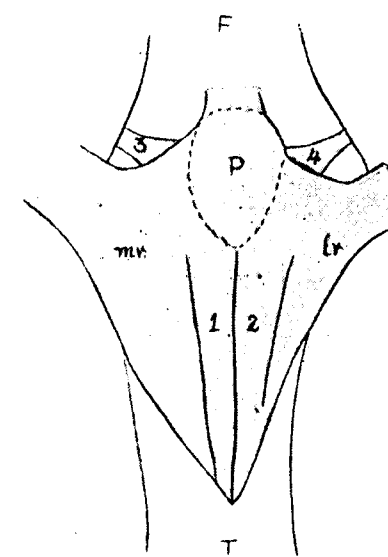


Fig. 5

Some observations on intramedullary Pinning in Dogs

By
JOSE B. ARANEZ, D.V.M.

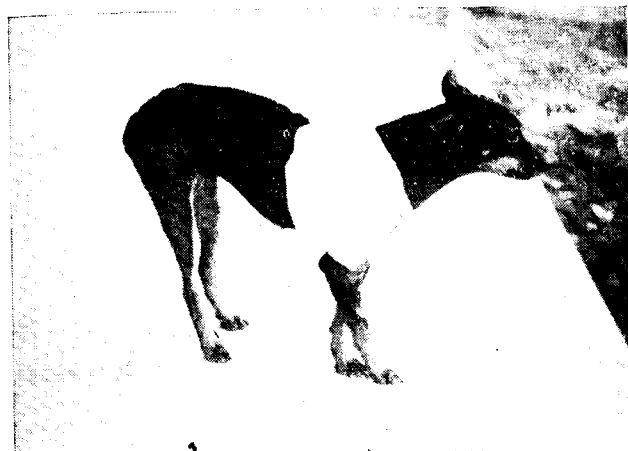


Fig. 1.

A two-year-old grade Fox Terrier with complete fracture of the midshaft of the right humerus.



Fig. 3.

A radiograph of the fractured leg of case 2 showing the overriding fracture at the distal third of the left femur before it was reduced.



Fig. 2.

An anesthetized three-month-old Great Dane with complete fracture of the left femur with an inserted intramedullary pin.



Fig. 4.

A 2½-month-old German Shepherd (case 3) four months after the insertion of the pin in the right femur.

THE ANATOMY OF A PORTAL INDIAN ELEPHANT

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sesamoids. The I digit has only one phalynx and the V digit has two phalanges. The digital formula is :—1, 3, 3, 3, 2.

The I *digit* has only one phalynx—a minute cartilagenous element.

The II *digit* has three phalanges. The I phalynx is ossified and resembles that of the horse. The II phalynx is very small and the III phalynx is minute, both being cartilagenous.

The III *digit* is the longest having three phalanges. The I phalynx resembles that of the II digit. The II phalynx is partly ossified and compressed resembling that of the horse. The III phalynx is small, pyramidal and cartilagenous.

The IV *digit* has three phalanges which resemble those of the III digit.

The V *digit* has I phalynx resembling that of the III digit and the terminal phalynx is minute and cartilagenous.

The *proximal sesamoids* are cartilagenous and resemble those of the forelimb. There are four pairs for the II, III, IV & V metatarsals only. The first pair of the II metatarsal are fused.

The Prehallux

The *prehallux*, like the prepollex is the sixth vestigeal digit. It is a curved bar of hyaline cartilage directed obliquely downward, backward and medialward from behind I tarsal and I metatarsal, articulating with them. It measures 3.75 cms. in length with the posterior end expanded and round.

The Joints of the Hind-limb

The Hip Joint

The hip joint is an *enarthrosis* between the head of femur and the cotyloid cavity of the hip bone. It is very simple in structure unlike in other larger animals. The only ligament of this joint is the *Capsular ligament* which is thick and strong. It is attached round the articular margin of the femoral head except in front where it is 1 cm. away from the articular margin. It is very thick round its attachment to the cotyloid rim, simulating the cotyloid ligament.

The Stifle Joint

This is a *ginglymus* in which there are two joints—femoro-patellar and femoro-tibial.

The *femoro-patellar* articulation is between the trochlea of femur and the patella.

The ligaments are :—

2

1. *The capsular ligament*:—This is thick and very capacious. Its attachment is .5 cms away from the articular margin of the trochlea and along the articular margin of patella. It forms a large *cul-de-sac* above the patella. The ligament is reinforced on the sides by the patellar retinacula.

The *synovial membrane* forms two *alar folds* which unite below forming the *infra-patellar fold* attached to the lower part of the trochlea as in the human subject. It also forms a large fringed fold above the base of patella.

2. *The medial ligament*:—It is thin and triangular connecting the medial border of patella to the lateral condyle of femur.

3. *The lateral ligament*:—This is thick and triangular connecting the lateral border of patella to the lateral condyle of femur.

4. *The anterior straight ligament*:—This is a thick band descending vertically from the apex of the patella to the tuberal groove of tibia.

5. *The medial retinacula*:—It is a small thick triangular fold-continuation of the tendon of vastus internus. It connects the medial border of patella to the medial border of the tuberal groove of tibia.

6. *The lateral retinacula*:—This is a large thick triangular fold-continuation of the tendon of vastus externus. It connects the lateral border of patella to the lateral border of the tuberal groove of tibia. Its medial part shows a well defined vertical band—the *lateral straight ligament* of patella.

The *femoro-tibial* articulation is formed between the femoral condyles and the glenoid cavities of tibia.

The ligaments are:—

1. *The capsular ligament*:—It is attached to the articular margins of the condyles and the glenoid cavities. It is thin in front and very thick and strong behind being reinforced by the posterior elastic ligament.

The *synovial membrane* forms two sacs under the condyles which communicate with the sac of the femoro-patellar capsule.

2. *The posterior elastic ligament*:—It consists of thick elastic bundles descending from a triangular area above the condyles forming a thick triangular fold blending with the capsule.

3. *The medial ligament*:—It is a thick long band descending from the medial condyle of femur to the medial border of tibia for a distance of 5 cms.

4. *The lateral ligament*:—It is short but thick and oblique descending from the lateral condyle to the head of fibula.

5. *The cruciate ligaments*:—They are two—anterior and posterior. The *anterior* is thin slender band passing upward and backward from the tibial spine to the posterior part of the intercondyloid groove. The *posterior* one is a short thick band descending from the posterior part of the intercondyloid groove to the tibial notch.

There are no *menisci* as in other larger animals.

The Tibio-fibular Joints

They make three joints—proximal and distal at their ends and the middle one by their shafts.

The *proximal joint* is a *diarthrosis* between the facets of their proximal ends. The *joint capsule* is tight consisting of short fibres connecting the margins of the facets.

The *middle joint* is a *syndesmosis* between their shafts which are connected by an *interosseous membrane* which is .5 cm. wide.

The *distal joint* is a *diarthrosis* between the facets of their lower ends with astragalus and os calcis. The *joint capsule* of the tarsal joint binds the bones.

The Tarsal Joint

This is a composite joint consisting of three articulations—1. *tibio-tarsal* between the proximal row of tarsal bones and distal ends of tibia and fibula forming a *ginglymus*; 2. *inter-tarsal* between the rows of tarsals forming *arthrodia*; 3. *tarso-metatarsal* between the distal row of tarsals and the proximal ends of metatarsals forming *arthrodia*.

The *common ligaments* are:

1. *The capsular ligament*:—This ligament covers all the three joints and is attached to the articular margins of tibia and fibula above and the metatarsals below. Its deep face is attached to all the tarsal bones and the special ligaments. In front it is membranous but behind and on the lateral aspects of the malleoli it is reinforced by thick pads of fibro-cartilage for forming grooves for tendons.

The *synovial-membrane* forms four sacs.

2. *The medial ligament*:—It is a thick band connecting medial malleolus to I tarsal and I metatarsal. Tendon of *tibialis posticus* passes under it.

3. *The lateral ligament*:—This is a thin oblique band extending from the lateral malleolus to the os calcis. Tendons of *peroneus longus* and *brevis* pass under it.

TUBERCULOUS MASTITIS IN A COW

BY

GAJINDAR SINGH, G. PRASAD
and

B. R. SEN GUPTA

In their review of literature on tuberculous mastitis in India Singh et al (1955) state that Mills (1898-99) was the first to record this condition in a cow. They have referred to fourteen other reports of cases of this infection: one by Naik (1932) in a buffalo cow, two others in cows belonging to Military dairy farms and mentioned in the annual reports of the Imperial Veterinary Research Institute for the years 1932-33 and 1940-1941, and the remaining ones mentioned in the annual progress report of the Indian Council of Agricultural Research Scheme for Investigation into Tuberculosis and Johne's Disease of Animals for the year 1941-42. Since then no further case of tubercular involvement of the udder seems to have been recorded in India.

Several of the recorded instances seem to have been based on macroscopic findings alone or on microscopic evidence of tissue changes in the udder; the isolation and typing of cultures having been attempted out on a few occasions. As shown by Singh et al, information on this point is essential for establishing the authenticity of a case of tuberculous mastitis or its public health importance, particularly in view of several records of udder infection due to avian type of tubercle bacilli and other acid-fast organisms. In this paper the authors have described in detail a case of tuberculous mastitis in a cow met with in their routine tuberculin tests.

History.—The cow, aged 6 years, red in colour and bearing some resemblance to Sahiwal breed, when subjected to double intra-dermal tests with mammalian tuberculin and johnin, reacted strongly to the former and proved negative for Johne's infection. Having reared the animal at his residence in Patna since calf-hood, the owner was in a position to furnish its full history. The animal was in its third lactation and had not apparently suffered from any serious disease or discomfort since its birth except for development of mastitis in the left hind quarter towards the close of the second lactation, which had improved considerably after treatment at a veterinary hospital. As the animal went dry shortly afterwards no notice was taken of the condition of the udder till the disease recurred in the same quarter soon after the third calving. Treatment this time, with penicillin and streptomycin, both locally and parentally, was proving of little avail. On interrogation, it was found that the animal had occasionally a short and husky cough. There was no history of close association with any diseased

animal. For the first two years of its life the cow had shared a shed with its mother, who died about four years back; the owner could not tell the cause of death. At the time of tuberculin test, the herd comprised of the cow, its 2½ years old heifer and a suckling calf. Tuberculin and johnin tests in the heifer, conducted at the same time as in the cow, did not produce any reaction.

Clinical Observations.—The apparent symptoms of ill health were confined to the udder and related lymph glands, the animal being otherwise in good general condition. The affected quarter showed hypertrophy and induration, unaccompanied by heat or pain. The supramammary lymph gland on the affected side was also enlarged and hard. Evidence of induration could be detected in the teat as well and the superficial mammary lymph gland on the affected side, though apparently normal in size, was indurated. An attempt at milking yielded a little pale watery fluid containing caseous flakes. Auscultation revealed the presence of areas of dullness in the left lung. Secretion from the affected quarter showed, on microscopic examination, acid-fast bacilli in teeming numbers, no necessity of searching for characteristic cell groups (Torrance, 1927) having even arisen. Milk from the other three quarters was normal in appearance and free from tubercle bacilli.

Two months after the test the cow was found in a Gowshala where the owner had left it, considering it to be unproductive. The general condition had tremendously deteriorated and with that the superficial lymph nodes had become quite prominent and the mucous membranes were distinctly anaemic. Cough was more frequent and respirations hurried. The animal died a few days later and was subjected to post-mortem examination.

Post-mortem findings.—Both the prescapular lymph glands were enlarged and showed caseous tubercular lesions. The left superficial mammary lymph gland was five times the size of the gland on the right and entirely caseous. The left hind quarter of the udder was highly enlarged and hard like wood; it weighed about ten pounds and on section the surface looked dry and wholly caseous, no glandular demarcation being visible. Mucous lining of the teat canal was thickened and contained nodules of different sizes. The left supra-mammary lymph gland was also enlarged and, on section, found to be composed only of degenerated caseous material. The left lung showed patches of consolidation, which on section revealed pale caseous areas. The other lung was normal. The pleura on the affected side was thickened and adherent at places. The mediastinal and bronchial lymph glands were congested and enlarged and contained caseous tubercles. Nothing unusual was noticed in the stomach and intestines except for slight congestion in the caecum.

The mesenteric lymph glands showed tubercular lesions. Pin point sized white nodules were observed on the surface of the kidneys. Heart, spleen and liver did not present any macroscopic changes.

Histopathology.—Histopathological examination of the tissues from udder, lungs and supra-mammary and mediastinal lymph glands showed evidence of caseating tubercles with numerous giant cells and calcareous foci with presence of innumerable acid-fast organisms morphologically indistinguishable from *Mycobacterium tuberculosis*.

Bacteriology.—Cultures of *Myco. tuberculosis* were obtained both from the affected quarter and its secretion. The strain isolated was studied in detail and found to conform to bovine type of morphological, cultural and pathogenical considerations, looking short and stout under the microscope, dysgonic in cultures, unable to multiply at room temperature or at 41°C, non pigment producing, non-glycerophilic and pathogenic both to guinea-pigs and rabbits in decisive doses. For the sake of brevity, pertinent information on essential points is presented in Tables I and II.

Transmission of infection.—It will be of interest to mention that the calf, which this cow continued to suckle till her last days, died five months later. Lesions of generalised tuberculosis involving mesenteric, bronchial and mediastinal lymph nodes and lungs were discovered on autopsy; these lesions, though numerous, were not advanced. Acid-fast bacilli could be demonstrated on smear examination from each of the organs named. The source of infection being obvious, isolation of cultures from this case was not considered necessary.

After the introduction of this cow in the Gowshala many other animals, particularly calves, became reactors to tuberculin.

Pathogenesis.—Singh *et al* (1955) have mentioned four possible ways of udder invasion by tubercle bacilli, the probability of occurrence of each of which in this particular case is discussed below:—

(i) Infection through wounds of the udder is precluded by the absence of such history.

(ii) The entry of infection via the teat canal can be surmised on account of the history of udder treatment; but this presumption would lead one to ascribe lung lesions to secondary invasion through lymphatic and venous channels. In the latter case, however, both the lungs, rather than the left one alone, would have been the seats of miliary lesions because of equal opportunity of catching the bacilli from pulmonary arterial flow.

TABLE I
Cultural characters of the Strain of *Myco. Tuberculosis* Isolated.

Incubation temperature.	37°C.						Room Temperature.			
	Medium.	Plain agar.	Glycerine agar.	Plain egg.	Glycerine egg.	Plain serum.	Glycerine serum.	Plain potato.	Glycerine potato.	Glycerine broth.
Growth after one month.	—	—	—	+	+	+	+	—	—	—
Growth after two months.	+	+	+	+	+	+	+	—	—	—
Pigmentation.	—	—	—	—	—	—	—	—	—	—

* By smeared cork floatation method.

TABLE II
Pathogenicity Tests in Rabbits.

No. of animal.	Date of injection.	Particulars of injection.	Date of death.	Post-mortem findings.
33 73	23-7-54 23-7-54	0.01 mg. of 21 day old culture on inspissated serum I/V.	1-9-54 20-8-54	Emaciated. Lesions seen in lungs, kidneys and liver. + Carcase in poor condition. Lesions generalised (Lungs, liver, kidneys and spleen.)
165 166	23-7-54 23-7-54	0.001 mg. of 21 day old culture on inspissated serum I/V.	22-9-54 22-9-54	Emaciated. Lungs, liver, spleen and kidneys involved. Very poor condition. Generalised macroscopic lesions in lungs, liver kidneys and spleen.

(iii) The possibility of infection having reached the udder by way of its efferent lymph vessels from the supramammary lymph gland does not sound appealing in the absence of any gross lesions in the abdominal cavity.

(iv) The authors are inclined to believe the haematogenous path of entry into the udder, which is found to operate in most of the cases, being responsible for mammary involvement in this case. There being no history of contact with a tuberculous animal, the cow appears to have contacted a primary lung infection from its mother, which remained quiescent for some time with subsequent exacerbation, or even slowly progressive from the very beginning by way of lymphatic or bronchial spread in the same lung, till the bacilli started escaping into the blood stream, a liquefied lesion draining into an adherent blood vessel. The bacilli thus liberated into the circulation would be carried through the left heart to the systemic organs other than lungs, and set up infection in them, depending upon their relative susceptibilities. The injury to glandular tissue caused by udder irrigation must have contributed largely to the establishment and progress of the condition; incrimination of the teat syphon for the production of nodular lesions in the teat canal can hardly be avoided.

Discussion.—The dangers from a case of tuberculous mastitis to all those in contact are evident. The influence which the infection in this particular animal had on the development of the disease in its calf, and possibly in other animals in the Gowshala as evidenced by tuberculin reactions is a further proof of the risk involved. The suckling calf appears to have picked up heavy repeated infection through the pulmonary and digestive channels. This mode of spread can prove disastrous in dairies run on commercial lines, where the milk from different animals is mixed up before distribution among calves and customers. The advisability of forestalling such happenings by a vigorous campaign against animal tuberculosis, before embarking on ambitious programmes of development of our cattle industry, cannot therefore, be over emphasized.

SUMMARY

- (i) A case of tuberculous mastitis due to bovine type of *Mycob. tuberculosis* is described.
- (ii) Infection of the udder is traced to lung lesions.
- (iii) Transmission of infection to calf and other incontact animals is established.
- (iv) Necessity for eradicating tuberculous infection from cattle is stressed.

ACKNOWLEDGMENTS

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BOVINE ENCEPHALOMYELITIS — A HISTOPATHOLOGIC DIAGNOSIS

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Introduction.—During the course of a survey in the State of Orissa to find out the incidence of Caprine Encephalomyelitis or Lumbar Paralysis as many people call it, a common malady in Beetal goats and their cross bred progeny, in Orissa, a female country bred calf in a herd of six (3 cows and calves), with marked inco-ordination of hind quarters was presented to the author. She was about 5 to 6 months old. When the owner saw progressive incoordination of the hind quarters accompanied by dystrophy of muscles of the affected quarters he gave the calf to the author for treatment.

Review of Literature

Occurrence of Bovine Encephalomyelitis was recorded in Orissa, India, during 1939-40 (Annual Report, V.I.O., Orissa, India, 1939-40). Mortality of about 90 cattle in a village in Sambalpur district, Orissa, India, was reported. A case was observed and symptoms seen were "inappetence, salivation, staggering gait, mucopurulent nasal discharge and constipation with no rise of temperature. It was ailing for about a week when examined. All the cattle that died also manifested the above clinical symptoms. The animal died and at autopsy haemorrhagic patches with eroded necrotic areas at the pharynx and abomasum were seen. Large quantity of straw colored semifluid in the peritoneal cavity was also present. Materials sent to Indian Veterinary Research Institute, Mukteswar, Uttar Pradesh for a histopathological diagnosis revealed; besides the finding of changes associated with encephalomyelitis on histological examination of section of the brain and spinal cord of the bullock, transmission experiment of the brain and spinal cord of the case was also proved positive for encephalomyelitis in addition to negative results in biological tests of liver, spleen and kidneys. The disease appears to be one of rare records in India."

A further outbreak in 1943-44 (Annual Report V.I.O. Orissa, India, 1943-44), in the same district (Sambalpur), Orissa, India, was observed. Six cases were found affected.

"At autopsy no other changes in any of the internal organs excepting brain which was hyperaemic was noticed. Histopathological examination of sections at the Indian Veterinary Research Institute, Mukteswar revealed changes associated with Encephalomyelitis"

Lumbar Paralysis affecting goats, sheep and horses occurred in Korea and Japan and had been studied for many years by Japanese research workers (Bush, 1951). The possible occurrence of cerebrospinal nematodiasis in goats in India leading to clinical manifestation of Lumbar Paralysis has been described by Innes, 1953. Powright (1954) reported a paralytic disease of sheep in Kenya, associated with symmetrical degenerative and reactive lesion limited to ventral horns of the spinal grey matter with a focal distribution. Rida, a chronic encephalitis of sheep prevalent for many years in several districts in Iceland has recently been reported (Singurdsson, 1954). The cause of the disease was attributed to a filter-passing virus. The clinically recognisable disease began very gradually, perhaps with an uncertain gait or with slight tremor of the lips. It ran a protracted course and did not affect the general health of the animal until the late stages.

Seetharaman and Shetty (1954) claimed to have cured a she-goat affected with Lumbar Paralysis with Magnesium sulphate and M.F.C. treatment. Similarly, Seetharaman and Rao (1954) treated successfully a black Dachshund dog having paraplegia with Vitamin B Complex, T.C.F., and Magnesium sulphate. The bovine paralysis occurring in South Kanara District, Madras State, India, was reported by Ramakrishnan and Ananthapadmanabhan, 1953. The disease appeared to be a nervous affection involving the brain and cord. Cattle and buffaloes were equally affected and the disease affected only adult animals.

Symptoms.—The calf showed paralysis of the hind quarters about 21 days before she was hospitalized. She was kept under observation for a period of 61 days. During the period under observation her appetite and temperature were normal. There was no difficulty in her mastication and deglutination. With the improved diet she put on flesh temporarily at the beginning, but owing to progressive paralysis and restrained movement she became unthrifty towards the end.

There was alertness of the eyes. The expression was lively. There was no discharge from the mouth, nostrils and eyes. She was responsive to the surroundings. The chief symptom was a motor paralysis of hind quarters of progressive type accompanied by the atrophy of the paralysed muscle. At times the animal was seen moving in circle, finally falling down and lying flat on one of her sides. When immediate support was given she got up but fell down again. Sometimes she made a few attempts to get up at her own accord showing marked muscular twitching of the hind quarters, but failed. Towards the latter part of the course, she became completely paralysed by hind quarters, unable to move or walk about and laid down till she had to be put to sleep.

Repeated thick blood and thin blood smears examination for an evidence of microfilarial or protozoan parasite gave a negative result. The blood and cerebrospinal fluid were sterile to cultural examination. Urinalysis revealed nothing of any pathologic significance. The faeces was of normal color and consistency. Faecal examination was negative.

Treatment.—The animal received a total number of 18 subcutaneous injections of Tonophosphon (Bayer) 10 c.c. of 3%, each, every alternate day along with 4 subcutaneous injections of Magnesium sulphate 30 c.c. of 20% for four consecutive days. Simultaneously, she was given orally an electuary consisting of Hexamine in sufficient treacle continuously for a period of 7 days. Subsequently Tonophosphon was substituted for M.F.C. (M&B), which was given a 20 c.c. intravenous injection alternated with one 20 c.c. subcutaneous injection for a total of 6 injections each.

These therapies did no good either improving the gait or musculature of the affected hind quarters. On the other hand, progressive paralysis supervened and the animal laid flat till she had to be put to death. (Post Mortem Report No. 3 of August 28, 1954).

Post Mortem Findings.—Except a few decubitus on the side the animal was lying, no other gross lesions were seen before the removal of the skin. None of the internal organs showed anything of pathologic significance. The cord at lumbar region showed a slight thickening, of course, no adherence to the inner surface of neural canal. The cord at this region on cut section revealed a few minute vacuolations.

Microscopical findings of the Brain and Cord.—Brain and cord showed very pronounced and interesting changes. The most important feature was perivascular cuffing and every blood vessel in the tissues showed varying degrees of this round cell. Infiltration in and round the blood vessels. Most of the vessels showed changes associated with sclerosis also; while on the other hand, a few lumina are almost entirely obliterated. Varying degrees of capillary congestion associated with slight focal haemorrhages were present. While a few others were distinctly dilated containing blood elements.

Another feature that was clearly evident was the presence of a clear empty space around every blood vessel and every nerve cell. Majority of the nerve cells were rounded in appearance and did not show the processes which characterize their satellite or triangular appearance. Another noticeable feature was an entire absence of perineuronal satellites.

The feature that was clearly evident, was a marked dissociation of nerve cells by the intervening neuroglia tissue which evidently

seemed to be increased in some parts while in some other parts numerous nerve cells were seen in close proximity to one another as seen in agglomeration. Some of the nerve cells showed the nuclear details while many others seemed to have lost their nuclear characteristic.

Discussion.—The clinical syndrome seen in Rida, chronic encephalitis in sheep in Iceland has certain similarities in the case under present study in that several weeks to several months, usually elapse after the first syndromes were noticed, until affected animals became prostrate and then die (Sigurdsson, 1954). The calf under the present investigation suffered from for a period of 82 days. The sporadic bovine encephalomyelitis (Wenner, Menges and Carter, 1955) in the Midwestern United States, indicated that the virus, the causative factor, gave rise to infection without clinical evidence of central nervous system disease. In the present study attempt was not made to isolate the virus from brain and cord although the clinical symptoms manifested by the calf during life and the pathologic findings seen in the nervous tissues were definitely suggestive of an affliction of Central Nervous System (CNS).

The sporadic Bovine Encephalomyelitis of Orissa, India, (Annual Reports, V. I. O., Orissa, India 1939-40, 1943-44) caused appreciable deaths of cattle. Whereas in the present study only a calf in a herd of 6 was affected, and was diagnosed to be encephalomyelitis on a histopathologic examination. The Magnesium therapy of Seetharaman and Shetty (1954) and Seetharaman and Rao (1954) tried in this calf under report did not give a desired effect suggesting all the more that the etiology involved was entirely different. The complete absence of perineuronal satellitosis in and around in all most all nerve cells, the absence of processes in a majority of nerve cells and the rounded appearance of these cells cannot easily be explained. However, the plausible explanation that can be put forth is that as the disease ran a chronic course as long as 82 days, a stage of neuronophagia might have taken place in the early stage of the disease which led to the occurrence of ataxia, paralysis, and nervous fits. As neuronophagia ultimately supervened, the paralysis went on as a progressive type. The damage done by this slow process of neuronophagy remained unrepaired. The animal in spite of all best care and treatment, did not improve.

The cavitations in between the obliterated nerve cells and nerve tissue might be suggestive for a Wallerian degeneration arising from a malacic focus, but the perivascular cuffing in blood vessels is rather more suggestive of a probable viral infection. The cavitations present a pathologic analogy as seen in the brain of sheep affected with Scrapie (Wagner et al 1954). But the characteristic occurrence of inclusion bodies seen in Scrapie was not demonstrable in the case under report.

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The absence of nuclei in many of the nerve cells, their changed morphological characters and rounded appearance, the absence of perineuronal satellitosis and the perivascular cuffing in and around the wall of blood vessels, the capillary congestion and haemorrhages, are all facts which cannot be overlooked in the diagnosis of encephalitis in the nerve tissues of the case under report.

Summary

The calf which showed paralysis of hind quarters during life was diagnosed to be a case of encephalomyelitis on histopathological examination.

ACKNOWLEDGMENT

The writer wishes to express his sincere appreciation to Dr. G. B. Singh, Director of Animal Husbandry, Orissa, for his keen interest shown during the course of this investigation and to Dr. P. R. K. Iyer, Research Officer, Indian Veterinary Research Institute, for his kind help in the examination of the slides.

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General Articles

SOME OBSERVATIONS ON INTRAMEDULLARY PINNING IN DOGS

By

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The value of intramedullary pinning as a satisfactory method of fixation and retention of complete transverse fracture particularly of long bones in the legs of small animals has been well recognized with increased popularity in recent years.

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The following four case histories of three complete fracture of the femur and one humerus treated at the hospital of the College of Veterinary Medicine, University of the Philippines, Quezon City, are presented.

Case 1.—A two-year-old female grade Fox terrier (Fig. 1) weighing about 8 lb. was presented for treatment on November 23, 1954. The dog was bumped by a car two days before. The right anterior limb was markedly lame, longer, swollen and crepitation was distinct on the shaft of the humerus. The limb can practically be bent at all directions. Fluoroscopic examination revealed complete transverse fracture at the midshaft of the humerus, with a splinter of about one centimeter square. Pentobarbital sodium, 1.5 c.c., was given intravenously and a sterilized intramedullary pin was inserted flush with the proximal end of the bone after removing the splinter. Sulfanilamide powder was dusted on the wound and 400,000 units of Dicrysticin* was given intramuscularly. The arm was bandaged and Aureomycin** ointment was applied on the second day. One calcium lactate and one multi-vitamin tablet were given per os daily till the animal was discharged satisfactorily on December 21, 1954. The owner was advised to return the dog for the removal of the pin the next week but failed to come back. Twenty days after it was discharged the bitch died after parturition.

Case 2.—On February 9, 1955, a three-month-old male Great Dane (Fig. 2) weighing about 24 lb. was presented for treatment with the complaint of severe lameness after a door fell on its thigh five days ago. The left thigh was swollen with marked crepitation and the leg was dangling in all directions. Fluoroscopic and X-ray examinations revealed a complete transverse and overriding fracture at the distal third of the left femur. (Fig. 3). Pentobarbital sodium, 4.5 c.c., was given intravenously and the sterilized intramedullary pin was inserted and left to protrude about 3/4 inch. The dog was given 20 c.c. of 10 per cent calcium gluconate intravenously; 250 c.c. of 5 per cent dextrose in saline (150 c.c. subcutaneously and 100 c.c. intravenously) and 400,000 units of Dicrysticin* applied directly on the fractured site before it was sutured. The dog was discharged on the same day and given a prescription of multi-vitamin, tricalcium phosphate, cod liver oil, and exposure to sunlight. The pin was removed on March 22, 1955. The use of the leg was quite delayed due to rickets. Two months after the pin was removed, the dog died of distemper.

Case 3.—On March 2, 1955, a 2½-month-old male German Shepherd weighing about 9 lb. was presented for treatment. The dog fell from

* Dicrysticin is a product of E. R. Squibb, New York.

** Aureomycin (chlortetracycline) hydrochloride ointment is a product of Lederle Laboratories, New York.

his cage on the right thigh two days ago. The right leg was dangling, swollen, and the dog cried when walked. Crepitation was distinct and the puppy preferred recumbency. Fluoroscopic examination revealed a complete transverse fracture at the midshaft of the right femur. Pentobarbital sodium, 1.5 c.c., was given intravenously and the sterilized intramedullary pin was inserted and left to protrude about ½ inch. The dog was given 400,000 units of Dicrysticin* intramuscularly; 10 c.c. of 10 per cent calcium gluconate intravenously; 100 c.c. of 5 per cent dextrose in saline subcutaneously and Aureomycin** ointment was applied on the wound. A week after, the dog bit the protruding pin and the owner who also owns case 2 was given the same prescription of vitamins, minerals, good food and exposure to sunlight. The owner was also advised to keep the dog in the cage for another two weeks. Four weeks after the dog removed the pin, the dog was already walking with slight limping and four months thereafter, the dog had completely recovered (Fig. 4).

Case 4.—An eight-year-old native bitch weighing about 31 lb. was presented for treatment on March 29, 1955. This dog was hit by a car on the right thigh the other day. There was limping, marked swelling, and shortening of the right hind leg. Crepitation was distinct. Fluoroscopic examination revealed complete fracture with some splinters at the upper third of the shaft of the right femur. Pentobarbital sodium, 4 c.c., intravenously was given and after the splinters were removed the sterilized intramedullary pin was inserted flush with the proximal end of the bone. The dog was given 500 c.c. of 5 per cent dextrose in saline (125 c.c. intravenously and 375 c.c. subcutaneously); Dicrysticin*, 400,000 units intramuscularly; 1 c.c. of 20 per cent camphorated oil intramuscularly, and sulfanilamide powder was applied on the wound. The next day aureomycin** ointment was applied on the wound. The dog was discharged on May 14, 1955, but the leg became shorter. However, the animal can run and make use of its injured leg properly. The pin was left inside the marrow cavity because the owner failed to return the dog. According to the satisfied owner, there was no discomfort or harmful effect of the pin on the bitch.

Discussion

All of these cases were not brought immediately to the hospital after the accident and marked inflammation and spastic contraction of the muscles had developed. The open reduction (fracture site technic) was used due to overriding and shortening of the limb, but the sterilized intramedullary pin was inserted at the proximal end of the femur and humerus because of the absence of a double-pointed pin. Blunt dissection in the separation of the muscles was done until the fracture ends were reached. The overriding and spastic contraction of the muscles were overcome by the pentobarbital sodium anesthesia with the help of

traction tongs and the Gordon extender. Fluoroscopy before and after the insertion of the sterilized pin was used. The temperatures, pulse and respiratory rates were normal before and after the operation, and all the operation wounds healed by first intention.

In case 1, a 1/16 inch Steinmann pin was inserted on a ridge about 1/4 inch below the most anterior point on the ridge of the lateral tuberosity of the humerus with the help of a pin chuck. Steinmann pins, 1/8", 1/16", and 1/8" were used respectively on cases 2, 3, and 4. The pins were inserted along the medial surface of the trochanter major to the trochanteric fossa. The sterilized pin was inserted by the pin chuck through the skin and underlying tissues down to the marrow cavity of the distal fragment after shaving the hair at the proximal end of the femur or humerus. A pin chuck was used to remove the inserted pin after clinical union has taken place.

Conclusions

1. Strict antisepsis should be observed in the insertion of the sterilized pin and in open reduction.
2. The normal position of the leg should be maintained before the insertion of the sterilized pin to prevent inconvenience to the animal, skin displacement, and possible bending of the proximal end of the pin.
3. There is more danger of X-ray exposure from fluoroscopy by using the proximal end (closed) than the fracture site (open) technic of reduction.
4. Correct, if not perfect, alignment of the fractured ends should be attained.
5. It is better not to leave the proximal end of the inserted pin protruding. Cut off the pin flush with the proximal end of the bone so that the dog may not remove it.
6. Intramedullary pinning is ideal for complete transverse fracture of the midshaft of long bones in limbs.
7. The pin should be well inserted beyond the site of the fracture without necessarily penetrating the immediate distal joint.
8. When properly reduced and pinned, a moderate amount of exercise after a week is desirable to improve the circulation and hasten recovery.
9. Good diet, including adequate vitamins and minerals should be provided.

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BONE FORMATION IN THE HEART

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Heterotopic bone formation had always been of great interest to the morbid anatomist and the experimental pathologist. Metaplastic and dystrophic ossification are not uncommon; but their occurrence in certain organs like the heart is almost a pathological curiosity. In a large series of veterinary post mortems (672 at D. C. B. Farm, Vizag, 500 at veterinary college, Madras, and 100 bovine hearts examined at a slaughter house, Madras) reviewed or performed by one of us (B. S. M.) this was the only case of primary bone formation in a buffalo heart. We are informed that there is no record of a similar lesion in the autopsy records of both, MMC Madras and A. M. C. Visakhapatnam. Considering the rarity and certain interesting features, the material presented, this case with a brief comment is reported.

Morgani described myocardial calcification as early as 1762. In the cyclopaedia of anatomy and physiology (1836-39 Vol. II,) the authors mentioned cartilaginous and osseous transformation of calcified areas, producing pressure atrophy of the adjacent myocardium. They thought it was the result of an altered nutrition and a remote effect of inflammation. Hueper (1945) described ossified cartilage with myeloid fat marrow in the aortic ring of a rabbit. Farris et al (1946) in the Wistar Institute, examined 336 grey Norway rats and 807 Wistar Albinos and found calcified structures in the left ventricle of 25 grey rats and 7 albinos. Microscopically their structure resembled 'Senecent' cartilage cells of endochondral bone formation. They assumed that the ossifying cartilage like tissue arose from metaplasia of fibroblasts, in areas of degeneration or scarring, the cause of which was unknown. "Finestone and Geschickter (1949) reviewed the literature and reported massive calcification with bone formation in the heart of a negro. They believe that 'a diminished blood supply for any reason plus the other necessary requisites will produce calcification, if an increased vascularity occurred later, ossification may result'. They further assert that 'osteoblast' can no longer be regarded as a cell with a specific power of laying down bone. Any of the connective tissues after

preliminary dedifferentiation to the state of primitive mesenchyme may be built up again in the form of one of the other connective tissues. In man the septum membranaceum acts as an aponeurosis and the trigonum fibrosa contains chondroid tissue. Senile hearts may show areas of calcification or even ossification. (Maximow and Bloom 1953). The cardiac skeleton may be approaching cartilage in horse, and pig, may be partly cartilage in dog and may be bone in ox. (Loc. Cit. Maximow and Bloom 1953). Sisson (1953), in his book on the anatomy of the domestic animals, described two types of extracardiac ossa cordis in relation to the aortic ring, a right and a left serving as attachment to the various moderator bands and the aortic valvular cusps. Occurrence of ossification as a result of pathological calcification, with or without parathyroid activity is of a fairly common occurrence and the process is more or less similar in every place. Authorities like Leriche and Policard (1928) and Greig (1931) are of opinion that the factors essential for formation of bone are a mass of primitive mesenchyme and excess of calcium with adequate blood supply. Dafson (1945) in a discussion on the bone formation in apical scars in lungs described two types. In type A, the first stage of ossification consisted in laying down of woven bone, either in calcified scar tissue or in fibrous tissue not previously calcified. The second stage consisted in the osteoclastic reaction with formation of marrow cavity and laying down of lamellar bone. This was comparable to Luschka type of pulmonary ossification. Type B was consequent on necrosis resulting from tuberculous infection. Huggins (1931) in his study on the formation of bone, under the influence of urinary tract epithelium described a preosseous eosinophilic change and fibrillary oedema of the affected connective tissue followed by metaplastic ossification.

Case Report :—A Murran buffalo No. 507, belonging to the D. C. B. F. Visakhapatnam was admitted on 22-12-53 for retained placenta. In spite of treatment with antibiotics, etc., after manual removal of placenta the animal died of septic metritis and cervicitis on 30-12-53 at 5 a.m. Autopsy was conducted by Dr. B. Sambamurthi on the same day at 9 a.m. The important autopsy findings are as below. External examination revealed nothing remarkable. Pericardial and left pleural cavities showed adhesions. Heart was enlarged and engorged. There was tricuspid valvulitis with areas of necrosis. Extending from the base of the aorta, along the interventricular and interatrial septa, there was a hard flat bony mass, palpable in the myocardium. The cross section of the bone near the base of the aorta is oval measuring 2 c.m. x 1 c.m. (Fig. 1). It had no relation to the

BONE

aortic valves proper. Left lung showed multiple abscesses, Rt. showed no gross change. Appearance of the small intestine was that of a 'pimply gut'. Kidneys showed pyelonephretic changes, Septic gangrenous endometritis and cervicitis, were seen in the uterus.

Anatomical diagnosis :—Septic endometritis, multiple abscesses left lung, and ulcerative tricuspid valvulitis, Primary intracardiac os cordis.

Microscopic examination :—Left lung showed multiple abscess with areas of necrosis and destruction of pulmonary parenchyma surrounded by acute inflammatory cells and vascular engorgement.

Sections from the heart, including the area of ossification, were stained with H & E, Von Gieson, and Elastic Stain. Well formed new bone with marrow formation was seen. Compressed bony lamellae with few bone corpuscles were seen here and there. Osteoclastic reaction could not be visualized. Immediately around the new bone the connective tissue formed a condensed layer with plump spindle cells. There was no evidence of calcification or cartilaginous tissue formation in other areas. A little to one side of this bone was seen an area of degeneration, the exact cause of which could not be judged. The cardiac muscle was eosinophilic with indistinct striations. The myoplasm shrunk from the sarcolemmal sheaths because of which there was an apparent increase in the number of nuclei. In certain portions of the same area the nuclei also showed degenerative changes. The resulting space between the sheath and the myoplasm was not filled in the majority of the areas; however in a few there was faint eosinophilic granularity. The interstitium was oedematous and rich in proliferating vascular endothelial buds and fully formed channels. There was plasma cell and round cell infiltration. In some of the areas there is mild proliferation of connective tissue partly replacing the degenerating muscle. The area is not definitely demarcated from the healthy muscle and the two imperceptibly mixed at the margins. The irregular, shrunken eosinophilic muscle masses have a false resemblance to early woven bone but scrutiny shows the simulation. No transitions between this infarct like area and the bone were seen in the sections examined. The marrow here was predominantly fat, with few islets, of nucleated cells here and there (Fig. 4).

Comment :—From the brief review made above, the views regarding heterotopic bone formation may be summarized as below. The bone formation may be secondary in dystrophic or metastatic calcified areas or may be metaplastic without either of the processes preceeding. It may be a process of initial dedifferentiation followed by altered development due to vascular disturbances (Finestone and Geschickter.) It may be influenced by the presence of certain tissues like the urinary tract

epithelium (Huggins). Thus ossification can occur in normal and healthy or decrepit and dead tissues by varied processes. It may not be possible to judge the various stages when only the final end result of bone formation is seen.

In the present case the process through which this new bone is formed is very difficult to visualize. The animal died during an acute infection which lasted about 8 days. This does not seem to have any relation to the lesion under discussion. The bone was well formed with lamellae and bone corpuscles and fatty marrow with certain amount of haemopoietic tissue here and there. There was no inflammatory foreign body or osteoclastic reaction seen in or around the bone. There was only a compressed layer of plump spindle cells around the bone piece. No evidence of cartilaginous tissue was made out in the sections examined. There was degenerating and dead tissue seen adjacent to but definitely separated from the new bone. There was no area of calcification seen within the infarcted area, though vascularity is definitely more. The role of parathyroids in this case could not be assessed properly as neither the other bones nor the kidneys were examined thoroughly. The change thus seems for all practical purposes to be metaplastic one not depending upon inflammatory or degenerative processes.

Summary

1. A case of primary intracardiac os cordis in a buffalo is recorded as an incidental autopsy finding.

2. A brief review of literature and a short comment on the pathogenesis are made.

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Bone Formation in the Heart

By

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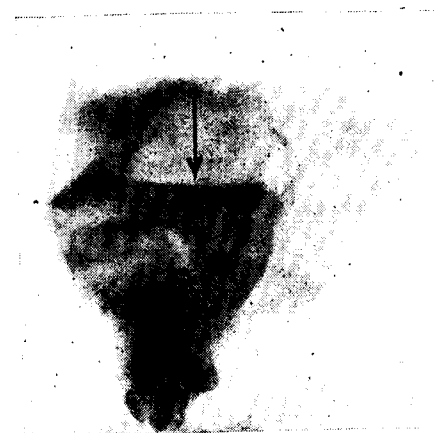


Fig. 1

Shows the cross section of the bone at the level of the interventricular septum as seen in the radiogram.

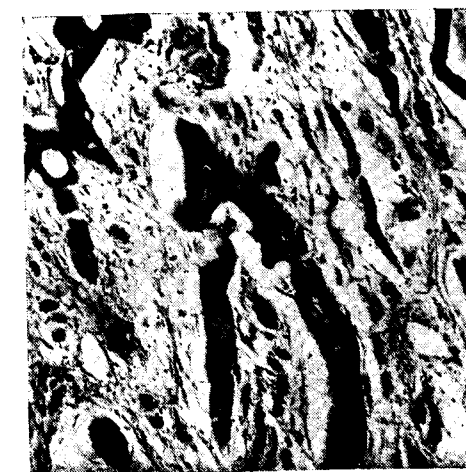


Fig. 2

Shows the area of bone formation with surrounding condensed connective tissue and healthy cardiac muscle.



Fig.

Area of infarction with marked vascularity.



Fig. 4

Shows fatty marrow with islets of nucleated cells.

Cardiac Hydatidiasis in the Bovine

By

B. Sambamurthy, G.M.V.C., B.V.Sc.



Fig. 1

Showing the cyst in the anterior of left ventricle ($\times \frac{1}{2}$).

Fig. 2

Showing the apical second and subpericardial third cyst ($\times \frac{1}{2}$).

Fig. 3

Section of muscle over the cyst wall (first cyst), showing laminated cystic wall, with mild inflammatory zone of lymphocytes.

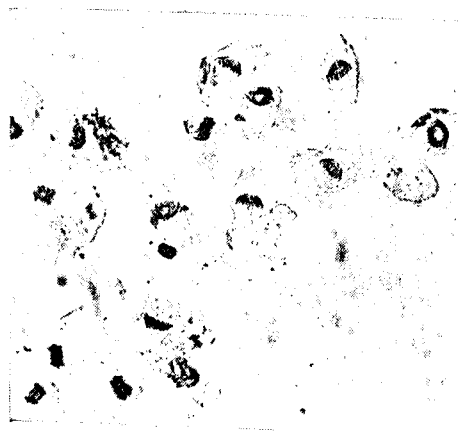


Fig. 4

Scrapings from the cyst wall showing many scolices.

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CARDIAC HYDATIDIASIS IN THE BOVINE

By

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Hydatidiasis is common in sheep and goat rearing countries like Australia, South America, New Zealand, Iceland, Greece etc. Although there is no reference in India about this disease—its pathology etc. in Veterinary or medical literature, it is wide spread in India.

Hydatid disease of the liver, spleen omentum and lungs is very common and rare in the pericardium and heart itself, Hydatids of the abdominal organs are asymptomatic and so are the pulmonary hydatids unless they attain sufficiently large size with complications. We do not know whether cardiac hydatidiasis is also a symptomatic. The occurrence of hydatid cysts in cardiac muscle appears to be very rare. Steele (1903) quotes Gamgee as having seen a large mass of echinococcus cyst hanging from the apex of an Ox's heart in Bologna museum. Gaiger and Davies (1938) mention the possibility of the heart muscle as a site of infestation. It appears to be equally rare in the human subject although there are a few records of its occurrence in the South American Medical literature, and none in India. d'Abreu. A. L. 1950 has recorded a case of a 50 year old woman having irritative cough, haemoptysis, persistent splenomegaly, splenic pain, cardiac dullness at left sternum and normal cardiac rythm. P. A. view of the chest revealed a large mass on left cardiac contour which on exploratory thorocotomy and resection revealed to be a hydatid cyst in the left ventricle (6 cm by 4 cm) scrapings of the germinal layer confirmed the cyst to be fertile Hydatid cyst. There were no eosinophils. This was claimed to be the

first record of surgical cure for cardiac hydatids. Sir John Blond Sutton (1928) was impressed that the effects of the Hydatids in the heart and circulation are very important. "A cyst may exist for a long time and give no indication of its presence and death occurs suddenly: the cause is manifest on P.M. In other cases the cysts or colony embarrasses the action of the heart and produces serious valvular lesions. (Evans & Moxon-1832). Hydatided emboli occur when the cyst bursts in the cavities. Osterlin has recorded a case of a 23 year old girl who developed gangrene of the right leg. This was amputated. The girl died of pyaemia. On P. M. an echinococcus was discovered in a thrombus in the right common ileac artery and an entire vesicle in the deep femoral artery. Another case of a girl gathering chips in a wood dying suddenly within ten minutes was reported by the same author. On P.M. a left ventricular hydatid was found to be ruptured and embolism of the left internal carotid artery occurred causing death. in such a dramatic manner. An allergic manifestation was reported to be possible when good sized hydatid cysts rupture in the thoracic or other cavities (R. H. Betts and T. Thomas 1952).

The following record of two cases of hydatid disease of the heart presents some interesting features both from the clinical and pathological aspects.

Case 1.—A gray bullock of Kangayam-Hallikar cross-breed aged about 13 years, apparently in good health was reported to have died suddenly with violent convulsions. It had gone for work at 6 a. m. on 18-1-52 and had taken its normal feed and worked normally till noon when the end came on suddenly. Blood smears were negative for Anthrax. Autopsy was conducted at 2 p.m. The liver, spleen and omentum showed numerous hydatid cysts. Both the lungs were almost completely replaced by a number of cysts. The pericardial cavity was normal. The heart showed left ventricular hypertrophy and there was a large cyst 4 cm. in diameter in the anterior wall of the left ventricle, protruding into the chamber, half an inch below the mitral valve and displacing the cardae tendinae and papillary muscle. The wall of the cyst was made of flattened muscle with the hydatid membrane lining it. There were two other cysts, one near the apex, 3.5 cms in diameter situated sub-endocardially and the other about 1 cm. in diameter in the anterior wall, more towards the interventricular septum (figs. 1 & 2.)

Histologically, scrapings from the wall of the cysts showed typical hydatid scolices (fig. 3). The myocardium covering the cyst was thin and showed evidence of fibrosis but there were very few inflammatory cells, lymphocytic in nature (fig. 4) The rest of the heart showed no abnormalities. Cyto-diagnostic staining with Van Giesson's showed definite zone of fibrosis.

Case 2.—A sindhi cow aged 9 years, a heavy milker, was reported to have died suddenly with violent convulsions at 10-30 a.m. on February 19th 1952. It was apparently in good health and was taken out for grazing at about 7.30 a.m. on that day. Blood films were negative for Anthrax and other infections. Autopsy was performed at 3.30 p.m. All organs except the heart were normal. There was a large intra-mural cyst in the anterior aspect of the left ventricle, close to the auriculo-ventricular groove. On opening the heart, the mitral orifice was found narrowed and the cusps were stretched over the cyst. The cyst was about 4 cm. in diameter and showed hydatid membrane lining it. Other chambers of the heart appeared normal.

In considering the pathology of the disease in the two cases recorded above they present some interesting problems. In both these cases the cause of sudden death was obviously the interference to cardiac function by the cysts. The cysts in view of their location near the mitral valve would not only have interfered with ventricular filling but also reduced the efficiency of the cardiac musculature. The latter possibility would be obvious in view of the size of the cyst and thinning and fibrosis of the myocardium. However, the sudden death will have to be explained by some other process since there was no evidence of rupture of the cysts or the cardae tendinae or blockage of the big vessels; a gradual narrowing of the coronary vessels by pressure and a sudden occlusion at some stage might be responsible for the death. These cases had a sudden death and no haemaptysis or other clinical symptoms as in the case recorded by d'Abreau. But one common feature in these cases was the absence of eosinophilia.

These cases illustrated here bring out the fact that the frequently encountered condition of hydatiasis may occasionally cause sudden death if it occurs in the heart. However, an antemortem diagnosis and therapeutic measures are practically extremely difficult in animals.

Summary

Two cases of hydatid disease of the heart are reported in cattle. In both, the condition was responsible for sudden death of the animal with convulsions.

Acknowledgments

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COCCIDIOSIS OF CHICKS

By

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Virologist needs eggs to propagate viruses upon it, a wise rural family gets its pin money from the egg, and physicians are often heard saying that eggs occupy a pre-eminent place amongst protective foods so essential to keep off the nutritional deficiencies. One egg can roughly supply one tenth of an adult's daily requirement of protein and vitamin A, one eighth of iron, one seventh of vitamin D besides providing a good assortment of minerals and a few factors of vitamin B complex. Its protein is specially suited for tissue building. The fat is of unusual nutritive value as it gets easily emulsified and digested, contains linoleic acid—a fatty acid essentially required by the body, and is rich in phospholipids—important constituents of brain tissue.

Poultry raising in India has been in the hands of most illiterate and backward classes of our society. It is a common sight to find rough feathered miserable looking chickens pecking heaps of dung and manure from morning till evening in search of grains in little-cared-for localities. Our lower standards of health and shorter average span of life are, to a great extent due to our unhappy nutritional state. The result of this dire neglect of poultry is that our hen lays 53 eggs annually against 113 laid by an American hen, an average Indian consumes only 4 eggs a year whereas an American eats an egg a day. A nation struggling hard to produce enough to support its people can ill-afford for long the helping hand of 14½ crores of its poultry in effacing food deficits by a rich supply of meat and egg.

The situation demands that humble hen be given its place of honour in our national nutritional programme. It needs to be taken off the dung heaps, bred and fed properly and protected against depredations of various diseases.

Coccidiosis is one of the three greatest causes of chick mortality, others being Ranikhet disease and Salmonellosis. Prior to 1939 when Levine of Cornell (U.S.A.) found that some of the sulpha drugs have coccidiostatic effect, coccidiosis was a serious limiting factor in chick rearing. Poultry farmer loses not only through the mortality of chicks: 20 to 90% of which may be seen dead from 4th to 6th day after they are first placed on floors containing seeds of coccidiosis, but also the survivors have extensive damage done to their gut, and they will reach the useful productive age comparatively later in life; suffering pullets stop laying and will regain the normal performance level after the lapse of a few weeks and also his cockerels weigh lighter and shall require more feed to recover the lost flesh. Thus coccidiosis is a very costly disease as the farmer loses from many sides.

No doubt drugs are available today which can effectively control coccidiosis and consequently losses from it may be less, but it does not mean that the disease has lost its importance for the lurking danger of coccidiosis is always round the corner and the disease is just as common.

To derive the maximum efficiency from these drugs, their limitations, and salient features in the life-cycle of the causative parasite together with the behaviour of the sick birds to its surroundings should be properly understood.

Coccidiosis is a general term applied to infection with one or more of the many species of minute, single-celled parasites called coccidia. Many different species of coccidia infect birds and animals. The domestic fowl has its own set of coccidia which are innocuous to other birds and animals. Each one of the fowl coccidia has a predetermined place in the gut to grow. Infection with one species of coccidium will protect the chicken against subsequent attack by the same species but confers no resistance against other types of coccidiosis. Thus the coccidia are very rigid in selecting hosts and further organs within it.

At least 8 different species of coccidia are known to affect the fowl, but in India only six of them have been encountered so far. Two of them (*Eimeria praecox* and *Eimeria mitis*) affect the upper part of the small intestine and produce a very mild disease. *E. acervulina*, the 3rd one, also affects the same region of gut but produces disease of greater severity. The 4th species, *E. maxima* develops in the middle and lower intestine and produces a disease midway in severity between

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the two types described above. The fifth one, *E. hagani* affects duodenum and small intestine, and produces no clinical symptoms. The sixth coccidium and incidentally the most predacious one affecting Indian poultry is *E. tenella* which develops only in caeca or blind gut causing a very serious illness in chicks, mortality ranging from 20-90 percent.

The seeds of coccidiosis outside the body of fowl occur in a tough capsule - the oocyst. They are voided in faeces in millions by a sick bird. Freshly voided oocyst is not infective unless it is sporulated (or ripened). This maturation process requires 2-3 days in moist atmosphere with a temperature of 80°-90° F. before it can infect other susceptible birds. If conditions are not conducive for maturation the oocysts can remain alive outside the body for periods upto eighteen months and still be infective. Finding conditions favourable the undifferentiated protoplasm inside the oocyst divides into four pieces, each piece sub-dividing into two, thus in each oocyst there are 8 parasites called sporozoites.

On ingestion by a susceptible host the tough capsule dissolves in intestine, and sporozoites escape from their tiny covers called sporocysts. Thus liberated sporozoites pierce cells lining the intestinal wall. It grows in its new abode into another but bigger form of parasite—the schizont, which in turn produces a crop of new parasites, called merozoites. Each merozoite, on rupture of the host cell, in turn pierces new intestinal cells. It is believed that one oocyst is capable of producing as many as 2,000,000 merozoites. In other words the progeny of one sporulated oocyst inside a susceptible chicken will kill a similar number of cells lining the intestine.

Second generation schizonts of *E. tenella* press upon the blood vessels in the caecal wall, thereby injuring and rupturing them. Profuse bleeding occurs in caeca and they become distended into purplish bags full of blood which starts coming out with the faeces of the affected chick towards the end of the 4th day. In chicks which do not die, the parasite differentiates in male and female forms which unite to form oocysts which start leaving the host at the end of the 7th day. The disease produced by *E. tenella* is popularly called 'caecal coccidiosis.' Such is the development cycle of *E. tenella* and other coccidia develop in a somewhat similar manner in different regions of intestine of chick.

There is another equally serious form of coccidiosis causing pin point haemorrhages or necrotic patches in small intestine. It is caused by *E. necatrix* which multiplies in small intestine. Its sexual forms are differentiated in cells of caecum where they form oocysts. So far this form of coccidiosis has not been reported from our country. As it can

cause serious losses amongst chicks of 3-4 months of age its symptoms may be mentioned briefly as one may come across its cases in future. Affected birds are unthrifty, thin and lean. Wasting of breast muscle is apparent, often persistent watery diarrhoea may occur with flecks of blood in it. Finding of oocysts in the faeces with the aid of microscope confirms the diagnosis.

Control Measures

Effective control of coccidiosis enjoins on the farmer a vigilant watch on his birds, for earlier he recognises the disease in his flocks and treatment instituted, the greater will be the rate of recovery of birds.

Control may be divided into sanitary and therapeutic measures.

Sanitary control.—Theoretically we can prevent the occurrence of coccidiosis in chicks by keeping them away from the infective oocysts by applying strict sanitary measures, however it will not only be uneconomical and laborious but also the birds will remain highly susceptible throughout their lives, and once if per chance an outbreak of caecal coccidiosis occurs there will be a high mortality. Therefore it becomes desirable that chicks should be permitted to take light doses of infective oocysts which will confer upon them resistance against subsequent attacks without producing illness.

Over-crowding of chicks in pens should be prevented otherwise a high concentration of oocysts will be built up and next brood of chicks coming on such floors will experience serious disease.

Oocysts are particularly resistant to most disinfectants but a 10% watery solution of household ammonia allowed to react for one hour (birds being placed on such treated floors when all traces of ammonia gas have disappeared) or frequent use of blow lamps will keep the oocyst population in pens low. As moisture is essential for sporulation of oocysts, hence keeping floors dry and daily removal of droppings will prevent building up of high concentration of oocysts in poultry houses. Special attention should be paid to places where chicks spend most of their time.

Before 1939 sulphur and borax in several forms were used, but their coccidiostatic effects were only noticeable when pushed to almost toxic levels. With the discovery of sulpha drugs and the knowledge of their beneficial effect on the course of coccidiosis little has been heard of sulphur and borax and now they are only of historic interest.

Therapeutic control.—Several sulpha drugs have been found useful for controlling coccidiosis. Therapeutic concentration of effective sulpha drug is near 10 mgm. per 100 ml. of blood, which should be achieved not

later than the time of rupture of second generation schizonts i.e. approximately at the close of 3rd day of infection or beginning of the 4th day when blood is first seen in droppings. Delayed administration of these drugs will meet with disappointing results. Medication of feed is not advisable as sick birds fail to eat, hence use of soluble salts in drinking water is preferable.

Sulphaquinoxaline or sodium salts of sulphamerazine and sulphamethazine are given in drinking water for 3 days in concentration of 0.05% and 0.2% respectively. Recently an intermittent schedule of medication has come into vogue as it protects chicks from infection through most susceptible age. Sulphaquinoxaline is given at 0.025% concentration in food or water for 2 days, then unmedicated feed or water for 3 days, repeating these two-and three-days periods over a period of four weeks. Sodium sulphamezathine (0.2% in drinking water) given for two three-days period on first appearance of blood in droppings separated by two days without treatment is advocated to be more effective in controlling outbreak of coccidiosis.

Sulphadiazine to the extent of 1% in the food within 3 days of infection also reduces the intensity of infection due to *E. tenella*. Sulpha drugs do not interfere with the development of immunity.

Sulphaguanidine (in 1.0% concentration in mash for 2 days, rest for 3-4 days, give medicated feed for one day and once again after another rest period of 3-4 days) effectively controls the infection but as it too rigorously inhibits the growth of the earlier stage of the parasite, it interferes with development of immunity and birds consequently remain susceptible to subsequent infection.

Another drug, not of sulpha series, nitrofurazone given in the food of chickens at the rate of 0.022% continuously for 7 days is said to be effective against both caecal and doudenal coccidiosis. It is all effective as a preventive when given in food at concentration of 0.011% for 10 days. Intermittent schedule recommended is to give medicated mash for 10 days, normal food for 5 days repeating this procedure over a period of 6 weeks. Continuous feeding schedule neither affects live weight nor do the chicks show any toxic effects due to it. Preference, however, is given to the intermittent method of feeding for it gives birds chance to pick up infection during the non-medication period and develop immunity. 4-4'-diaminodiphenyl sulphone has no appreciable effect on the course of *E. tenella* infection.

Built-up Floor Litter:—Some American workers have suggested that built-up litter system (i.e.: droppings allowed to pile up on litter to a depth of 6"-12"; layer thus formed kept moist to promote fermentation) can effectively control coccidiosis. In their opinion ammonia

produced in the litter kills or prevents the development of oocysts or there may be some natural enemies of coccidia present in the old litter. No doubt this litter develops high concentration of certain dietary factors essential for hatchability and growth but now it has been shown that deep litter favours rather than inhibits the development of worm ova and coccidial oocysts. Thus it may maintain high parasite population. Hence the swing of opinion is not in favour of this method as birds may face additional hazards of parasitic infection.

Continuous Treatment:—Americans are giving medicated feed (0.0125% sulphaquinoxaline) continuously to chicks upto 10 weeks of age to control coccidiosis. Such a procedure does effectively prevent occurrence of coccidiosis but since the sulpha drugs are essentially 'antivitamins' in sterilising the intestinal tract of its beneficial microflora and as the effect of such treatment on the physiology of the fowl is not yet completely understood, this system is not finding favour elsewhere.

A LEUCOCYTOZOON SPECIES FROM AN INDIAN PARTRIDGE *FRANOLINUS* sp.

By

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Leucocytozoa have been recorded from several species of birds, but the present note on the occurrence of this haemosporidium—as far as the authors are aware—is the first account of its incidence in partridge.

Unstained blood smears were received through the courtesy of the Assistant Disease Investigation Officer (Poultry) Bombay, and were stained by us with a modified Romanowsky stain (J.S.B., 1944).

Heavy parasitisation of blood cells with gametocytic stage of the parasite was noticed. Both male and female forms were either oval or round in contour.

Male forms measuring $8\mu \times 7.5\mu$ on average, were characterised by thin and light blue cytoplasm. Nucleus measured $3.6\mu \times 3.2\mu$ in size was oval in shape with diffuse chromatin but without a definite karyosome.

Female forms measuring $10\mu \times 9.5\mu$ on average, showed dense and intensely blue stained cytoplasm. Nucleus was $2.7\mu \times 2.5\mu$ in size: chromatin granules were dense and contained a prominent karyosome.

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TERRAMYCIN IN THE CONTROL OF AN OUTBREAK OF INFECTIOUS CORYZA IN A FLOCK OF BARRED PLYMOUTH ROCKS

By

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Introduction:—To the owners of Poultry Industry, particularly those in heavily Poultry populous countries, the economic loss from avian infectious Coryza is too well known to need any emphasis. With the appearance of the disease in any flock of birds, there is immediate reduction in feed consumption followed by retardation in growth and sudden decline in egg yield. Through the affection of eyes, the birds are unable to appreciate their surroundings, and hence there is progressive emaciation and death. The ones that survive, carry permanent deformities and therefore, cannot be of any utility to the owner. In the past, various workers have tried different therapeutic agents in the control of the disease, but results obtained have either been inconsistent or not very satisfactory. The authors wish to place on record in this paper, the high efficacy of terramycin in the control of an outbreak of infectious Coryza in a flock of Barred Plymouth Rocks.

Review of Literature:—The contagious catarrh firstly reported by De Blicke (1931) as early as 1927, in Holland, and subsequently confirmed by Nelson (1932), Schalm and Beach (1934), Eliot and Lewis (1934), and Delaplane *et al.* (1934) in U.S.A. as an infectious catarrh is a respiratory disease of chickens. The causal organism *Haemophilus gallinarum* involves the trachea and bronchi of affected birds, setting up rales and dyspnoea (Beach & Schalm, 1936; Delaplane and Stuart, 1941 a). The duration and severity of the disease has been reported to have a wide range of variation, which might be due to difference in the poultry management practices. The infection persists through the cold months of the year and the mortality in affected birds is appreciably high (Delaplane *et al.*, 1933). The efficacy of Sulfathiazole against infectious Coryza has been reported by Delaplane and Stuart (1941 b). Schlenker *et al.* (1941), Hamilton (1943), and Wernicoff and Goldhaft (1944) Galli (1953), in Italy, worked with a flock infected with *Haemophilus gallinarum* and after obtaining disappointing results with Sulfonamide used dihydrostreptomycin with very good results. Similarly Rivera Anaya *et al.* (1953), in Israel, obtained very good results with the use of dihydrostreptomycin in the control of infectious Coryza.

Management Practices:—The outbreak in question occurred in a flock of 187 Barred Plymouth Rocks of 4 to 5 months old in fairly good condition at the Cuttack sub-farm. These birds had been protected against Ranikhet Disease and Fowl Pox and had been treated against common internal parasitic and coccidial infection. In keeping with the management practices observed in similar sub-farms in the State, the birds were getting required quantities of crushed paddy, groundnut oil-cake and meat offal in the wet mash, besides paddy as scratch grain. In addition, they were given plenty of greens, shell grit and clean fresh water. They were housed in a thatched shed with cemented floor and sides closed with hexagonal mesh wire netting and had access to a wire netted run during the day. The floor of the house and run used to be regularly cleaned.

Outbreak:—During the course of the outbreak, 17 birds were severely affected manifesting profuse lachrymation followed by marked oedema of the eyelids, deposition of yellow caseous material in one or both eyes and swelling of the face. The caseous deposit in some of the birds was so adherent to the eyes that its removal was difficult. Deposition of the caseous material in the upper nasal cleft was not seen in any of the birds under report, although the characteristic bad odour from the mouth was being emitted. Rales were evidenced only in one of the affected birds, 4 to 5 days after the manifestation of the clinical symptoms.

Within a period of 5 days from the commencement of the disease, 8 severely affected ones which had completely lost their eyesight, died without any treatment and treatment was taken up with the remaining nine.

Amongst the rest apparently healthy flock, quite an appreciable number of birds showed dullness, slight lachrymation, running of the nose, and marked decrease in feed consumption. The growth rate of these birds was also found retarded.

Experimental:—Microscopical examination of the nasal discharge of one affected bird showed small, gram negative, pleomorphic rods indistinguishable from *Haemophilus gallinarum*. But cultural examination of the nasal and ocular materials in 10% chicken serum agar, 10% ox blood agar, 10% goat blood agar and nutrient broth failed to demonstrate of the organism. With an attempt to transmit the disease through artificial modes of infection, two country bred birds, and one apparently healthy B.P.R. bird from the main flock (kept under observation for five days) were infected with nasal and ocular materials. All the three birds were housed in a small room together till the end of the present study. The B.P.R. bird came down with the disease on the third day while the country bred ones did not get the infection.

Repeated attempts on the above lines to reproduce the disease in the country birds were found unsuccessful. Further attempts to transmit the disease to two other healthy B.P.R. birds, one through infective material from the already artificially infected one and another through close in contact, did not succeed also.

Treatment and Result:—Terramycin therapy was started in the remaining 9 severely affected birds referred to above which were surviving at the commencement of the treatment. The treatment consisted of 5-6 mg. of terramycin powder in gelatin capsule given per os twice a day for a period of 4 days, topical application of terramycin ointment to the eyes after thorough cleansing with sterile distilled water. Four of these birds in extremes were given a single intramuscular injection of 25 mgs. of terramycin. One of the four birds in the extremes died the following day of treatment.

The remaining 8 birds including the three in the extremes recovered from the disease. These birds became very much active, and responsive to their surroundings in about 36-48 hours after treatment. There was gradual decrease in the quantity of the yellow caseous material and the affected eyes came round although in 3 cases, eyesight (one eye in each case) was lost. There was marked improvement in the feed consumption.

All the birds in the main flock were given oral administration of terramycin 5-6 mgs. twice daily for a period of 4 days irrespective of whether they were showing dullness, lachrymation etc. or not. All the birds of the group showed marked improvement in their feed intake, body growth, movement and general appearance. Lachrymation and running of the nose were no longer seen in any of the treated birds.

Discussion:—A mortality of 4.8% occurred in the affected flock under report from infectious Coryza during the summer months of the year contrary to reports of high mortality and incidence of the disease in cold months of the year (Biester & Schwarte, 1952). The variation in the percentage of mortality might be attributable to the therapeutic agents used by different workers.

Haemophilus gallinarum is fastidious in its growth, requirements. For optimum growth, an atmosphere containing 10% CO_2 has been found to be desirable (Biester & Schwarte, 1952), although DeBlicke (1932) and Delaplane *et al.* (1936) obtained satisfactory growth without adding CO_2 . In this study, efforts to get cultural growths in 10% chicken serum agar, 10% ox blood agar, 10% goat blood agar and nutrient broth with infective nasal and ocular materials failed.

The incubation period after experimental inoculation has been reported to be 18 to 36 hours (Biester & Schwarte, (1952), whereas in

this study the incubation period was 3 days in the first bird artificially infected. It is, however interesting to note that neither the incontact bird nor the one subsequently infected came down with the disease.

The persistent failure to reproduce the disease in the two country birds after repeated inoculations with the infective material and close contact with the diseased cannot be explained. However, it may be possible that these country birds have a greater resistance to this disease than the B. P. R.

Sulphathiazole has been used by Delaplane and Stuart (1941 b), Schlanker *et al.* (1941), Hamilton (1943), and Wernicoff and Goldhaft (1944) with certain degree of success in the control of infectious coryza. The Sulphonamide, however, gave variable results in the hands of Bonstein *et al.* (1955), who on the other hand, obtained good results by the use of Streptomycin. Terramycin used in the control of the outbreak in this study gave the most desired effect as a curative and prophylactic. The undesirable effects of shock or death resulting from the use of streptomycin in a small percentage of chicks (Bonstein *et al.*, 1955) was not seen in this study. In contrast to the depressing effects of sulfonamide and undesirable effects of streptomycin, terramycin actively increased feed consumption and promoted body weight, and general appearance of the birds.

Summary

- (1) An outbreak of infectious coryza in a flock of 187 B.P.R. birds has been described.
- (2) A. 4.8% mortality in the affected flock has been recorded.
- (3) The country birds appear to be more resistant to infectious coryza than B.P.R.
- (4) Terramycin has been used successfully as curative and prophylactic in the control of infectious coryza.

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INCIDENCE OF NASAL SCHISTOSOMIASIS IN BUFFALOES IN ORISSA PRELIMINARY REPORT

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Perusal of available literature shows that incidence of Nasal Granuloma in buffaloes is rare; information gathered so far from the field staff of the Orissa State indicates that nasal Granuloma does not appear to be seen in buffaloes.

Datta (1932)² reported that "it is interesting, for example, to note that Fairley and Makie (1926) conveyed infection of *Schistosoma spindalis* to buffaloes, which they believe to be the natural hosts of the parasite, but the buffalo appears to be resistant to attack by the parasite of Nasal

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Granuloma". Further, Datta (1932)² stated that "the peculiar immunity of the buffalo against this nasal affection has been particularly commented upon in every province of occurrence from time to time".

Malkani (1933)³ and Rao (1933)⁵ recorded the incidence of Nasal Granuloma in the buffalo in Bihar and Madras, respectively.

Sen (1949)⁶ examined the nasal discharge from about one thousand cattle and buffaloes of different villages in Jhargram sub-division of Midnapore district of West Bengal and found schistosome ova in 100% cattle showing clinical symptoms of Nasal Granuloma and in 90% cattle and 87% buffaloes showing no clinical manifestation of the disease. While Choudhury (1955), on the otherhand, reporting Nasal Granuloma in the State of West Bengal stated that the disease has not been observed among local buffaloes. Rao and Mohiyuddeen (1955)⁴ reported a case of infestation of the buffalo with *Schistosoma nasalis*, Rao, in Mysore.

The author had the opportunity to examine forty-five specimens of nasal scrapings of buffaloes at the District Livestock Breeding Farm, Keonjhar, Orissa, India, where the infestation of nasal schistosomiasis in Cattle was very very high. Twenty-five specimens of nasal scrapings of buffaloes revealed eggs and miracidia of nasal schistosome indistinguishable from those seen in cattle. Six of these twenty-five specimens were from buffalo calves of varying age.

To the knowledge of the author this is the first report on the incidence of Nasal Schistosomiasis in buffaloes in Orissa State.

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THE IMPACT OF GENETICS ON RESISTANCE TO INFECTIOUS DISEASES

By

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Profitable animal production depends upon a good plan of breeding, feeding management and disease control. As disease control is very essential, because of its curative and preventive aspects, the knowledge of the fundamentals of disease is of great importance. Despite infective organisms or non-infective causes being responsible for the occurrence of various diseases, the relationship of disease and heredity has been recognised. In fact, marked progress has been made by plant breeders in controlling plant diseases through the development of resistant strains.

The importance of organisms in diseases was recognised by the early efforts of Pasteur, Koch and their students. Subsequently, various workers reported bacteria, protozoa, viruses, mites etc. as causative agents of specific diseases. Later the use of vaccination for their control was successfully reported. These findings of about 1900 in the field of bacteriology, made many of the practitioners of medicine think that the problems of disease were solved.

Since 1900, the science of genetics started to enter into the field of diseased conditions and abnormalities. Early reports of Bateson (1906) on the heredity of brachydactyly, congenital cataract, albinism, alcaptonuria, haemophilia and colour blindness in the human being have been supported from time to time. Research on genetics since 1906 had demonstrated that many of the abnormal conditions as well as the resistance to disease are inherited.

Disease Resistance :—The species, breed, family and individual differences with respect to resistance to certain diseases have been observed and reported. Many of the diseases of lower animals do not occur in man and vice versa. This type of resistance or non-occurrence of some diseases in certain species is often called, "Natural or Native immunity". Differences within the same species of animal as regards resistance to certain diseases have been found between breeds. The resistance of Algerian sheep to Anthrax, as compared to sheep of other breeds, is an example of the inherited difference in cattle of different races or breeds. Lambert, Speelman and Osborn (1939) reported that different breeds of horses showed considerable differences in resistance to encephalomyelitis. Within the breed, the difference is ordinarily one of degree, though it may be altered experimentally by inbreeding. Wright and Lewis (1921) observed the marked differences in reaction to tuberculosis

among inbred lines of guinea-pigs. Pritchett (1925) also reported the differences between inbred strains of mice to mouse typhoid infection.

The science of genetics seeks to explain the variations in characteristics shown by individuals connected by a common line of descent. Application of genetics to disease resistance, therefore, lies in analysis of families or pedigrees with regard to inheritance of the character and then to adopt the principle evolved for the breeding and production of disease resistance strains. On the basis of the results of the experiments conducted on this aspect, it is assumed that the occurrence of disease is the result of the interplay of three factors, the genotype of the individual, the dose and virulence of the pathogen, and the environmental conditions. All of them or any of their combinations may effect the production of the diseased condition.

Factors Associated with Host :—Differences in genotype are now recognised to-day to be responsible for the diversity in certain physiological characters in animals, human beings and plants, although the detailed understanding of this relationship is far from complete. There are several factors associated with hosts, the presence, absence or variation of which may be related to the genetic make up of the individual and to the resistance or susceptibility to certain diseases. Some of them attack directly on the organisms causing their destruction or inhibition of their multiplication. There are others which are passive. They either present barriers for the entrance of organisms to the tissues or fail to provide suitable environment for the multiplication of microorganisms. The first or aggressive defence mechanism are—skin and mucous membrane (mechanical barrier as well as having bactericidal properties), bactericidal properties of blood and body fluids, lysozyme, antianthrax polypeptides, antiinvasin, normal non-specific bactericidal properties, and phagocytosis. Factors associated with the passive defence mechanisms are—body temperature, lack of certain tissue metabolites, oxygen tension in tissues.

Hereditary Resistance to Diseases :—Specific resistance to an infectious disease is perhaps inherited and is best illustrated by the selective breeding experiments carried out by several workers, the object of which was to determine whether continued selection for resistance to infectious disease would lower the death loss. In mice, Webster (1924 and 1925) Schott (1932) and Hetzer (1937) reported that the resistance to mouse typhoid was greatly increased in successive generations by breeding the individuals selected on the basis of survival of their offspring after administration of the pathogen. Similar results in chickens were obtained by Roberts and Cards (1926) for fowl typhoid (*S. Gallinarum*.) Irwin (1927) also noted the same

kind of results for Danisz bacillus infection in rats, and Cole (1930) for abortus infection in rabbits.

In large domesticated animals, similar types of experiments have not been conducted. It is because of limited number of offspring with a great deal of time between generations and also high cost of maintenance. Further, the method of breeding practiced by Animal Breeders does not lead quickly to the formation of sufficiently inbred line where the character of disease resistance can be said to be fixed. Moreover, selection is generally practised in absence of disease in the herd and thus any closely bred line developed would not show significant resistance to any disease except by chance. Inherited resistance to some of the diseases, however, has been studied by the analysis of family data. In cattle the resistance to some diseases are known by such studies on astitis (Murphy et al. 1944) on Tuberculosis (Rupert 1935, cited by Gilmore 1952) and on Para tuberculosis (Mathews 1947).

Virulence of Pathogen:—The virulence of the pathogen is one of the three factors affecting the production of disease. The term 'Virulence' means the ability of a microorganism to produce pathological condition in a particular host and it is the end result of interactions between host and parasite. Virulence, like other characters, is based on the inherited constitution, of the microorganism. It has been to the knowledge for long that pathogenic organisms vary considerably in virulence, but not much was known about the causes of variation. They may be due the effect of changing environment or to some inherent change in the organism itself or to both. The one thing certain is that there are changes, and that have been observed and experimentally demonstrated from time to time. In recent years, this aspect has begun to be studied systematically and is better understood. Pasteur (1881) subjected the virulent Anthrax bacilli to successive Subcultures at a higher temperature (42.5°C) than its optimum (37°C) and found after three to four weeks that the loss of virulence was proportional to the length of exposure period. After about six weeks, he observed that the bacilli had lost their virulence completely.

Numerous studies have shown that passage of bacteria may increase their virulence and prolonged cultivation under laboratory conditions may result in loss of virulence. Stern (1937) observed that bacillus anthracis after prolonged subculturing on ordinary media has become completely avirulent. Recent researches indicate that these changes are due to the establishment of mutants with altered virulence in initially virulent population. Many properties are found to be associated with the virulence of pathogenic strains. Some of them are surface structure of the bacteria, production of toxins, haemolysins,

leukocidin, Coagulase, fibrinolysins and hyaluronidase. Changes in all these properties are now recognised to be resulting from biochemical mutants.

In general, on the basis of experimental evidences, perhaps it is no exaggeration to state that practically all the pathogenic bacteria undergo constitutional or mutational changes affecting virulence one way or other. If it is the fact or if the agent itself can mutate and hybridise, there is almost no end to the possible interactions between the host and the organism. What is interpreted to be an increased resistance might well result from lower virulence. It is still not definitely known whether genetics can play a decisive role in bringing about such changes. The very important fact of varying virulence should not, however, be overlooked.

Environmental effect.—The environmental factors, such as age, sex, temperature nutrition etc. are known to cause susceptibility or resistance to certain infectious diseases. Young bovines are susceptible to cylostidium chauvii infection. Under-nourished individual is more prone to be diseased than the well nourished one. Excessive heat, cold and bad sanitation equally predispose the hosts to develop diseases.

Practical Application:—Theoretically, it seems possible, through the application of genetic principle, to cut down the death loss from disease to a considerable extent which is a matter of economic importance. Why, then, has the livestock resistant to various diseases not been evolved? It is because the practicability of establishing disease resistant strains depends on many factors, such as the nature of the disease and its etiology, the individual value of the host species, the manner of reproduction etc. The limitation of reproduction in large domesticated animals, and the relatively high cost of individual animals are the chief difficulties in raising disease resistant strains of livestock. The other difficulty met with is in obtaining sufficiently inbred strains of livestock which can be almost pure stock for the disease resistance character. However, by patient selection and breeding it is not impossible to evolve strains which will combine most of the desirable characters including disease resistance.

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A PRELIMINARY REPORT ON NUTRITIONAL ENCEPHALOMALACIA OR SOME RELATED DISORDER OF CHICKENS IN INDO-PAKISTAN

By

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Much of the efforts by workers in this country were directed towards the study of infectious and contagious diseases of livestock, but little or no attention was paid to nutritional disorders particularly those affecting the domestic fowl.

During the last few decades tremendous progress has been made in the field of poultry nutrition all over the world, but while reviewing the literature, it was surprising to note that no specific information was available on the nutritional disorders of poultry in the sub-continent of Indo-Pakistan, except a casual mention here or there. Qureshi (1946) reported an outbreak of disease in a flock of young australorps which was traced to be due to nutritional deficiency and was corrected by putting the sick birds on a freshly prepared balanced diet. This was confirmed by Haddow at Mukteswar (I.V.R.I.) who examined half a dozen typical cases sent to him by special messenger. Unfortunately the exact factor responsible for the trouble was not identified but presumed to be the deficiency of vitamin E. In view of this fact it is considered desirable to report a few more cases resembling clinically nutritional encephalomalacia or certain related disorders of chickens in Pakistan. The cases reported here are mostly baby chicks and chicks of about 4 weeks of age received for diagnostic purposes at this laboratory from localities widely separated and under different private flock management.

The consistent clinical manifestations were leg weakness (paralysis), tremors, rough and shaggy feathering and stunted growth. The older chicks of about 4 weeks of age exhibited retraction or

twisting of the neck muscles as the prominent symptom. Sometimes they will rock back and front and when held by some object, will push against it frantically till exhausted.

The feed consisted mostly of bajra millet and rice supplemented occasionally with fish oil and skimmed milk. Obviously the ration did not seem to be adequate in all the essentials necessary for normal growth and feathering.

In studies like this the availability of a synthetic diet apparently adequate in the essential amino acids, and fortified with minerals and vitamins is of basic importance. In the absence of such facilities the procedure adopted to attack the present problem was an indirect one based on circumstantial evidence.

In the first trial 6 baby chicks exhibiting tremors and signs of leg weakness were fed on their usual ration and administered orally multi-vitamins, (thiamin riboflavin, ascarbic acid, nicotonic acid and vitamins A & D) in adequate quantities twice daily for several days without showing any improvement. Some of these chicks received calcium gluconate injections with a view to eliminate the possibility of D. D. T. poisoning. Saline suspensions of liver, spleen and brain tissues from sick birds when inoculated into healthy chicks intracerebrally did not sicken them.

In the second trial 6 typically diseased birds received the same treatment (vitamins and nervine tonics) for a couple of days without exhibiting any improvement. But when these birds were put on a freshly prepared feed mixture supplemented with plenty of greens and whole milk showed rapid recovery within a week. The ration consisted of freshly ground yellow corn, wheat and oat meals (20 parts, each), peanut oil meal (15 parts) cotton seed oil meal (10 parts), freshly crushed and boiled bones (3 parts), wheat bran (5 parts), molasses (6 percent) and salt (0.5%). Unfortunately for want of facilities no chemical analysis of the feeds involved was undertaken.

Discussion:—In the preceding paragraphs a few cases of the possible occurrence of Nutritional Encephalomalacia or related disorders in chickens are reported. Although chick encephalomalacia had not been a serious problem as an epidemic in this country, it has been an annoying problem on several occasions.

The results of the present investigation indicate that the disease is not transmissible by inoculation and as such there is no reason for regarding it to be of infectious nature. It is presumed that the disease was brought on by the absence or the destruction of some nutritive factor in the diet.

The treatment of sick birds with adequate quantities of multivitamins (Bacedix-Glaxo) did not prove beneficial. But the sick birds showed marked improvement within a week when put on a freshly grounded feed mixture containing adequate quantities of peanut oil meal and cotton seed oil meal. This shows that this factor might be present in vegetable oils and is liable to be destroyed during storage as reported by various workers.

According to the latest evidence, an outbreak of encephalomalacia usually occurs because of imbalance between vitamin E and the unsaturated fatty acids. Most of these unsaturated fatty acids come from fish meal and, in some cases, from other animal products, which are not used commonly in this country. It is also possible that plant products occasionally contribute to the problem. It may also be mentioned that the feeds used for poultry in this country are of inferior quality usually drawn out from stored grains unfit for human use, and the use of fish oil is also not uncommon.

The metabolism of these unsaturated fatty acids is normally, controlled by a biological anti-oxidant including vitamin E. Occasionally however, the amount of unsaturated fatty acids may become too great in contrast to a very low level of vitamin E; thus precipitating an outbreak of encephalomalacia.

Vitamin A is often incriminated or associated with the problem. It is a well known fact that vitamin A is unstable in the presence of oxidised fats and certain antioxidants like vitamin E improve the utilization of vitamin A by simply preventing its destruction. With 2 percent fish oil, as a stress factor, the vitamin E requirement is increased greatly, and the total vitamin E in the ration is not a measure of that available to the chick. The trend in the evidence presented here is, therefore, in favour of the conclusion drawn.

Summary

The possible occurrence of chick encephalomalacia or some related nutritional disorder in Indo-Pakistan is reported.

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Clinical Articles

HAIR BALLS IN A CASE OF TYMPANY

By

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A Nagori breed heifer, aged about one and a half, was brought to the S. T. Veterinary Hospital, Johdhpur (Rajasthan, India), suffering from acute Tympany.

Pulse was slow. Temperature 99.8° F. Was suffering from the effects of wrong drenching by the owner. The tympany started some four hours ago and the animal was in great distress and in semi-comotosed condition.

It was decided to puncture the rumen and relieve the animal of the suffering. When the trocar and canula was pushed in, it came in contact with some hard stony substance. This gave rise to suspicion of some foreign body. One drachm of Formalin well diluted with water was put into the rumen through the canula. The animal though appeared relieved a good deal, died after three hours.

On post-mortem the rumen contained 18 hard lumps of different sizes. A cut piece was examined under the microscope and it was found that these balls were made up of human hair and rumen ingesta. The diameter of the largest ball was 5.8 inches and it weighed 3½ lbs. The smallest was 2.6 inches in diameter and weighed half a pound.

These hair balls are preserved as specimens in the M. P. Veterinary College, Jabalpur and Rajasthan Veterinary College, Bikaner.

The case is recorded because of the enormity of the hair balls both in size and number.

URETHRAL CALCULI IN A BULLOCK AND ITS TREATMENT WITH THE DECOCTION OF *DOLICHOS BIFLORUS* (HORSE GRAM)

By

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A bullock having the following symptoms was brought to this dispensary on 17-5-55.

The bullock had no micturition for over a fortnight. It had oedematous swellings of the dewlap and the lower aspect of the abdomen. All the joints of fore and hind limbs were swollen. The animal was noticed to do frequent and ineffectual attempts to urinate while standing. Sometimes, it stretched itself, strained violently and groaning with pain discharged a few drops of urine.

On examination per rectum the bladder was felt to be over distended. On applying a little pressure over the bladder few drops of urine were seen to dribble down.

All attempts by administration of diuretics for three days were of no avail. Hence it was decided to perform "Ischial Urethrotomy" on the lines of Md. Iftakhar Hussain, G.B.V.C., Department of Animal Husbandry, East Bengal, adopted in the case of a goat (Vide *I.V.J.* Vol. XXXI, No. 3, November 1954). But the owner, a brahmin widow, did not like to have her animal operated on and withdrew the case from the dispensary.

On the same evening while discussing this case with Dr. K. Biswal, M.B.B.S., a local Private Medical Practitioner, I learnt that he had noticed considerable good result in Renal Colic due to uroliths in human beings by regular administration of decoction of *Dolichos Biflorus* (Horse gram, Hind—Kulthi). And so the owner was advised to administer the decoction of horse gram regularly. The decoction was prepared by boiling 1-lb of horse gram in 4-lbs of water and administered after the boiled gram was strained. This treatment was continued from 20-5-55 to 29-6-55 with gradual improvement. The animal has now normal micturition and is otherwise normal in every way. No definite opinion as to its mode of action can be advanced. I would however request the members of the profession to try this treatment in such cases and record their experience in the *I.V.J.*

Before concluding, I would like to express my thanks to Dr. K. Biswal, M.B.B.S., Private Practitioner, Jagatsingpur, for his kind suggestion and encouragement.

USEFUL VERMICIDES FOR CONTROL OF WORMS IN CATTLE

By

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Veterinary Surgeon, Balaghat, M.P.

A survey of some villages in Raipur District in Madhya Pradesh, revealed that nearly 75 percent of the cattle population suffered from infestation of worms. Similarly 9 out of 10 postmortems held on

calves that died in a dairy in Balaghat District, revealed that death was due to Round Worms and lesions of pneumonia in lungs.

The following line of treatment proved successful. All cases with loose motions, due to any etiology were treated with Hexachlorethane in fractional doses. 15 Grammes were given twice a day till the normal consistency of faeces returned. It took one to ten days to effect a cure. Animals were not 'prepared' through starvation though this is advocated by the makers.

Animals in very poor condition which defied all other lines of treatment responded satisfactorily with Phenothiazine given twice at a weekly interval. Likewise treatment in calves in 5 to 10 gramme dose has reduced the mortality considerably. One pound of Hexachlorethane costs about Rs. 3-12-0 and Phenothiazine Rs. 5-11-0.

FAECAL LUMP IN THE TAIL

By

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Subject :— A Cross Terrier Dog — age 3 years.

History :— For sometime past the bowel movement of the dog was not very satisfactory and he was not eating well. On the 28th July 1955 the dog had two successive fits each lasting three to four minutes. After that the dog was very restless, did not drink his milk. He passed urine during the fits involuntarily, but there was no stool for two days.

The general health of the dog was satisfactory — temperature was normal, heart and pulse were a bit quick but otherwise good. Visible mucous membranes were congested, eyes red and pupils dilated. On deep palpation over the colon some tenderness and flatulence could be felt. A hard lump at the inner side of the tail extending between the root and the proximal part of the docked end, leaving almost 1" on either side could be felt. As according to the owner's statement, the lump was there since the present owner got him about a year back, neither, increasing nor decreasing in size, and apparently causing no inconvenience to the animal, much attention was not therefore paid to that part.

Treatment :— 28-7-55 Calcium gluconate vit C 5 c. c. Intramuscular Gardenal Tab. gr. I one only given per os Glycurine suppository - 1 introduced.

The owner was advised to keep the dog in a cool, dark room, left alone, without being restrained. He was allowed to be fed with milks soup and plenty of glucose water. Examination of stool was advised as

soon as possible. Report had to be sent next morning provided no recurrence of the fits had occurred.

29-7-55 - Had no more fits, passed stool on 28th noon, looking brighter and was hungry. The stool examination report was :

Colour.....light brown
Consistency.....Semi solid
Parasites & Ova. — Nil.

Remarks : Foreign bodies (cotton fibres, hair etc.) present in abundance.

Treatment :— Another injection of calcium vit C repeated.

A full dose of castor oil given per os.

A light food was advised that day too and raw minced meat was allowed provided it was given in the afternoon and the dog was very hungry.

30-7-55 The dog was alright. The lump was then closely examined and a fluctuating point could be detected on the distal end, so with the owner's consent, operation was undertaken.

Operation :—Under Ethylchloride spray over the region an exploratory puncture was made over the fluctuating point and a little cheesy pus came out. So the point was incised with an abscess knife. Some more cheesy pus with dirty coloured blood came out ; when the harder portion was pressed some faecal matter with hairs made its appearance through the opening. It was then decided to open up the wound more adequately to investigate the matter further.

So the dog was at once put under general anesthesia with Thial Barbitone Sodium Intravenously. The lump was slowly exposed. It was surprising to see that a lump of stool lying between the muscles of the tail and the skin, i.e. in the subcutaneous tissue there. The stool was unchanged as if placed there only a day back. When that mass was removed it was more interesting to note the presence of hair lodged in the part covered by the lump. The whole thing looked like a soft outer skin. So, that had to be removed completely exposing the muscles of the tail. The overlying loose skin was removed. As a ligature was applied at the root of the tail there was negligible bleeding and one cutaneous branch of the artery had to be controlled only.

As it was diagnosed as a protrusion of rectum through an opening at the root of tail, a thorough search was made to find out that opening but even a fine probe failed to show any aperture either in through the

adjoining subcutaneous tissue or through the muscles and the coccygeal vertebrae, even by removing the ligature at the root of the tail.

The wound was then cleansed with Eusal solution and dusted with Penicillin Sulfamezathine dusting powder and was stitched up with interrupted sutures and two sutures of relaxation and bandaged up.

As usual, the dog got back from anaesthesia in 1½ hours' time and overcame the giddiness and dizziness in 6 hours time.

The wound was required to be dressed only three times and the stitches were removed on the 10th day.

The dog has been visited three times till September 1955 and he appears quite well.

Now the presence of this mass of stool can be explained in one of following two ways :—

- (1) It might have been a case of coccygeal hernia or a rectal hernia and made its way through the subcutaneous space of the root of the tail, when an irritation closed the ring and thus one end got encysted there and the other end got cicatrised by nature or (more a Ritchells type or simulating to that ?).
- (2) It might have been a case of congenital rectal bifurcation which atrophied at the neck with an irritation.

The facility of the immediate microscopical examination was not available and the bag was not examined; otherwise a clue to the origin of the condition might have been found.

I shall be grateful to know if any other professional brother has had experience of such type of cases.

I am thankful to my friend Sri B. K. Banerjee for giving me the opportunity to study the case.

News and Views

Inaugurating the Tenth Annual Meeting of the Association of Scientific Workers of India, at Agra, on 2nd January 1956, Pandit Jawaharlal Nehru said :—“The importance of science, was never so great as it was to-day. They had to do everything in a scientific way. If their schemes were not scientifically planned it would founder on the rock of failure. Planning did not mean merely building roads, houses, hospitals, industries, etc. Planning itself was a science.” And he continued :

* * *

“Planning meant the assessment of one's future needs and requirements and then drawing up schemes for fulfilling those needs.

Planning meant the avoidance of wasteful expenditure and using every ounce of one's energies and resources in constructive channels. Whatever they planned they must plan effectively and in a scientific way. While planning they must know in which sphere they were going ahead and where they were lagging behind".

Wise words, indeed! We commend them to Veterinarians as well. Verily, Pandit Nehru, as some one has described him, is like one of those peripatetic philosophers of ancient Greece! The description does end there: It is said that he has constituted himself as a 'Walking University' spreading knowledge wherever he goes.

Again, see what he has said at the Science Congress.

At the 43rd Session of the Science Congress at Agra he said "The results of atom and hydrogen bombs, if unleashed would be very disastrous. But much more dangerous than this is the kind of atom bomb we nurse in our minds". Then he quotes Gandhiji and says "It soils you and others and spreads hatred and ill-will if you keep on nursing it in your mind and bosom". It is no wonder that the world hails him as a messenger of Peace.

Almost identical in thought were the words of Dr. S. Radhakrishnan at the Prize distribution ceremony of the Industries Fair at New Delhi. He said "Security is not enough; social justice is not enough; we should aim at refinement of human relationship and the development of virtues of mind and graces of life".

He added "Our plan is to feed the hungry; clothe the naked; nourish the sick, train the minds and civilise the emotions of men and women." In this national work or should we say, International work the Veterinarian has a definite part to play. Let him not be found wanting.

Pandit Nehru speaking on the "Shradh Day" at the 61st session of the Indian National Congress said "An uncommon life and an equally uncommon end to it are truly the lot of the great. Gandhiji's life and death are covered in un-dying glory". Unforgettable words are these! The Father of the Nation will continue to live in those words through eternity!

The Second Five Year Plan has been in the offing for a long time. It is out after all—at any rate its draft outline. We are expecting an official copy of this report and may give our views on it at a later date. But here are a few high-lights of this report as has appeared in the Press.

An outlay of 40 crores for Animal Husbandry and 22 crores for dairying has been provided for. 1900 Veterinary Dispensaries are expected to be added. But it would be interesting to know how many of the existing Veterinary Billets are kept closed for want of personnel and may we add due to lack of proper canalising also.

The Key Village Scheme is rightly put down as the main hope of livestock improvement in Rural areas. It is expected to produce 3000 improved bulls, 9,36,000 improved bullocks and 1,000 cows. Alluring figures no doubt, but we await details. The staff engaged on such work should realise in time how much depends on their work and what the Government and the country expect from them.

There is an informative article on the Key Village Scheme in the Block Development corner of this tissue by Sri D. Pattabhiraman, Deputy Director (Livestock), Madras. We invite reports from other States as well.

At a Conference of the State Directors of Animal Husbandry and Veterinary Services, held at New Delhi in February 1956, it was considered necessary to provide facilities for rearing the improved calves, brought about under the Key Village Scheme, on a proper plane of nutrition. The Conference therefore recommended the setting up of a well-knit organisation both at the centre and in the states for the development of cattle fodder resources in the Key Village areas. It also urged the cultivation of fodder crops, improvement of pasture, popularisation of economically balanced rations and prevention of wastage and conservation of fodder.

That is something to be thankful for! Writing on 'The Improvement of India's cattle wealth, in our May 1955 issue, we said "Unless and until this first step is taken, cattle development in this land will be a myth! We even said with regard to the importation of Jersey Bulls for seed materials, "We begin to wonder if we are not making a beginning at the wrong end". Well, we are happy over the 'recommendation'.

But resolution is one thing and implementation is another. There should be a special agency to bring about this all round feed improvement in Key Village Areas. Specific lines of work should be indicated through printed pamphlets and action taken if not adhered to. It is a general tendency to pass resolutions and then feel satisfied. This is time for action. Those who cannot put their shoulders to the wheel with sincerity, let them retire and make room for the right type of men. India wants workers and not clogs on her wheel of progress.

Here is some news in the *Evening News of India* dated 16th February 1956.

Mr. R. H. Macnab, a wellknown British veterinary scientist, is due to arrive in Bombay from Karachi on March 2.

A Fellow of the Pharmaceutical Society of Great Britain and head of the veterinary department of A. J. White Limited, of London, Mr. Macnab has a full programme of meetings with eminent veterinary scientists to discuss new methods of treating animal diseases.

His visit to India at the present time is particularly appropriate, since the vast expansion of the poultry industry envisaged by the second Five-Year Plan, with its target of one egg per person a day, demands the use of effective and economic products for the prevention of poultry diseases.

Son of a Scottish doctor, Mr. Macnab was born in 1911 and educated at London University. Subsequently he specialised in the field of Veterinary Science.

I. V. R. I.

A Report on the Special Course in the Commercial Methods of Manufacture of Veterinary Biological Products held at The Indian Veterinary Research Institute, Izatnagar, Mukteswar From The 3rd to 22nd October 1955.

A special course of three weeks duration designed for veterinarians engaged in the large scale manufacture of veterinary biological products in the various States in the Indian Union, commenced at Izatnagar on the 3rd October, 1955.

Genesis:—In 1951 the Government of India launched a Scheme to reorganise and modernise the activities of the Biological Products Division at the Indian Veterinary Research Institute and provided necessary funds. Assistance from the Technical Co-operation Mission of the U.S.A. and the F.A.O. of the United Nations was also obtained. Since 1952 it was desired that a Special Course in the large scale manufacture of biological products should be conducted for the benefit of all the producing centres in the country with the object of bringing all such centres to a desired level so as to produce veterinary biologicals of quality. In 1953, an International Training Course in Virus Vaccine manufacture was conducted at I.V.R.I. under the joint auspices of the Government of India and the F.A.O. and this course was very useful and enlarged the scope of production of veterinary virus vaccines on a uniform level not only in India but also in the Far East. Further the Government of India constituted an Expert Committee to formulate rules and regulations governing the standardisation of veterinary biological products and the report was published early 1955. Progress to a desired level was also achieved in the modernisation of production procedures at the Indian Veterinary Research Institute and it was, therefore, decided to conduct the Special Course with a view to demonstrate the new equipments and manufacturing

processes employed, to discuss the recommendations of the Expert Committee, and to establish a convenient uniformity of production procedures throughout the country.

Instructional staff:—The staff of the Divisions of Biological Products and Pathology and Bacteriology assisted by Mr. Oliver A. Bauman, Research Biologic Advisor, Technical cooperation Mission U.S.A. who has been assigned to this Institute for the past four years for the modernisation of the Biological Products Division, conducted the course. The T.C.M. provided also two Consultants—Specialists on commercial production of veterinary biologicals—Dr. E. L. Mundell of the Jensen Laboratory, Kansas City, U.S.A. and Dr. E. L. Baldwin of the Corn State Biologicals, Omaha, Nebraska, U.S.A.

Participants:—Fifteen trainees participated in this Seminar. Photo appeared in January 56 issue of the *I.V.J.* Of these twelve were from States and three from the Indian Veterinary Research Institute.

The Course:—The Course consisted of practical laboratory work, lectures, demonstrations and question periods. Production methods followed in U.S.A. were demonstrated using Colour-film-strips and movies. Subject matters included in this course were presented to the participants in the form of pamphlets or notes.

(a) Standard methods—Biological Standardisation.

The necessity of adoption of uniform production procedures was discussed in detail. The designing of biological products, manufacturing units, working of machineries, equipments, staff, requirement of production and test animals were the main subject on which the discussions were based.

There was considerable discussion on the recommendations of the experts committee on biological standardisation. There was an uniformity of opinion that these procedures should be adopted as soon as possible keeping in view the facilities available in different units in India at present.

Stress was laid on simple operational techniques so that maximum sterile precautions can be taken. Use of ultraviolet-lamps in laboratories was stressed. Colour-films showing the production procedures of Equine encephalomyelitis Vaccine and Sera as followed in Jensen Salsbery Laboratories in U.S.A. was projected to demonstrate the usual laboratory techniques.

(b) Freeze Drying:—General principles of refrigeration, Shell-freezing, and Centrifugal freeze drying were discussed in detail.

(c) Rinderpest:—Discussions and demonstrations on the production of Goat-tissue Vaccine, Lapinised rinderpest Vaccine and Anti-rinderpest Serum.

(d) New Castle disease (Ranikhet) Vaccine:—The production of the Vaccine was demonstrated.

(e) Discussions on general principles of manufacture of other Virus Vaccines were held.

(f) Bacterial Vaccines:—General discussions on the production methods of bacterial Vaccines were held at Izatnagar Drs. Mundell and

Baldwin elucidated certain interesting points as to how these Vaccines can further be improved.

Participants along with the instructional staff went to I.V.R.I. Mukteswar, where production methods of adjuvant H. S. Vaccine, Brucella Vaccine, Anthrax Spore Vaccine and Tuberculin were demonstrated to the participants.

Discussions and Assessment of the course

It may be pointed out that the participants, in majority of cases represented senior workers in the field of production of veterinary biologicals and this course served as a venue for discussions to bring out the salient points which constitute the present day problems in this line. Discussions helped the workers to pick and choose information useful for adopting a working plan for future production procedures. This also helped the workers to discuss their problems so that solutions may be found out. The visit of these officers to the Indian Veterinary Research Institute was useful in that the operation of new equipments procured during the first Five Year Plan was demonstrated in detail. Mr. O. A. Bauman, T.C.M. Advisor, discussed in detail the procedures to be adopted in harnessing the T.C.M. funds for the procurement of apparatus and equipments under the operational agreement No. 39.

In a joint discussion held at Mukteswar, it was stressed that the workers in the field of manufacture of Veterinary Biological Products should meet once a year and such meetings can be held along with the D.I.Os' Conference. This would afford facilities to such workers to assess the utility of products so that constant efforts be made to improve the standard of products.

It was stressed that before placing any product in the hands of a field worker it is absolutely essential that the product should be tested for its safety and efficacy and to this effect the recommendations of the Experts Committee on Biological Standardisation may be given effect to as far as possible in keeping with the facilities available in different laboratories.

Pamphlets Issued to Participants

1. Notes on the Commercial Manufacture of Veterinary Biological Products :—By Oliver A. Bauman.
2. Ranikhet Disease ; (i) The evolution of present day Vaccine (ii) Effectiveness of the Vaccine in the control of the disease.—By C. Seetharaman.
3. Anti-sera in the control of animal diseases :—By K. C. Sinha.
4. The present day Ranikhet Disease Vaccine :—By D. R. Uppal.
5. Principles of Freeze-drying :—By P. N. Joshi.
6. Minimum standards for biological products :—By E. L. Baldwin and E. L. Mundell.
7. Freeze-drying equipment :—By E. L. Mundell & E. L. Baldwin.
8. The report of the Expert Committee on the Standardisation of Veterinary Biological Products.

THE BLOCK DEVELOPMENT CORNER LIVESTOCK DEVELOPMENT IN MADRAS STATE

through

THE KEY VILLAGE SCHEME

By

D. PATTABIRAMAN, G.M.V.C., A.I.D.I.,

Deputy Director of Animal Husbandry (Livestock), Madras.

According to the latest census of cattle, the Madras State has got about 41 lakhs of cows and 13 lakhs of she-buffaloes of breedable age. To improve the above animals by grading up with pure bred bulls of known pedigree and parentage, 41,000 bulls and 13,000 buffalo bulls will be required at the rate of one bull for 100 cows or buffaloes of breedable age, whereas the State has now got only about 1,200 approved bulls and all the Government Farms and the Pattagar's Farm at Palayakottai are expected to produce only about 150 bulls every year. There is thus a wide gap between the availability and requirement of bulls. The question of starting more number of Farms by Government with a view to bridging this gap, cannot be thought of at present, in view of the heavy initial and recurring expenditure that will be involved and the present financial stringency. The question of grading up the village cattle by using superior bulls in a contiguous area and eliminating breeding by scrub bulls in that area has been under consideration for a number of years, and the outcome of this is the "Key Village Scheme".

There has been quite a lot of confused thinking over this term "The Key Village Scheme". The term "Key Village" has a specific meaning. It is used in the sense that it is the chief element in the proposed or planned system of rapid livestock improvement work in this country. It is comparable to a "Key stone" in an arch. It is used in the sense that it is pivot or the "Key pin" on which the entire system of livestock improvement is proposed to revolve or rotate. It is a village which will keep open its supply of improved livestock for further developmental work in other areas. In short, it is a village which will occupy a "Key position" in our scheme of Livestock Improvement work in this country.

The Key Village is an intensive cattle improvement unit worked in a compact area of one village or a group of contiguous villages containing a total population of about 500 cows or she-buffaloes over 3 years of age fit for breeding or milk production.

It is ideal to start the scheme in the breeding tracts where already a definite and well established pure breed of cattle of certain standard exists and is also in line with genetic principles. The Key Village Centre in such a tract is expected to start off straight away with highly specialised selective breeding, using only superior bulls of known pedigree as far as possible, either from Government farms or from private cattle breeders of some standing repute, aided of course with necessary breeding records, livestock improvement acts, etc. So a Key Village Centre is meant to multiply pure bred stock, under controlled and scientific conditions as quickly as possible and issue the male progeny to other areas.

Lately this term was applied rather loosely even for "grading up" centres. For instance, a rural welfare centre or a village livestock improvement centre in a non-breeding tract with one or two stud bulls stationed there is often referred to as a Key Village Centre. How can one or two stud bulls put on a varied heterogeneous group of village cattle of unknown genetic make up for colour, constitution, performance, etc., be expected to provide us with stud bulls of required purity and standard within a short time? Granting, the continuity of this grading up work is kept up, it will take at least 20—25 years to draw bulls of pure breed from such a centre. Such centres may be termed as "Grading up centres" but not "Key Village Centres".

The advantages of starting the Key Village Scheme in the breeding tracts are manifold:—

(1) The generality of cattle there are already pure stock, their type is fixed, they breed true and we step in only to build up high pedigreed stock by scientific and controlled breeding.

(2) The male progeny of the first generation itself will be available for distribution as breeding bulls for other grading up centres in nonbreeding tracts.

(3) The ryots are livestock minded.

(4) The ryots though illiterate, know the elementary principles of breeding and realise the advantages of pedigree breeding.

(5) The co-operation of the ryots will be readily forthcoming for implementing the scheme.

(6) The animals can be registered to start with itself in the herd register to be opened.

(7) Pedigree records can be maintained and the progeny marked.

(8) The Scheme is bound to be a success.

(9) In course of time, the management, etc., can be left to the villagers themselves to be run through an association to be formed.

Items of work to be carried out in the Key Village Scheme.

(1) *Survey*:—A house to house survey for each Key Village has to be undertaken to start with, regarding the census of all classes of live stock (cattle, sheep and goats, poultry, etc.,) the number of holdings etc., by the ryots, acreage maintained for food crops, cash crops, growing of fodder crops, cultivation of perennial grasses, hay-making, silage-making, methods of breeding, marketing of cattle, dairying, etc., and all particulars recorded in a separate register.

(2) *Breeding*:—Livestock Improvement Act should be enforced. Only pedigree bulls approved by the Committee (to be formed among the villagers) should be located in the village and all the other bulls should be castrated compulsorily. Necessary records have to be maintained by the staff appointed for the scheme.

(3) *Artificial Insemination*:—This should form an integral part of the Centre's work. This should help us to locate the superior germ plasm available in the country in each breed of cattle and thus hasten the day of producing superior cattle.

(4) *Feeding*:—This should be always associated with scientific and controlled breeding. Correct feeding standards for various classes of cattle should be carried out. The success of the scheme depends only on good feeding. The ryots should be advised to keep only good stock and to weed out the undersirable ones. Fodder should be conserved for one year at least. Perennial grasses should be cultivated. Arrangements should be made for procuring concentrates at cheap rates and distributed to the ryots through a common agency.

(5) *Disease control*:—Contagious diseases of cattle are the greatest impediment for the growth of livestock industry. Contagious Cattle Diseases Act should be enforced in the area. The animals in the village should be periodically protected against the contagious diseases before the onset of the season. This can be done by carefully maintaining and studying the records as to the seasons for the spread of contagious diseases in those areas.

Treatment should also be undertaken in the villages for ordinary ailments of cattle.

(6) *Marketing*:—This item only is of considerable importance to the villagers as they derive immediate benefit financially. This should be studied carefully by the staff, and the ryots should be helped by proper marketing of their cattle.

(N. B.) Young stock (selected male progeny, suitable for breeding purposes) should be purchased from the ryots and reared in a Farm to be opened by the Government.

(7) *Dairying* : Milk recording should be carried out for all the cows in the village. Surplus milk should be pooled and arrangements made for marketing the produce to the nearest City where there is a demand. This will certainly give an incentive to the ryots for the proper feeding of their stock, as they will be getting an additional income through the sale of milk and milk products.

(8) *Propaganda* : This is an important item of work in the Scheme. Every opportunity should be taken by the staff to enlighten the ryots on scientific livestock management. All improved methods of animal husbandry have to be undertaken by the ryots themselves and they should take confidence in the work they are undertaking. Not only adults but younger generation also should be taught of the correct methods of animal husbandry.

In fact, the Key Village Centre should be the nucleus of all livestock activities (i. e.) should be a livestock breeding centre, a treatment centre, a dairy centre, a fodder production centre, an artificial insemination centre, a propaganda centre and a marketing centre of livestock and its products.

Though the scheme was started in October, 1951, as fore-runner of the Key Village scheme, the centres were not working satisfactorily as they were not located properly. Hence the centres had to be shifted to different breeding tracts. At present there are now 15 Key Village main centres with 60 Key Villages attached to them and they are distributed as mentioned below :

1. Kangayam.	Coimbatore Dt.	The ten Centres are located in the Kangayam Breeding tract for improving the Kangayam breed of cattle as it is the only recognised breed of all India importance in this State. This breed is holding sway in almost all the southern districts of this State.
2. Vellakoil.	"	
3. Sivagiri.	"	
4. Sankarandampalayam.	"	
5. Mulanur.	"	
6. Chikkanapuram.	"	
7. Malayandipatnam.	"	
8. Thoppampatti.	Madurai Dt.	
9. Idayakottai.	"	
10. Neikarapatti.	"	
11. Cinchona.	Coimbatore Dt.	This Centre is for improving the Scindhi breed of cattle in Anamalais hills a compact area where the cattle are being graded up with Scindhi. All the cattle are now in the fourth or fifth generation of graded Scindhis.
12. Hosur Cattle Farm.	Salem Dt.	This Centre is meant for improving the Hallikar cattle of that area as the predominant breed is Hallikar in that area.

13. Valarpuram.	Chingleput Dt.
14. Kilacheri.	South Arcot Dt.
15. Chidambaram.	

These three Centres have been located in non-breeding areas where the type of cattle is non-descript and to grade the cattle with Scindhi and Murrah buffalo bulls to aid the Co-operative Milk Supply Unions. When compared with other centres, the work of the centres located in non-breeding areas is not satisfactory.

Each Key Village main centre is in charge of a qualified Veterinary Assistant Surgeon, assisted by two Stockmen or Veterinary and Livestock Inspectors, who are all trained in Artificial Insemination work. Four Key Villages are attached to the main centre and each Key Village is in charge of a Stockman or Veterinary and Livestock Inspector. All of them should reside in their respective villages, move closely with the ryots and talk to them periodically about the improved animal husbandry practices etc.

In each Key Village, two bulls of known parentage are entrusted to ryots interested in cattle breeding, for maintenance. In order to enable the custodians to maintain the bulls, in good condition and fit for service, a subsidy of Rs. 30/- p.m. per bull is paid. The bulls are intended for natural services in the village. Records as to the performance of the bull progeny, milk yield etc. are being maintained.

Each Key Village is expected to produce 100 bulls per annum. In order to supplement the natural services, the technique of Artificial Insemination is also applied in such villages. For this purpose, there is an Artificial Insemination Centre for a group of four Key villages, the centre being situated at the most favourable place from all points of view. Four bulls of known pedigree are stationed in each Artificial Insemination Centre. Semen is collected from the bulls, diluted properly and sent for insemination in the attached Key Villages.

Every insemination done in that area is being followed up by the staff and the results are recorded. In fact all the items mentioned previously in the programme of work being carried out.

As this is a new technique and as the village ryots are very conservative to adopt new methods, the staff have been requested to be very careful in the insemination work to get the maximum percentage of success. There was some difficulty in pushing the work to start with till a ryot was able to see the calf born by this method. Afterwards all prejudices towards this method had waned out and today the experienced ryots are doing propaganda to other ryots about the advantages of this method.

In fact there are innumerable requests from the ryots in all the districts to open more Key Village Centres. This kind of work is a

highly specialised nature of work and it has to be carried out with great care to ensure the maximum success. The object is to create each Key Village Centre into a miniature cattle farm by proper selective breeding control and to build up pedigree records etc. Each centre will be a nucleus seed farm producing pure bred bulls for intensive development work in other non-breeding areas.

In all the centres, calves of good type fit for breeding purposes are selected and a subsidy of Rs. 5/- a month is given for 24 months.

Calf rallies and Cattle shows are arranged periodically to create enthusiasm and competitive spirit in raising good type of animals.

During the Second Five Year Plan, it is proposed to extend the area of these Centres to attack two more Key Villages so as to have six Key Villages for each Key Village Centre which will cover a total of 5,000 cows and buffaloes of breedable age. Also 20 additional Key Village Centres with 120 Key Villages are proposed to be established at the rate of 4 centres, each year.

Hence at the end of the Second Five Year plan period 35 Artificial Insemination Centres with 210 Key villages would have been established and 1,75,000 cows and their progeny will be improved upon and individually studied and it is expected that this State will be able to meet its requirements of pedigree bulls satisfactorily.

*Progress of work in the Several Centres since
1952-53 upto 30-11-55.*

S. No.	Name of Centre.	Natural Services.	Inseminations.	Calves born and verified.	Castrations.	Inoculations.
1	Kangayam	703	9786	803	118	5177
2	Vellakoil	1087	6939	658	240	5682
3	Sivagiri	1662	1488	79	60	6249
4	Sankarandampalayam	691	2426	285	113	7599
5	Mulanur	491	2998	329	297	3661
6	Chikkanapuram	136	1062	9	239	1700
7	Malayandipattanam	477	2636	484	513	7755
8	Thoppampatti	256	1462	2	55	1206
9	Idayakottai	275	3392	582	357	4716
10	Neikarapatti	419	5889	1264	1240	12438
11	Chinchona	483	1057	357	38	1108
12	Hosur Cattle Farm	1130	2537	1126	1584	9896
13	Valarapuram	18	880	106	548	3909
14	Kilacheri	68	1824	234	686	7940
15	Chidambaram	86	1865	148	272	5595

Livestock Development in Madras State through The Key Village Scheme

By

D. Pattabiraman, G.M.V.C., A.I.D.I.



Collection of Semen in an Artificial Insemination Centre.



Insemination process.

THE INDIAN VETERINARY RESEARCH INSTITUTE MUKTESWAR
POST-GRADUATE REFRESHER COURSE IN VETERINARY SCIENCE
1955



Sitting :—Left to Right : P. R. Neelakantan, Gajendra Singh, Gopalakrishnan, Ganguli, J. M. Lal, Dr. M. R. Dhanda (Head of division Path. and Bact), Dr. Haides (F.A.O. Expert), M. S. Menon, Thakral, Sen, M. S. Sethi.
Standing :—1st row : R. P. Thapliyal (U.P.), S. T. Kathe (Bombay), K. Jageerdar (Bombay), J. Venkatanarayana (Andhra), R. K. Gupta (Bihar), R. V. Hegde (Madras), P. L. Narayana Rao (Andhra), G. Venkatarathnam (Andhra), R. Madhusudan (Hyderabad), K. S. Bist (U.P.), V. Venkataraman (Madras), F. R. Gour (Punjab), A. N. Chadda (Punjab).
2nd row : K. Ananthapadmanabhan (Madras), R. K. Shah (Bihar), P. Sathianarayana (Andhra), M. L. Manoch (Thailand), A. Sambamurthy (Andhra).

POULTRY FARMING

SOME USEFUL POINTS TO REMEMBER

PART I

BY

T. VINAYAKA MUDALIAR,

Retired Livestock Development Officer, Government of Madras.

Signs of health :—

- Birds :—1. Should be active and alert, picking and scratching their food.
2. Should have bright clear eyes and a bold bearing with majestic gait.
 3. Comb and wattles should be well developed, fine and soft and not coarse.
 4. The ear lobes should be soft and free from wrinkles.
 5. Tight plumage with no soiled fluff.
 6. Nostrils and mouth should be clean and with no discharge of any kind.
 7. Beak should be stout and short indicating hard work for food and the crop should be full.
 8. The body should be free from vermin.
 9. The droppings should be well formed, grey and white in colour and voided without any straining.
 10. The normal temperature should be about 106°F

Signs of disease :—

1. All deviations from the normal.
2. Remaining on the perch at day break, dull and depressed.
3. Ruffled feathers, drooping wings, head not carried erect, tail down.
4. Discharge from eyes and beak and head carried to a side or hidden under feathers.
5. Soiled fluff.
6. Crop empty.
7. Comb pale or discoloured.
8. Not feeding and having diarrhoea.
9. Temperature either sub-normal or far above normal,

Signs of age :—

1. Old birds have coarse and fleshy combs, wattles and ear lobes.
2. The spurs are long.
3. The shanks are scaly and coarse.
4. The toes and webbing are coarse and scaly.
5. The body is carried heavily and there is no smartness in the gait.
6. The bright and youthful appearance is lacking.

Normal habits :—

1. Rush about when let out at day-break.
2. The cocks crow long before day-break.
3. The male bird calls the hens to feed wherever food is found.
4. Forage long distances.
5. Rest under shade during the hottest part of the day.
6. Rest on perches at night.
7. Rush about and create noise and commotion, when an enemy is sighted.

Food and feeding :—

*Adult birds :—*1. Feed grains at the rate of one ounce per bird each time, twice a day. First thing in the morning and the last thing before closing them in for the night. This provides carbohydrates.

2. The mash should be fed at about 11 A. M. daily at the rate of 2 ounces per bird per day. This can be given either as dry mash or wet mash. This provides proteins.

3. Minced meat or offal, well cooked with a little rice and mixed with a little bran or chopped green leaves of vegetables may be given at 2. P.M. every alternate day. This provides animal protein to force production.

4. Birds require in addition, minerals and vitamins. These can be given in the form of Bone-meal and lime or a composition called mineral mixture. This can be mixed in the mash itself. Provide cut pieces of greens such as spinach, lettuce, cabbage leaves, etc. Salt is also to be added to the mash. The proper proportion is $\frac{1}{4}$ % salt and to 1 to 2% mineral mixture in the feed given.

5. Provide shall grit and granulated charcoal in a pot at one end of the run. This aids digestion of coarse food and provides lime and thus prevents laying of soft-shelled eggs.

6. Clean and cool water should always be available ; keep it in shade and change it often if it gets hot or gets fouled. Prevent fouling of water through proper contrivance.

7. Skim-milk or butter milk can also be given. It is good for growing chicks and laying birds. It provides animal protein.

8. Feed should be given in feed-hoppers, which should be cleaned then and there.

9. The grains given may consist of an equal mixture of paddy, jowar, maize, ragi, broken rice or broken wheat, etc. Here is a rough and ready mash. The mash can be prepared in the following proportion.

Rice bran.	...	30 parts.
Jowar.	...	20 "
Ragi.	...	20 "
Cumbu.	...	20 "
Groundnut-cake.	...	9½ "
Salt.	...	½ "

10. Allow the birds to forage right round the runs under supervision, if space is available.

Feeding of young chickens :—

1. Don't feed a chick for 36 hours after hatching. They don't require any food then. This is the best period to despatch them as one-day old chicks. Keep them in warm brooder.

2. Start with broken rice or broken wheat or broken maize.

3. Up to 10 days of age, feed 5 times a day on only broken grains.

4. 10 to 20 days :—Grain as noted above. Boiled eggs finely grated with shell and bread crumbs may be given.

5. 20 days to one month :—Same as above. Leaves of vegetables, shell-grit and charcoal should be made available.

6. 1 to 3 months. Feed three times a day with grains, cracked a little bigger.

7. From 3 months onwards, give grains and mash as in the case of adult birds but reduced in quantity.

8. For drink, give clean water, skim milk or butter milk diluted with water.

9. Put out the chicks in the sun in chicken runs every day on fresh ground as far as possible :

10. Collect the droppings and burn or store them in proper place if required for manure.

- Housing** :—1. Fowls must be well-housed.
2. The houses should be free from draught, and dampness.
 3. Parasites such as ticks, lice etc., should be kept out.
 4. Good sanitation, light, ventilation and freedom from crevices, etc. should be provided.
 5. Provide protection against enemies like snakes, dogs, Jackals etc.
 6. Provide perches for birds to sit upon.
 7. Provide a nest box for egg laying.
 8. Clean the floor and if removable, put it out in the sun.
 9. Use brush for cleaning.
 10. Lime-wash the walls once a fortnight or a month.
- Runs** :—1. These are essential for exercise, sun-bath, etc.
2. Shade also is necessary in the runs and this can be provided either as small shrubby trees or as a small pandal at one end.
 3. A shallow pit can be dug out in a corner and filled with clean earth or wood ash. This provides the dust-bath so necessary for birds to keep themselves free from vermins.
 4. Provide nests for laying birds in the runs and keep them clean and comfortable.
 5. Keep the run quite clean.

I. C. A. R.

Farm News Releases

Success in Sheep Breeding. Proper Feeding of Rams :—Good feed is the foundation for good growth and vigour and hence to success in sheep breeding, experiments point out.

Rams, it is found out, should get a pound of concentrates in addition to good grazing throughout the year.

In the Government Livestock Farm at Hissar in the Punjab, good results are obtained by giving the rams one half to one pound of a grain mixture daily, depending upon grazing conditions.

The mixture fed during the summer contains two parts of crushed gram and one part of wheat bran with one per cent salt, and

that fed in winter consists of 2 parts of crushed guar seed and one part wheat bran with one per cent salt.

An alternate good mixture that can be tried is groundnut cake (4 oz.), rice bran (4 oz.), boiled horse gram (8 oz.), salt ($\frac{1}{4}$ oz.) and sterilised bonemeal ($\frac{1}{4}$ oz.).

If grazing is in plenty, half a pound of the mixture is sufficient. One pound of the mixture with two to four pounds of green fodder is needed during the season when grazing is scanty.

It is advisable to increase the grain ration to $1\frac{1}{2}$ pounds daily within about a fortnight's time as the breeding season approaches, and then reduce to the normal ration after a month of the start of the mating season.

Millet seed, if included in the ration up to a fourth of the total quantity, has been seen to have good results on breeding rams. No. 153.

* * *

Kudzu Vine. A Nutritive Fodder :—The kudzu vine makes a nutritive green fodder. It is rich in protein, calcium and phosphorous.

Trials in Delhi show that it provides a good green fodder in April and May, a period when green fodder is scarce, especially where there is no irrigation.

At the Indian Agricultural Research Institute, kudzu yielded 447 maunds of green fodder per acre in three cuttings, taken in April, August and October. The vine also make excellent hay. As green fodder or hay, it is liked by cattle.

Kudzu, however, does not stand frequent and close cuttings. It would be a good practice to cut it twice or thrice a year. If regular cuttings are desired, two to three maunds of ammonium sulphate per acre per year should be applied. This will help the plants maintain a high production of green fodder. No. 158.

* * *

Sprains or Strains. Method of Treatment :—Farm animals commonly get sprains or strains in their limbs. This is due to the animal slipping, stumbling or falling. It may sometimes also result from great and sudden muscular efforts on the part of the animal.

When there is a sprain or strain, the affected part becomes hot, swollen and painful. The animal goes lame.

Animals, especially working cattle and horses, should be carefully treated. Sometimes, merely resting the animal completely cures it, and it can be put to work again in a few days.

Where the sprain or strain is more severe, the affected part should be irrigated by applying plenty of cold water, then applying cold water bandages on the affected part. Later, the part should be massaged twice or thrice daily with an embrocation like ammonia, camphor, belladonna or soap liniment till the animal is normal again.

The help and advice of a Veterinary Surgeon should be sought if this treatment fails to effect a cure. No. 166.

Sore Teats. A Common Complaint:—Sore teats are common in cows and buffaloes. These are caused by the milker squeezing the teats too tightly or over-stretching them. Wet milking and prolonged stripping also result in sore teats. Similarly, vigorous suckling or biting by the calf may cause the injury. Faulty construction of floor may also result in sore teats.

When teats are so affected they get swollen, chopped and painful. Milking therefore, becomes difficult.

The first duty of the cattle owner is to remove or check the cause. The animal should be kept in a clean dry place. At milking time vaseline should be thinly smeared on the teats. After milking, the teats should be first cleaned with warm water containing potassium permanganate (one part in a thousand) or a teaspoonful of common salt. After this, the teats should be dried with a clean, soft cloth and some antiseptic ointment like sulphanilamide (one in eight) or boric or zinc ointment applied.—No. 169.

Correspondence

[The views and opinions expressed in correspondence are those of the writers themselves and are not always endorsed by the Editor. Ed.I.V.J.]

The Indo-American Team's Report

Sir,

A very retrograde recommendation has been made by the Joint Indo-American Team on Agricultural Research and Education that visited the U. S. A. during the first quarter of the last year, in as much as the team has suggested the bifurcation of the functions of the Animal Husbandry Commissioner with the Government of India. A new post, according to the Team, is to be created in the person of a Commissioner for Animal Husbandry and Dairying and under him several "Chiefs" are to be placed. It is proposed to have a Chief of Cattle Improvement, a Chief of Animal Nutrition and Feeding, a Chief of Dairying, a Chief of

Sheep and Goat improvement and a Chief of Poultry improvement, under the new Commissioner.

I am inclined to believe that the American system of teaching Veterinary Science has influenced the Team to make this unwise recommendation. The Veterinary education of the U. S. A. is not in tune with the needs of this country. Certain subjects, most important to us, does not find a place in the Veterinary Curricula of studies. Nothing of Animal Husbandry, as we know it here, is taught in the Veterinary Colleges of the U. S. A. But Animal Husbandry is included in the syllabuses of the Agricultural and other Colleges, where dairying, poultry husbandry, sheep farming etc. are gone into. Our system of education is to bring in everything connected with domestic animals into one fold and that in the Veterinary Colleges. The Veterinary Colleges in India are all organised for dealing with Dairy Science, Animal Nutrition, Animal Genetics and Breeding.

Every right thinking person would agree with the dictum put forward by the Committee of Veterinary Experts who conducted a Seminar in Bombay a few months back. This Committee says "The purpose of Veterinary education is to produce men and women who can assist the animal industries by aiding production and by prevention and treating diseases". Further the same Committee came to the conclusion that the term "Veterinary" could be assumed to include Animal Husbandry.

There may or may not be a need for a Commissioner of Dairying to advice the Government of India as development of dairies, marketing of milk and milk products, and other allied activities of the dairy industry are all waiting to be taken up. But how is he competent to supervise, organise and expand Animal Husbandry in general? The recommendation is fantastic.

Again the Animal Husbandry Commissioner with the Government of India, as work increased, is now helped by an Assistant Commissioner, a Deputy Livestock Adviser and also a Deputy Animal Husbandry Commissioner. The responsibility of controlling diseases and expanding animal wealth are the chief functions of the Animal Husbandry Commissioner. A succession of first rate men as Animal Husbandry Commissioners, have done yeoman service to the domestic animals of this country. The co-ordination of the activities of the control of diseases and development of livestock, can be carried out only by a single officer. It will be a sad day when this set up is changed. By all means, have a Commissioner for dairying, but leave Animal Husbandry work to the man who has been doing it with success for

the past so many years. I do not want to be uncharitable and say that the team was overpacked with Crop Husbandry Experts, and the Animal Husbandry Experts were in a minority in the Committee. But that is a fact. The Animal Husbandry Expert from India can only voice his protest by putting down a "Note of Dissent" and he has done it.

Veterinary College,
Mannuthy, Trichur,
13-1-1955.

K. S. NAIR.
Principal.

Association News

THE ALL-INDIA VETERINARY ASSOCIATION, HYDERABAD-BRANCH, THE INAUGURAL FUNCTION

The 18th of December 1955 was a day of great event in the history of Veterinary Profession in Hyderabad State. On that memorable day, the members of the All-India Veterinary Association, were able to celebrate the inaugural function of their Association, with great elation and pomp, at the Central Veterinary Hospital, Seetharampet. The premises of the entire hospital was tastefully decorated with flower pots and lights and special shamianas were put up in the open space behind the main building. The entire place flurting with flags and festoons gave the appearance of a fairy land. The Police band, in gorgeous dress in attendance, added colour to the function. The rank and file of the profession in their entirety worked day and night and spared no pains to make the function a grand success. The arrangements were so elaborate and perfect that there remained nothing to be desired.

Several messages of good wishes were received from prominent persons of whom mention must be made of Dr. Punjabrao Deshmukh, Union Minister for Agriculture and Shri M. S. Raudhava, I.C.S., Vice-President, I.C.A.R.

Shri Gopal Rao Ekbote, Minister for Education, Local Government and Assembly Affairs, arrived punctually at 4 P.M., and was received by Dr. K. S. Shetty, Director of Veterinary Service and President of the Association at the gate specially erected for the function and was then introduced to the members of the Reception Committee. Introduction over, the Minister was taken round the hospital, to see the various activities like Artificial Insemination, Poultry Farm, Wards and other places of interest. A group photograph of all the Members with the Chief Guest was taken (published elsewhere) and then the Minister was led to the specially erected dias. The function commenced with a welcome speech by Dr. K. S. Shetty, President of the Association.

In welcoming the distinguished gathering Dr. Shetty said "that though India possessed nearly one-fourth of the total cattle population of the world the productive capacity of the cow was lamentably low. Similarly the annual laying capacity of the hen was also low. The same could be said with regard to the sheep. All this was due to the fact that Animal Husbandry remained neglected in the past. Due to the inferior quality and low productivity of the livestock, the deficiency of protective foods like, meat, milk, eggs, etc., has

been estimated to be more than 250 to 300 per cent." He also dealt with the havoc caused by cattle diseases. He said that the milk sold in most of the towns and cities was usually adulterated not to speak of the contamination and there was yet no law to prohibit this crime with the result that the fat content and solids were reduced to a minimum. Centres like the Aarey Milk Colony in Bombay and the Co-operative Milk Union, Khairat, should be set up in every town and Municipality.

He next dealt with the plans for improvement of livestock and dairying and research and said that they had established several Key Village Centres jointly financed by the State and the Central Government and Artificial Insemination Centre at Hyderabad and some other places. In conclusion, he said that Veterinarians would not fail in their duties towards the State and would do their best in raising the standard of our livestock and thereby improving the prosperity of our country.

Rising amidst thunderous ovation, Shri Gopal Rao Ekbote, Minister for Education, Local Self Government and Assembly Affairs, inaugurated the Association in a very interesting and thought provoking address which was listened to with rapt attention.

"It is indeed a pleasure for me to meet you all here on this auspicious occasion and I appreciate the honour you have done me in asking me to inaugurate your Association.

I have heard the interesting account your President has just given in his address about the formation and development of a Branch of that great Association in our State "The All-India Veterinary Association" which I understand has done so much and continues to do yeoman service to the Indian Veterinarians and through them to the country for its emancipation from poverty, economic distress and disease.

It needs no emphasis to impress on you about the importance and utility of such Associations as yours—not only to further the cause and consolidate your noble profession but also to be of immense help and guidance to the Government in chalking out policies and programmes in launching any schemes for the national development and prosperity of our country. Viewed in this context, it would not fail to surpass one's comprehension as to why this Association of yours was not formed in Hyderabad even earlier than this—despite the fact that with adequate number of professional staff, the Veterinary Department has been in existence in Hyderabad also for nearly half a century. Any way I congratulate Dr. Shetty and his band of trusted lieutenants of the profession for forming this Association at a time when it is most needed.

Though your profession is not so lucrative as that of legal, medical engineering and the like—I can say without any fear of contradiction that yours is a noble profession the usefulness of which is felt by every one.

This is an age of planning and development. Plans that are said to be the greatest ever attempted in human history are now being drawn up in India for eradication of poverty and disease on the one hand and ignorance and illiteracy on the other. On this eve of great historic importance it is necessary that we should be clear in our minds what philosophy of action should inspire us to undertake each one of these developmental activities. Cattle development

being the next biggest industry to Agriculture in India necessarily needs immediate attention.

In the chain of Nation building activities of Government of a welfare State, therefore, the Veterinary and Animal Husbandry Department plays an important part. It is the strongest link connecting Agriculture on one side, medicine and public health on the other. Thus the contribution of Veterinarians to human welfare and happiness is inestimable. Suffice it to say that man from creation times has been dependent on animals directly and indirectly for his health and comfort. The responsibility of protecting these valuable livestock to improve them and to make them more productive rests on you, Veterinarians.

Besides mitigating the sufferings of animals, you Veterinarians have to work in close co-operation with the medical and health officers to stamp out communicable diseases like Rabies, Anthrax, Tuberculosis, Brucellosis, etc., etc., from animals to human beings and perhaps it is for all these above mentioned reasons it is said that there is no other single profession or department that bears so much all round importance to humanity as Veterinary profession or department.

The knowledge of animal nutrition in our country has been one of academic interest. The farmer knows nothing about this subject except what has been handed down to him as a tradition. You are right in observing that though our country has the largest animal population in the world, yet unfortunately majority of them are unproductive—more a liability than an asset to us. According to the 1951 livestock census the country has 193 million head of cattle. It includes 43 million buffaloes but excludes 75 million sheep and goats. Thus India roughly has one-fourth of the total bovine population of the world. Now the unproductive cattle, at the lowest level of 10 percent, amount to the staggering figure of approximately 20 million heads. Thus we have too many cattle than can be economically justified. Roughly in India we have 100 cattle for 100 acres of land annually sown. Whereas the corresponding figure for Holland is 38 and for Egypt it is only 25. To put it differently India has only three-fourth of an acre per person on which are to be fed both the animals and the human beings which the U. S. A. has got seven times more land per capita, Russia ten times more, Brazil twenty times more and other thinly populated countries like Canada, Newzealand still higher and Australia has a far higher percentage. In spite of possessing such a large number of cattle, we have only very few working bullocks—one pair for every twelve acres of land. Again as you had said the per capita consumption of milk in our country is one of the lowest of averages in the world. It is said that the per capita consumption of milk per day is 5.6 ounces in India. Our sheep do not give the desired quality and quantity of wool. Our fowls are not only inferior in quality but also not productive and even the few eggs they give are below the size and weight. Maintenance of these 193 million head of cattle with the lowest per capital production of milk and very poor capacity of performance of work is really a great strain on the available cattle feed of the country and that too with ever-diminishing capacity of the land for production and with more and more mouths to be fed year after year. This is a very dangerous trend.

I have no doubt, you as Veterinarians of this country have realised the immensity of problems facing you and I am sure you would leave no stone

untuned in taking all possible and speedy measures to protect, preserve and improve our livestock—you would use your newly formed Association to think and work in terms of realisation of this ideal, and we all realise that this ideal could be achieved only through a strenuous, intelligent planned work by Association like yours.

With these few words, I deem it a great honour to inaugurate your Association. I wish you all success.

With a vote of thanks proposed by Dr. Narsingh Pershad, Vice-President of the Association, the function came to a close.

The meeting then adjourned for light refreshments arranged in the decorated shamina erected specially for the purpose.

Proceedings of the General Body Meeting of the All-India Veterinary Association, Hyderabad-Branch, held at the Central Veterinary Hospital, Seetharampet, on 19th December 1955

The General Body meeting of the All-India Veterinary Association was held under the Shamina specially erected at the Central Veterinary Hospital, Seetharampet, in conjunction with the inaugural function of the said Association, the day previous.

Dr. K. S. Shetty, President of the Association was in the Chair.

The proceedings commenced at 10 A.M. Before the commencement of the meeting, the gathering stood in silence for a minute as a mark of respect on the sudden demise of Shri Ramanujachari and passed unanimously a resolution to send a letter of condolence to the bereaved family.

Dr. M. Mahalingam, Secretary of the Association, presented his report on the working of the Association, extracts from which are as follows:

We have a membership of 88. Some of our brethren have not yet thought of enrolling themselves as members of this Association. The door is ever open and whenever they choose to come, they will be heartily welcomed.

Out of a total sum of Rs. 528/- realised as subscription, there is a balance of Rs. 370-0-5 after meeting an expenditure of Rs. 157-15-7 as per the following details.

<i>Income.</i>		<i>Expenditure.</i>	
	Rs. A. P.		Rs. A. P.
Subscription from 90 members	528 0 0	To service stamps	20 0 0
		„ printing	86 0 9
		„ Stationery	12 8 10
		„ At home to distinguished visitors	39 6 0
		„ Cash on hand	370 0 5
	528 0 0		528 0 0

During the period from 12-12-53 to date, two General Body Meetings and 5 Managing Committee meetings were held.

The following distinguished visitors were entertained on behalf of the Association :—

1. Dr. Bains, F.A.O. Expert, Australia.
2. Dr. Dhanda, Head of the Division of Pathology, I.V.R.I.
3. Sir Thomas Dalling, F.A.O. Adviser.

A sum of Rs 30/- was collected from members separately and was sent on behalf of the Association towards the farewell party arranged at Madras on the eve of retirement of Dr. Pangal Srinivasa Rao from Editorship of *All-India Veterinary Journal*. This short report is placed together with statements of income and expenditure for adoption.

Dr. Madhava Rao moved the adoption of the report. Dr. M. R. Reddy seconded it. After some discussion, the report was adopted unanimously.

Next the following resolutions were passed unanimously :—

1. This Association strongly feels that there is no justification to reduce the scale of pay of the Assistant Veterinary Surgeons when no such reduction has taken place in the sister departments of Medical and Agriculture, and further feels that it is gross injustice to bring the Assistant Veterinary Surgeons on par with the graduates of other Departments whose course of study is of much lesser duration than the Veterinary course.

This reduction has caused discontentment amongst the fresh entrants as well as students of the college. Therefore the Association requests the Government to reconsider their decision and restore the previous grades in consideration of the long period of study and unremunerative work they have to discharge after entering the service.

2. Resolved to hold Seminars once in six months and to issue an annual number of the Association incorporating the various activities of the Association and the work done towards development of livestock.
3. Resolved to hold monthly meetings of the Veterinary Surgeons in their respective districts to exchange ideas on the work to be carried out and to take stock of the work done in connection with the various schemes launched by the Department in connection with Livestock improvement.
4. Resolved that in order to meet the expenditure towards Seminars and bulletins to be brought out in future, the annual subscription of Rs. 6/- be raised to Rs. 10/-.

Resolutions having been passed, election of Office-bearers was taken up and the following were elected for the year 1956.—

- | | | | |
|----|------------------|-----|-----------------------|
| 1. | Dr. K. S. Shetty | ... | <i>President</i> |
| 2. | " M. A. Rahiman | ... | <i>Vice-president</i> |
| 3. | " M. Mahalingam | ... | <i>Secretary</i> |
| 4. | " B. Madhava Rao | ... | <i>Jt. Secretary</i> |

- | | | | |
|-----|----------------------|-----|---------------------------|
| 5. | Dr. Prabhakar | ... | <i>Treasurer</i> |
| 6. | " Narsing Prasad | } | <i>Managing Committee</i> |
| 7. | " T. S. Ayyaswamy | | |
| 8. | " Ahmeduddin Mohmed | | |
| 9. | " Venkat Ram Narsiah | | |
| 10. | " Siva Ram Kishan | | |
| 11. | " M. R. Reddy | | |
| 12. | " Seetharama Rao | | |

With a vote of thanks proposed by Dr. M. Mahalingam, the meeting came to a close.

Hyderabad—Dn. M. MAHALINGAM,
Secretary.

THE SECOND ALL-INDIA VETERINARY STUDENTS CONFERENCE

The above Conference met at the Madras Veterinary College at 9 A.M., on Sunday, the 12th February 1956 under the presidency of Sri Bertie A. D'Souza, the Principal of the College. Delegates from Bengal, Assam, Bombay and other places attended. The hall was packed to capacity and the enthusiasm of the students was something remarkable.

Sri Rao Sahib T. Vinayaka Mudaliar, General Secretary of the All-India Veterinary Association and the Editor of the *Indian Veterinary Journal* was the main speaker. The President in his opening remarks said that the students have set themselves a hard task in trying to bring into existence a country-wide organisation and he hoped that it would prove an instrument for good both to the students and the profession. He added that no better person could have been thought of to give you the necessary lead in the matter than Sri Rao Sahib T. Vinayaka Mudaliar, who has gone grey in the service of the profession.

Sri Rao Sahib Vinayaka Mudaliar said as far as he could see this Conference of the A.I.V. Students can have only one object and that is to make the future Veterinarian of this land a better equipped and a better trained man, second to none in Veterinary Science in the whole world. Towards that end in view this Conference of students can ask for highest facilities in this land itself for specialisation in the several subjects of Veterinary Science and for doing all kinds of Post-graduate work in India itself. They can ask for the best students in each subject.

to be given facilities for higher studies in that subject and for specialisation with the aid of some form of scholarship or other. They can ask at University level for periodic lectures in special subjects by specialists in the line. They can ask for Inter-University Educational tours to different States &c. "But" he added "never make a fetish of anything. Never agitate, keep your credentials open and above board for communism is round the corner and rightly or wrongly it is much dreaded."

The minutes of the previous conference were read and adopted.

With a vote of thanks proposed by Mr. S. Thandavakrishnan, the conference came to a close. Later it met for election of office-bearers.

The following were elected:—

1. Mr. Arun Chatterjee of West Bengal ... *President.*
2. „ K. R. Kodagate of Bombay and
„ D. D. Choudhary of Assam ... *Vice-Presidents.*
3. „ Thandavakrishnan of Madras ... *General Secretary.*

Reviews

Veterinary Surgery.—By E. R. Frank, B.S.A., D.V.M., M.S., Professor of Surgery, Kansas State College, U.S.A. Price 52s. 6d. Burgess Publishing Company, Minneapolis, 15, Minn, U.S.A.

The text of the book under review is richly supplied with figures representing gross clinical appearances of surgical conditions particularly relating to large animal surgery as claimed in the preface. Generally the book may be considered as of value for Veterinary students. The get up and the presentation in general are satisfactory.

M.N.M.

Diseases of the Pig.—By David J. Anthony, M.R.C.V.S., D.V.S.M. (Vict.), F. R. San. I. Pp. xii—370 with 81 illustrations. Fourth Edition. Price 25sh. Messrs. Bailliere, Tindall & Cox, Ltd., London, W. C. 2.

That a book has gone through four editions within a space of 15 years, is in itself an indication of its popularity or should we say its necessity, amongst all those interested in pig-farming.

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T.V.M.

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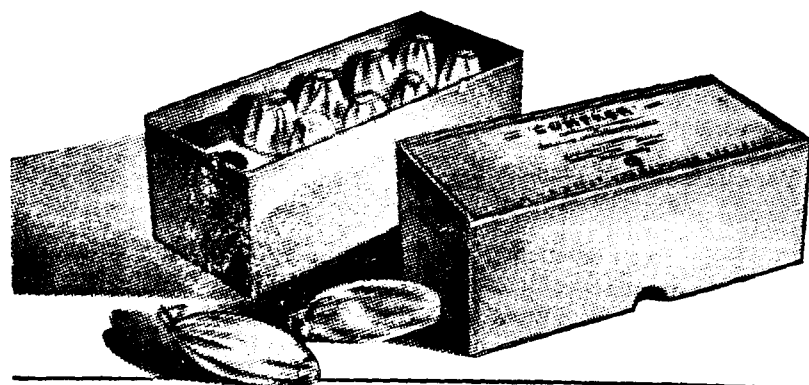
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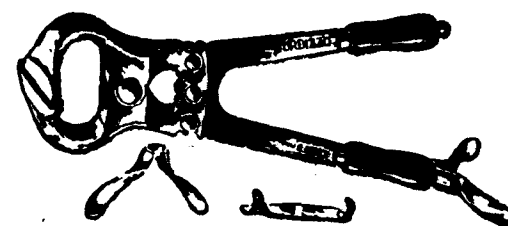
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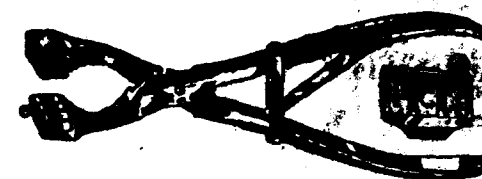
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