

1437

The Indian Veterinary
Journal

1944. May.

VOL. 20. NO. 6

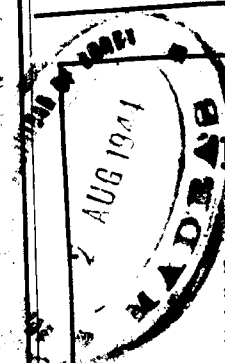
JL
KZm2, N24
N44.20.6
79809

THE INDIAN VETERINARY JOURNAL

26, WALLAJAH ROAD, MOUNT ROAD P.O., MADRAS (S. India)

Published Bi-monthly

(THE JOURNAL OF THE ALL-INDIA VETERINARY ASSOCIATION)



437

EQUINE STREPTOCOCCAL INFECTIONS

In the sulphonamides, Sulphanilamide and SOLUSEPTASINE, the profession now has an effective, rapid and reliable treatment for pneumonia in horses, as was shown by the work of Hignett and King on this infection. (Hignett and King, 1940, "Veterinary Journal," Vol. 96, p. 81.)

In other streptococcal infections in horses the evidence is less substantial but the sulphonamides are frequently of value in preventing and treating wound infections and joint-ill of foals.

Further trial is indicated in purpura hæmorrhagica and metritis in mares. In strangles, results have been less favourable and little benefit seems to be obtained from Sulphanilamide.

Sulphanilamide (May & Baker) and SOLUSEPTASINE are supplied as follows:—

Sulphanilamide (May & Baker)

Containers of 250x0.50 gm. at 8-14-6

Packets of 25 gm. powder at 1-6-6

★ SOLUSEPTASINE

10 per cent. solution 10x5 c.c. ampoules at 9-12-9

20 per cent. solution Ampoules of 30 c.c. at 5-14-6

★ TRADE MARK



BOMBAY

CALCUTTA



JL

KZ m2, N24

NA4-20.6

79809

FOR UNIFORM EFFICACY

Specify

EYELEX

Eyelex ointment contains 5% Urea Sulphazide (a compound of Urea, Azo dye and Sulphanilamide) in a non-irritating base and is of excellent value for the local treatment of infective conditions of the eye.

Obtainable in glass tube with insertion rod ready for immediate use.

UNION DRUG CO. LTD. CALCUTTA.

285, BOWBAZAR STREET

T'phones :
Cal. 1159.
Cal. 4975.

T'Gram :
"Benzoic"
Cal.

THE JOURNAL OF THE ROYAL ARMY VETERINARY CORPS

The Journal of the Royal Army Veterinary Corps is a Quarterly Periodical, which will appear on February 1st, May 1st, August 1st, and November 1st of each year. It is published at the Royal Army Veterinary School, Aldershot.

The Journal is sold at the price of 3s. per copy or 10s. 6d. per annum, post paid to any part of the world. Reduced rates are available to the undermentioned :

Serving other ranks, R.V.A.C., Annual Subscription 7s. 6d.
Single copy 2s. each
Personnel of the Indian Army Veterinary Corps, Annual Subscription Rs. 5. Single copy, Rs. 1-4.
A discount of 10 per cent is admissible in respect of accredited commercial agencies.

All communications and enquiries should be addressed to :

THE EDITOR,

**The Journal of the Royal Army Veterinary Corps,
ROYAL ARMY VETERINARY SCHOOL
Thornhill, ALDERSHOT**

When writing to advertisers please mention this Journal.

The Indian Veterinary Journal

(The Journal of the All-India Veterinary Association)

NOTICE TO SUBSCRIBERS

Subscribers are hereby requested to remit their annual subscription for the next volume to the Editor, so as to reach him by the 30th of June, 1944, after which date the Journal will be sent as usual by V.P.P., to realise the annual subscription.

MADRAS,
1st May 1944

P. SRINIVASA RAO, G.M.V.C.,
Editor,
The Indian Veterinary Journal.

Editor :

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

Veterinary Surgeon, Madras.

Office: 26, WALLAJAH ROAD, MOUNT ROAD, MADRAS (S. INDIA)

PRINTED AT

THE CENTRAL ART PRESS, 14, SINGANNA NAICK STREET, G.T., MADRAS

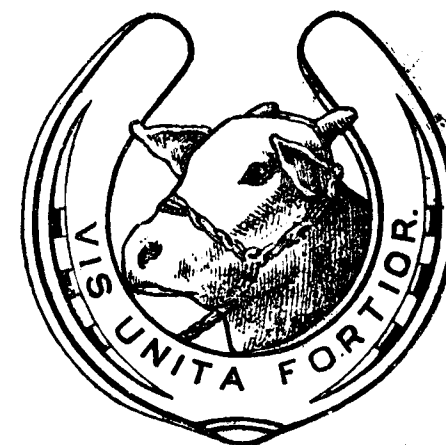
1944

Published Bi-monthly
Vol. XX

May 1944
No. 6

The Indian Veterinary Journal

(The Journal of the All-India Veterinary Association)



Editor :

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

Veterinary Surgeon, Madras.

Office: 26, WALLAJAH ROAD, MOUNT ROAD, MADRAS (S. INDIA)

PRINTED AT

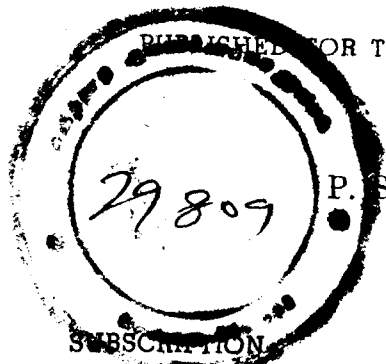
THE CENTRAL ART PRESS, 14, SINGANNA NAICK STREET, G.T., MADRAS

1944

NOTICE

The Indian Veterinary Journal

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



PUBLISHED FOR THE ALL-INDIA VETERINARY ASSOCIATION

EDITOR:

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

SUBSCRIPTION

For members of the profession and students:—Rs. 4 or 6s. 8d. per annum including postage, in advance. Re. 1 or 1s. 8d. per part.

For others:—Rs. 8 or 13s. 8d. per annum in advance, or Rs. 2 or 3s. 4d. per part.

1. Original Articles, Clinical Notes, Society Reports and Notes on interesting cases are invited. Contributors of Original Articles will receive 25 copies of their papers *free* if wanted.

2. All Editorial Communications, Reports and Books for Review and Exchange should be addressed to the Editor.

3. All contributions should be sent to the Editor. Contributors are requested to sign their contributions. All communications must be authenticated by the name and address of the writer whether intended for publication or not.

4. Members who do not receive the Journal regularly, or who find it wrongly addressed, are requested to communicate their address to the Editor at once.

KZ m 2, N 24
N 44-20-9

THE JOURNAL OF THE SOUTH AFRICAN VETERINARY MEDICAL ASSOCIATION

— PUBLISHED QUARTERLY —

This Journal is owned and published by the South African Veterinary Association of which it is the official organ.

It is devoted to matters of Veterinary interest, generally and usually contains Original Articles by Research Workers at the Onderstepoort Veterinary Research Institute as well as by Field Veterinarians and Private Practitioners. Authoritative Reviews on important subjects appear from time to time, and there are sections for Clinical Notes and Abstracts of Selected Current Veterinary Literature.

Subscription: 10/6 (South African) Post Free 437

All correspondence should be addressed to:

The Managing Editor,

Journal for the S. A. V. M. A.,

ONDERSTEPSOORT, Pretoria, South Africa.

Reliable Veterinary Products

FOR PASSIVE IMMUNISATION
TETANUS ANTITOXIC SERUM

2000 and 6000 I.U.

FOR ACTIVE IMMUNISATION
TETANUS ANATOXIN

in 25 c.c. and 50 c.c. phials

FOR ACTIVE LEUCOCYTOSIS
NUCLEIN

10% solution of nucleic acid in 5 c.c. ampoules

BENGAL CHEMICAL
CALCUTTA : : BOMBAY

When writing to advertisers please mention this Journal.

THE Indian Veterinary Journal

(The Journal of The All-India Veterinary Association)

Vol. XX

MAY, 1944

No. 6

CONTENTS

	PAGE
I. General Articles	
A Guide to the study of Bacterium Coli.—By D. C. Matheson, F.R.C.V.S., D.V.S.M.	231
Brucellosis in Animals and Human Beings in the Madras Presidency—By G. R. Viswanathan, G.M.V.C., P.G.	234
Some Problems of Bovine Surra.—By S. Vaidyanatha Mudaliar, G.M.V.C.	244
The House Dog: Its Education and Training.—By N. Mahadevan	245
Perforate Septum Lucidum (Ox).—By D. Mariapa, G.M.V.C.	247
II. Editorial	
A Good Augury	251
III. Clinical Articles	
Double Spleen in a Goat—A Congenital Abnormality.—By Nazir Sadiq, L.V.P.	255
Fracture of Femur in a Filly.—By W. V. Soman, G.B.V.C., P.G., M.R.S.I.	258
Echinococcus Cyst in the Kidney of a Cow.—By M. Maqsood, L.V.P.	260
Tetanus in a Bullock.—By S. S. Venkatesan, G.M.V.C.	262
A Case of Choking in an Elephant.—By N. C. Chikmath, G.B.V.C.	263
IV. Association News	
The All-India Veterinary Association, Madras Branch—	
„ Proceedings of the Provincial Veterinary Conference held at Madras on the 15th and 16th April 1944	264
„ Welcome Address by Mr. K. S. Nair, G.B.V.C., M.R.C.V.S., D.T.V.M.	265
„ Opening Speech by Mr. S. V. Ramamurthy, M.A., I.C.S., C.I.E.	270
„ Presidential Address by Mr. T. J. Hurley, M.R.C.V.S., D.V.S.M.	272
„ Vote of Thanks by Rao Sahib K. Kylasamier, G.B.V.C.	277
„ Resolutions	281
„ Proceedings of the Annual General Body Meeting held on the 16th April 1944.	287
„ Panikkar Memorial Fund	290
V. College News	
Bengal Veterinary College — Results of Diploma Examination for the Session 1943-44	291
Bihar Veterinary College — „	292
Bombay Veterinary College — „	293
Madras Veterinary College — „	293
Bihar Veterinary College — Notice of Admission	293
VI. Announcement	
Indian Army Veterinary Corps — Further list of V. A. S's. employed as V.C.Os.	295
Imperial Dairy Research Institute, Bangalore—Honorary Research Workers	296
VII. Extracts	
Dairy Research in India	295
Animal Health: The Future of Veterinary Practice	297
Improvement of Livestock	299



THE Indian Veterinary Journal

(The Journal of The All-India Veterinary Association)

Vol. XX

MAY, 1944

No. 6

General Articles

A GUIDE TO THE STUDY OF BACTERIUM COLI

By

D. C. MATHESON, F.R.C.V.S., D.V.S.M.

*Professor of Pathology, Bacteriology, and Meat Inspection,
Royal (Dick) Veterinary College, Edinburgh.*

“Any system, however, which may serve to smooth the path of the student is so far of service, but no further,” so wrote Delabere Prichett Blaine in his “Outlines of the Veterinary Art” and the following scheme for the study of the excretal types of Bacterium Coli has been compiled by the present writer with a view to assisting the student in the examination of members of this genus. Boswell’s “Life of Johnson” contains the following sentence:—“Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information upon it”. Until constant practice has made us independent of it the following table of “tests” may be kept at hand for reference. The student should not attempt to commit the “tests” to memory but should perform them, especially the first six, frequently; thus an understanding of them will be attained and the essential facts will assume their place in the memory and the guide word will suggest the details. A modification of the scheme has been in use in the writer’s classes for a number of years and has proved useful for the purpose indicated. Slight variations may occur depending upon the stain used; the reaction of the media employed; the purity of the ingredients of the media, etc. A similar series of “tests” may be drawn up for other members of the genus Bacterium. What is referred to as the “Flaginac” Test for Bacillus Coli (Houston) appears in Minett’s (I.) book on page 15, and a study of this test suggested to the present writer the compilation of the scheme which is the basis of the present article.

Tests for *B. Coli* Excretal Types

"BAGMANS" TEST

- B. Bacterium—rod: rounded ends.
- A. Aerobe: facultative anaerobe.
- G. Gram-negative. Does not retain the stain by Gram's method.
- M. Motile.
- A. Agglutinable.
- N. Non-sporing. Does not sporulate.
- S. Size, 2 or 4 microns by 0.6 micron—average.

"GUMVAC" TEST

- G. Gas ratio low: $\text{CO}_2 : \text{H}_2 :: 1 : 1$.
- U. Uric acid medium—no utilisation of uric acid.
- M. Methyl-red test—Positive acid reaction.
- V. Voges-Proskauer test negative.
- A. Acid and gas produced from lactose.
- C. Citrate. Sodium citrate medium—no utilisation of citrate.

"MIDDEN" TEST

- M. Mannitol—acid and gas produced.
- I. Inositol—neither acid nor gas produced
- D. Dextrose—acid and gas produced.
- D. Dulcitol—acid and gas produced.
- E. Eijkman's test—positive.
- N. Nitrates reduced to nitrites.

"GIVAIL" TEST

- G. Gelatin is not liquefied by *B. Coli*.
- I. Indole is produced in peptone water culture.
- V. Voges—Proskauer test is negative.
- A. Adonitol—neither acid nor gas produced.
- I. Inositol—neither acid nor gas produced.
- L. Lactose. Acid and gas produced from lactose.

"VIMLIC" TEST

- V. Voges—Proskauer test is negative.
- I. Inulin is not fermented.
- M. Methyl-red test—positive acid reaction.
- L. Lead acetate medium. No blackening (c.f. *B. typhosus*).
- I. Indole produced.
- C. Citrate not utilised.

"HIGHBAR" TEST

- H. Haemolysis. Haemolytic towards human red blood cells.
- I. Indigo reduced to a leucobase (anaerobic conditions).

- G. Galactose. Acid and gas produced.
- H. Habitat: excretal types, intestine.
- B. Broth, cloudy.
- A. Agar slope—moist colourless growth.
- R. Raffinose. Acid and gas produced.

"RAX" TEST

- R. Rhamnose. Acid and gas produced.
- A. Arabinose. Acid and gas produced.
- X. Xylose. Acid and gas produced.

"HAT" TEST

- H. Hesse agar—*B. coli* motile.
- A. Acetyl-methyl-carbinol (V. P. Test) negative.
- T. Trehalose. Acid and gas produced.

"MAP" TEST

- M. Maltose. Acid and gas produced.
- A. Artichoke, *B. coli* produces greenish colouration.
- P. Potato, *B. coli* produces moist, whitish growth which turns yellowish brown (c. f. *P. mallei*, *B. abortus*, etc.).

"FAG" TEST

- F. Fructose. Acid and gas produced.
- A. Adonitol—negative.
- G. Glycerin. Acid and gas produced.

"SELASS" TEST

- S. Solidified serum not liquefied.
- E. Erythrite. Acid and gas produced.
- L. Laevulose. Acid and gas produced.
- A. Arbutin. Acid and gas produced.
- S. Sorbose. Acid and gas produced.
- S. Sorbite. Acid and gas produced.

"CIG" TEST

- C. Cellobiose not fermented.
- I. Indole—positive.
- G. Gas in lactose bile salt nutrient broth at 44° C. in 24 hours. (c. f. Eijkman's Test).

"Ass" TEST (*B. coli commune*).

- A. Adonitol—no fermentation.
- S. Salicin. Acid and gas produced.
- S. Saccharose—no fermentation.

"SAS" TEST (*B. coli communis*).

- S. Salicin—no fermentation.
- A. Adonitol—no fermentation.
- S. Saccharose. Acid and gas produced.

"LOMME" TEST

- L. Lethal temperature 65°C. for 60 mins.
- O. Optimum temperature 37.5°C.
- M. Maximum temperature 45°C.
- M. Minimum temperature 10°C.
- E. Eijkman's Test 43-45°C.

"CALC" TEST

- C. Caffeine inhibits growth of *B. coli*.
- A. Acetic acid produced from sugar.
- L. Lithium chloride inhibits growth of *B. coli*.
- C. Cholesterin permits the growth of *B. coli*.

"FLAX" TEST

- Fl. Greenish fluorescence in neutral red broth medium.
(Test this both aerobically and anaerobically).
- A. Artichoke. *B. coli* produces greenish colouration when grown on a sliced artichoke.
- X. Xylose. Acid and gas produced.

(1) Minett, E. P., (1913) "Diagnosis of bacteria and blood parasites", 2nd Edition, Bailliere, Tindall and Cox, 8 Henrietta Street, Covent Garden, London.

BRUCELLOSIS IN ANIMALS AND HUMAN BEINGS IN THE MADRAS PRESIDENCY*

By

G. R. VISWANATHAN, G.M.V.C., P.G. (Edin. & Mukteswar),
Veterinary Investigation Officer, Madras Presidency

Introduction

Animal Husbandry, for its success, is fundamentally dependent on efficient reproduction and the preservation of young stock. Not only are losses among these a prolific source of direct economic loss but they also tend to create an equally serious disadvantage of a more indirect nature.

Such an economic loss is caused by 'abortion' in cattle, which is as great as any other disease in domestic animals.

* Paper read at the Provincial Conference of the All-India Veterinary Association, Madras Branch, held on the 15th and 16th April 1944.

PREVIOUS RECORD OF THE DISEASE IN THIS PRESIDENCY

Previous to my investigation in this presidency, cases of abortion have been recorded in 33 centres. Many samples of sera had been received but from the records available only stray cases had been confirmed for Brucellosis. The first case confirmed was in Hosur Cattle Farm, C. B. Cow No. 125 on 20-3-26. The second confirmed case was in a country-bred cow in Periyakulam of Madura District on 15-1-29; the third and last case was on 15-7-29 in cow No. 210 belonging to the Agricultural College, Coimbatore. From that date till the time of my taking up the investigation in 1938, there has not been any other confirmed case.

ORIGIN AND INVESTIGATION

During the year 1938, a condition called "Avudu" in cattle was brought to my notice for investigation by the then District Veterinary Officer, Coimbatore, through the Director of Veterinary Services, Madras. This condition was suspected for plant poisoning, the plant incriminated being "*Colacassia aniquorum*" (in Tamil "Neerchembu").

INVESTIGATION

In Tamil districts, this condition is called "Neer Kal" or "Ammalakattu", in Canarese, it is known as "Avudu" and "Maruvu Gantu" or "Maruvi" according as the front or hind limbs are affected.

A systematic and detailed investigation was conducted in ten villages of Hosur Taluk, Salem District, and 16 villages of Kollegal Taluk, in Coimbatore District. From this, it was ascertained that the disease was in existence in those tracts for more than 20 years. The history of abortion in cows at varying periods of pregnancy, the absence of the suspected plant in many of the affected villages and the agglutination test conducted with sera from suspected cases confirmed the disease to be one of Brucellosis.

The investigation was then extended to the other parts of the Madras Presidency. Up to date, the disease has been confirmed in 10 districts, namely, Coimbatore, Salem, Madura, Nellore, Tinnevely, Nilgris, Kurnool, Cuddappah, South Arcot and Ramnad. Suspicious cases have been recorded in the districts of Guntur, Kistna and Vizag. In the districts of North Arcot, Malabar, South Kanara, Chittoor and Chingleput the disease has not been confirmed.

The Research Officer, Contagious Abortion, Imperial Institute of Veterinary Research, who was specially appointed for the investigation of Brucellosis throughout India, was furnished with full particulars in 1939

regarding the widespread and enzootic nature of this disease in this Presidency. During the year 1940, a combined tour with the above Officer was undertaken by me for a period of six weeks. Nine organised farms, nine slaughter houses and 51 villages distributed over 18 taluks of 11 districts were visited. The territory covered was the area from Bezvada to Madura District, especially Periyakulam taluk, Tinnevely, Coimbatore, the Nilgiris and the Salem Districts.

The disease is very much rampant especially in the Anchetty area of Hosur taluk of Salem district, in the Kollegal taluk of Coimbatore district, in Sankarankoil taluk of Tinnevely district, in the Periyakulam taluk of Madura district and in Rapur taluk of Nellore district. A high incidence of the disease has been recorded in village cattle. Summarising the investigation, it is observed that infection appears greatest in the part of the jungles along the hilly tracts of Western Ghats from the Nilgiris to Tinnevely, and also in the grazing areas on the hills of Nellore, Cuddapah, and Nallamalais, whilst the towns on the plains appeared comparatively free. The live stock Research Station, Hosur, has been found to be free from the disease.

It is quite possible that many more taluks of the same district might have been affected, but it requires investigation. The incidence in other districts also will have to be investigated. The disease has been known to occur and confirmed in some villages of the Nizam's State, bordering Kistna district.

ANIMALS AFFECTED

Bovines of all ages and of both sexes are affected with Brucellosis—females more than males, pregnant animals more than non-pregnant ones. Abortion occurs at any period between the third and last month of pregnancy but is more frequent between the 4th and 7th month. Abortion is more frequent in primipara and young cows than in older ones. The affected animals are the local breeds.

Although Br. *Abortus Bang* is generally known to cause abortion in cows, it has been noticed during the course of my investigation to cause synovial distensions of the joints of draught bullocks and bulls in the affected locality. A few buffaloes were found affected in Guntur Lamb Farm, while a few cases of sheep and goats were confirmed for Brucellosis in Vizag District. The incidence of the disease in dogs, horses and fowls has not been recorded so far. An investigation is under progress to find out the possibility of sheep dogs acting as potential agencies in the incidence of this disease in flocks of sheep.

INCIDENCE IN HUMAN BEINGS.

Six cases (5 males and 1 female) of Brucellosis have been recorded by Doctors N. G. Pandalai and Raman among the patients of King George Hospital, Vizagapatam. Of these two are butchers, dealing with goats and sheep. The disease appears to be an occupational one. In the case of the female, there was the history of her having drunk goat's milk. The only positive proof was the isolation of *B. melitensis* from the urine of 3 cases and the positive agglutination reaction in a high dilution of 1 in 640.

MODE OF INFECTION

The commonest mode of infection is per Os. The bull is of less importance as a factor in its transmission. Contact with infected animals or its agents, discharges etc. is a greater source of infection in human beings than the consumption of milk.

CAUSES OF ABORTION

Besides Brucellosis, no other cause has been found for the incidence of widespread abortions. Dietary deficiencies and or specific infection other than Brucellosis such as *Vibrio Foetus*, *Trichomonads*, etc., may induce abortions but not on a widespread scale. The Research Officer, Contagious Abortion, Mukteswar, thinks that a protozoan parasite may cause abortions in buffaloes. This is under investigation.

ISOLATION OF THE CAUSAL ORGANISM OF ABORTION

Attempts were made to isolate the causative agent from the heart blood and stomach contents of fetuses and also from the maternal placental fluid by using the special media "Bacto Tryptose Broth" but so far without success. The examination of the smears revealed small Gram negative organisms morphologically indistinguishable from *Brucella* organisms.

Four guinea pigs were inoculated with the gravity cream from the milk of recently aborted animals and also from synovial fluid. The materials were tested before inoculation and found positive for Brucellosis by agglutination test. These four guinea pigs were handed over to R.O.C.A. Mukteswar for isolation of the organisms. He was able to isolate pure cultures of organisms from three of them while in the fourth one he failed to recover the organism. The material for inoculation was collected from Kommipadu village of Rapur taluk of Nellore district, where the infection appeared to be unique in intensity and the R.O.C.A. was desirous of isolating the causal organism or strain from this village.

The composition and preparation of the medium used for the isolation of the organism was follows :

Bacto Tryptose	— 20 grams.
Water distilled	— 1000 c.c.
Sodium Chloride	— 5 grams.

Heat in flowing stream for 20 minutes to dissolve. Adjust reaction to PH 7.2. Filter through coarse filter paper. Distribute in final containers and sterilise for 20 minutes at 15 lbs. pressure.

THE VARIOUS FACTORS THAT HELPED IN THE DIAGNOSIS AND CONFIRMATION OF THE DISEASE IN THE PRESIDENCY :—

From the preliminary enquiry and by a process of elimination of other diseases, the history of the herd, the clinical symptoms and the microscopic findings in individual cases gave a strong suspicion for *Brucella*. The clinical features which were highly suggestive of infection with *Br. Abortus Bang* comprised swelling of the vulvar lips of the affected animals, easy delivery of the foetus, the presence of a yellow slimy flocculent uterine discharge, the necrotic appearance of the cotylidons, the period of abortion during pregnancy and the large number of abortions that occurred in an otherwise healthy herd. Synovial distensions of joints in cows, bulls and bullocks with slightly yellowish synovia containing white fibrinous flakes provided an excellent visual means of recognising probable *Brucella* infection in village tracts. The agglutination test conducted with the sera, synovial fluid, milk etc., confirmed the findings of *Brucellosis*. Isolation of the organisms still further confirmed *Brucellosis*.

THE AGGLUTINATION TEST

It is generally accepted that the agglutination test for contagious abortion is as accurate and reliable for the detection of infected animals as most of the biological diagnostic tests in use. Its value is realised when we consider the large number of sera of animals to be tested. For this purpose the rapid agglutination or the "Quick Test" or "Huddleson's test" has been used as routine procedure in the diagnosis of *Brucella* infections in all species of animals in this presidency in the field. In the field its practical applicability, accuracy and simplicity as a means of detecting specific agglutinins in blood serum, milk etc., have been studied critically.

The positive and the suspicious ones of the rapid test were further tested by the tube method and the results checked and corroborated.

The antigens used both for the rapid test and the tube test were supplied by the Research Officer, Contagious Abortion, Imperial Institute of Veterinary Research, Mukteswar.

The total number of samples of Sera, Synovial fluid, milk, placental fluid etc. and the highest titre recorded in this presidency is tabulated below :—

	Total No. Tested.	No. of Positive.	No. of Suspicious.	Negative	Highest Titre.
A. Serum	4567	320 (7%)	88 (2%)	4159	1 in 5120
B. Synovial fluid	71	26 (36%)	2 (3%)	43	1 in 2560
C. Milk Samples and Cholastra	136	38 (28%)	1	97	1 in 20480 (Cholastrum)
D. Placental fluid	6	2 (33%)	...	4	1 in 320
E. Uterine discharge	28	...	...	28	1 in 5120
F. Human Serum	6	6	...	...	1 in 1280

In the infected localities 70 to 80 per cent. of the suspected cases gave positive reaction to the test.

One peculiarity noticed by me was that the *Synovial fluid* collected from the swellings of animals in Anchetti and Kollegal began to show rapid agglutination even before incubation when on the table and with incubation the agglutination was complete. This is the first record so far known in India when the synovial fluid was submitted to the agglutination test and that with positive results. (This special feature and its first demonstration was done in the presence of the R.O.C.A., Mukteswar and the P.M.V.C., Madras.) Above 30 per cent of the enlarged joints in cows, bulls and draft bullocks contained synovia which reacted to a high titre to the agglutination test. Further the blood serum of the animals was also positive.

PLACENTAL FLUID

This is the first record of positive results obtained by agglutination test against *B. Bang* in this Presidency. It is also interesting to note that though mention has been made in literature about the antigenic value of the placental amniotic fluid, the presence of antibody formation in it has not been mentioned.

It is interesting to note that the maternal serum gave a positive reaction upto 1 in 5120 dilutions whereas the placental membrane fluid, a titre of 1 in 160 while the foetal heart blood gave negative results.

SEQUELAE AND COMPLICATIONS NOTICED

This disease produces not only abortions but also becomes responsible directly or indirectly, for retained after-births, breeding difficulties and udder diseases in cows. The production of sterility appears to be an exceedingly important effect of the disease. Granular Vaginitis also is a common occurrence. A case of granular vaginitis has been confirmed for Brucellosis by agglutination tests. Mastitis in some cases in the infected locality has been noticed.

One lesion of Brucellosis noticed in this presidency is the causation of Synovitis and Arthritis in cows and draft bullocks. The joints affected are the knee, hock, stifle and fetlocks. In stifle, generally unilateral swellings are noticed. The inflammatory process in the joints may be acute or chronic but the disturbance to the health is not severe. In cows, milk yield decreases and the animal subsequently becomes sterile. In the Kommipadu Village where the incidence of the disease was very intense, the infected animals had become a complete wreck as the result of many abortions with even deaths.

TREATMENT

There is no medicinal treatment to cure Bang's disease. Sulphanilamide is stated to give some beneficial results but the results are conflicting. For the hygromatous swellings of the bullocks and cows the injection of "Lugols Iodine" solution into the swellings after aspiration gives beneficial results especially in the reduction of the size of the swellings. Complete cures have been claimed by some after the injection of one or more doses of killed anti-abortion vaccine of equine strain. The possibility of treating these cases of Brucellosis by the injection of a dead culture of *Br. abortus* is being kept in view and will be tried soon.

Vaccination against Brucellosis has been practised in other countries with strain S19 developed in America and the Wye strain 45/20 produced by McEwen in England. So far vaccination has not been undertaken in this Province.

Spicer was able to cause a marked fall in the abortion rate in 15 herds infected with contagious abortion involving about 800 cows by giving 2 lbs. of Rangoon rice bran or polishing as a source of Vitamin E per day per animal.

Recent researches show that *Brucella* infection impairs the transfer of Vitamin A from the maternal blood to the foetus and it is emphasised that the possibility for *Brucella* infection should be ruled out before Vitamin A deficiency is diagnosed as the cause of abortion.

Based on the above findings, treatment with Churn Flour supplied by the Imperial Chemical Industries, Madras, was undertaken by me in cases of abortion by *Br. Abortus* in the village of Kommipadu, Periakulam, Rajapalayam, Sivagiri, etc. The dose given was 1 oz. per day in feed from the 4th month or just before the probable time of abortion up to the 7th month. So far more than 50 cases have been treated. Although the agglutination test conducted with the sera of cows after treatment gave positive results for *Br. Abortus* Bang, nearly 90 per cent of the treated animals have given normal calvings indicating thereby that the abortions can be reduced in a herd, though the disease was not cured.

CONTROL MEASURES

Before effective measures for the control of the diseases can be elaborated a knowledge of the cause and the methods of spread combined with an accurate diagnosis is necessary. One of the greatest difficulties, however, is that many cattle owners have only a vague idea of the importance of this disease. These control measures can be outlined under two heads viz.—
(i) what the owners of cattle should do (ii) what the Veterinary Surgeon should do.

(1) *What the owners should do:*

(a) Report the incidence of abortion immediately to the nearest Veterinary Surgeon.

(b) Provide for a separate calving shed and allow the infected animals to rejoin the herd only when all discharges have ceased, as the uterine discharges are the main sources of infection.

(c) Destroy the aborted calf and foetal membranes and disinfect any part of the premises contaminated with the discharges.

(d) Prevent contamination of foodstuffs, beddings etc., by attendants etc.

(e) Ensure as far as possible that aborted cows are isolated, fed and attended to, after the healthy ones.

(2) *What the Veterinary Surgeons should do:*

(a) Collect blood samples etc., when necessary to establish the presence of *Brucella* infection.

(b) Advise as to special precautions necessary in the particular herd.

(c) In herds where eradication is being carried out, collect the necessary blood samples and advise as to the isolation of reactors.

SUMMARY OF OBSERVATIONS AND CONCLUSIONS

1. Brucellosis in animals is a common and widespread occurrence in this Presidency especially in village cattle, buffaloes are rarely affected.

Sheep and goats also get infected. Incidence in human beings also has been recorded. The disease has been confirmed by agglutination test and by isolation of organisms from the infected animals.

2. The disease is called "Avudu," "Maruvu Gantu" or "Maruvi" in Kanarese and "Neer Kal" or "Ammalakothu" in Tamil.

3. Infection appears greatest in the foot of the jungles along the hilly tracts of Western Ghats from Nilgiris to Tinnevely and also in the grazing areas in the Eastern Ghats.

4. Animals of both sexes are affected—pregnant more than non-pregnant, young cows more than older ones. Draft bullocks are affected with synovial distensions of joints.

5. Mode of infection is per Os through grazing in infected pastures.

6. The highest titre of the serum recorded is 1 in 5120.

7. The highest titre of the synovial fluid is Positive 1 in 2560, agglutination test demonstrated with synovia is the first record in India.

8. The highest titre of the placental fluid is 1 in 320.

This is the first record of Positive results obtained by agglutination test in this Presidency.

9. Abortion, retention of the after-births, breeding difficulties, mastitis, milk reduction, granular vaginitis, and hygroma of the joints are the common sequelae and complications.

10. Churn flour treatment though not a curative for Brucella reduces the number of abortions.

11. Persistence of infection of Brucella in the udders of infected cows has been noticed.

12. Sera of recently aborted animals gave positive reaction and some cows recently infected did not give positive reaction during the first few weeks after abortion.

13. The results of the "Rapid Test" and the "Tube Test" of agglutination reaction are in close agreement.

14. Three or four abortions have been recorded in an individual.

15. The aborted animals come to heat between the third and the fourth week and the number of services required by them is also more.

DISCUSSION

Rao Sahib K. Kyalasamier in opening the discussion asked whether vitamin B had anything to do with abortion.

Mr. K. S. Nair wanted to know whether (1) the quick test can be done by the Veterinary Assistant Surgeon in the field and (2) whether the suspected cases of abortion were examined for Trichomonads. Mr. K. Mallikarjuna Rao stated that the author mentioned that 70 to 80 per cent of the village cattle reacted to agglutination test whereas Mr. Polding had stated in his report that the incidence was high only in places where there is imported blood.

Mr. John wanted to know whether lack of Vitamin A produced abortion and whether it had any connection with Brucella Abortus.

Mr. M. R. Subramania Sastry stated that infected udder during the dry period was stated to be the reservoir of Brucella and wanted to know how long the infection will remain there.

Mr. G. R. Viswanathan in replying said that, in the available literature no mention is made about Vitamin B having anything to do with contagious abortion. Vitamin A and E alone were mentioned. Recent researches show that Vitamin A deficiency will cause premature termination of pregnancy and that differential diagnosis could not be recognised clinically. Hence, it is emphasised that the possibility of Brucella infection should be ruled out before the case is diagnosed as one of Vitamin A deficiency. Vitamin A has not yet been tried by him. As regards the infection of the udder, it takes place within 3 weeks after abortion. The hind quarters were generally found infected. The period is only of short duration. From the agglutination test conducted with the milk, the highest titre was recorded in the third week and then gradually declined up to six months when the test was negative. Hence the maximum period that the organism remained in the udder was six months. The agglutination test could be done by the Veterinary Assistant Surgeons in the field after the collection of the serum if they are supplied with the standard quick antigen. It is an easy one and the result would be known in 2 minutes. More than 100 suspected cases have been examined so far for Trichomonads with negative results.

Mr. T. J. Hurley, President, concluded that much work has been done in this Presidency on this subject by Mr. G. R. Viswanathan. The real value of the Churn Flour treatment cannot be assessed correctly since some cows after one or two abortions will carry the foetus to the full period.

SOME PROBLEMS OF BOVINE SURRA*

By

S. VAIDYANATHA MUDALIAR, G.M.V.C.,

Lecturer in Parasitology, Madras Veterinary College

The Course of Bovine Surra in inoculated animals is different from that in a natural infection. In the former it is found to run a chronic course with the organisms appearing at very infrequent intervals, in very small numbers and finally disappearing from the animal's circulation within about six months; while natural Surra of the bovines is very virulent, runs an acute course in the form of outbreaks and is attended with as many as even 90 per cent of mortality. From this it is doubted if both the organisms are the same or different from each other.

The possibility of bovines acting as reservoir hosts for the dissemination of surra among animals has been examined. There is evidence in support of this hypothesis. Successful transmission of the disease from such reservoirs can be effected by biting flies, thus bridging the gulf between the off-surra seasons and precipitating an acute outbreak among animals.

The transmission of surra from the diseased to healthy bovines or other animals is probably only direct or mechanical by biting flies through interrupted feedings, the interval between the feeds not exceeding a few minutes. No cyclical development in any of the biting flies *Tabanus* or *Glossina* has been noticed so far and probably this does not exist.

Cattle form the reservoir host in addition to the camel where the latter is found commonly and the period when such cattle can act as the reservoir host may not be more than six months. Any solution to successfully tackle the problem of cattle surra as well as of other animals should depend on the detection and treatment of the carriers prior to the expected surra outbreaks.

Methods of diagnosing the carriers include the animal inoculation, complement fixation and the nitric acid test, and also examination of material obtained from puncturing lymphatic glands.

With regard to treatment, due to the non-availability of Bayer 205, the other drug Antrypol can be successfully used at an early stage of the disease. Antimony Tartarate also may be successful though attended with a little amount of risk.

* Abstract of paper read at the Provincial Veterinary Conference of the All-India Veterinary Association, Madras Branch, held on the 15th and 16th April 1944.

THE HOUSE DOG: ITS EDUCATION AND TRAINING

By

MR. N. MAHADEVAN

In India, dogs are usually kept as guards, companions and pets. The following pages are devoted to the training of such dogs only.

The dog is man's most loyal servant; he is extremely anxious to serve you if only you can show him how. Education on the correct lines will turn just an ordinary dog into a very useful and incorruptible servant.

It takes longer to educate a dog trainer than to educate a dog. Earlier you start educating a dog, the more learned it becomes. Be patient and kind; do not beat the dog when it fails to understand you; more often the trainer fails to make himself understood. If you cannot control your own temper while teaching the dog, you will have very little chance of controlling the dog. Punish, only when it knowingly disobeys. Go to the dog and punish it at the scene of crime. Never call the dog to you for a beating. It won't come when you call it again. The meaning of the punishment is to let the dog know that you disapprove of it. It is unnecessary to inflict physical pain with a whip or stick.

We shall assume that you have just purchased a puppy and brought it home; we shall begin his education at once.

1. TO BE CLEAN IN THE HOUSE:

The first thing that the puppy should learn is to relieve himself outside, and not on your drawing room carpet.

(a) After each feed, keep the puppy out for at least fifteen minutes. Do not allow him inside until he has done his duty. Once he does it on grass, he will look for grass again; once he does it on your carpet, he will do it on your carpet again. He will even control himself while out, come in and do it. It is absolutely no use rubbing his nose on the scene of crime and beating him. An ounce of prevention is better than a pound of soap and a bucket of water.

(b) Take him to places where other dogs have left souvenirs of their presence; if possible let him loose. He may not like to do it while near you and at the end of a chain; he is modest and may desire privacy.

(c) If he learns slowly, or has already formed bad habits before coming to you, it is a safe plan to keep him tied and take him out at regular intervals outside. No puppy will commit nuisance when tied if

it can help it. Please note that you should *always* avoid the necessity of tying up a dog. A dog that needs to be restrained is like a criminal whom society keeps in jail. Such a dog is as useful to its master as a criminal is to society. It is easier for a master to tie the poor animal instead of teaching him to behave like a gentleman. Such a man does not deserve to keep a dog.

2. TO LEARN HIS HOUSEHOLD MANNERS:

Every dog prefers your best chair to the hard floor. Unless you want to give up your chair to the dog, teach the puppy from the very first not to get up on chairs. Take him out of the chair and put him at the place which you want him to occupy in that room.

(b) Forbid him entry into rooms where he should not go. Many Indian households do not like dogs in the kitchen; whereas, I am told that in some countries the dog generally lives in the kitchen. It is highly undesirable for a dog to live in or to enter the kitchen. He will feed himself to death. His proper place is the doormat, keeping watch at the entrance.

(c) Smack his paws smartly whenever he tries to put them on your good self in greeting. He may do the same thing on a visitor and spoil his best suit. The owner of a bad mannered dog soon becomes unpopular.

*(d) From the earliest possible moment prevent unnecessary breaking. Hold his jaws in your hands and say "Quiet". Some of the bigger breeds keep their state in silent dignity but many small dogs and hounds give tongue unnecessarily. The terriers especially are very noisy, just out of high spirits; you may enjoy their yapping but your neighbours may not, if the sound of barking trespasses into their premises.

(e) To bark on command is as necessary as to "quiet" on command. In European countries, where dogs are trained to a marvellous degree. "To speak on command" figures in the higher obedience tests, and they comment that it is a difficult accomplishment. The writer has found this to be one of the easiest things to teach his dogs. Every dog from Alsations to pie dogs learnt this in a very short time. One very clever Alsatian learnt this in five minutes, and another dog of the same breed took three days. Hold something in your hand which the dog likes very much, a ball (preferably) or something to eat. Say, "Bark". The dog of course has not the faintest idea what you mean. But he may

* The writer has had several Alsations which would never bark once we retired to bed. If an unauthorised person enters, one of the male dogs would usually catch him, and he will have to bark, not the dog. We all know the proverb that barking dogs don't bite. But all dogs do not know the proverb: Some dogs bark, and bite.

in desperation at not getting what he wants, let out a tiny squeak of annoyance. Give it to him at once. Repeat the exercises again. Rest him, and repeat the exercise after several hours or the next day. When the dog barks, you should also say "Bark", very soon the dog connects your word of command with the act of barking, and barks with gust. This exercise is very important and is the basis of some forms of higher education, with which we shall deal later.

(f) To prevent his getting poisoned: Every dog that is used as a guard should have a high morale with regard to his food. (It is the guard dogs that burglars try to poison). The dog should know that he is as much a member of the house as anyone else, and that his food is his by right at regular hours. If you throw scraps to him from the table, or allow him to pick up edibles from the floor, you ruin his self respect, and he will readily accept food from a stranger, and next morning you will be attending to his funeral. Give him food from his own plate; never throw scraps, and if give you must, offer them to him politely from hand, instead of throwing. Punish *severely* any attempt to eat anywhere else, anything else. If it eats rubbish don't blame the dog; blame the master who does not feed it properly; horse dung and cow dung contain phosphates which a growing dog requires. It is not expected that a puppy will learn this exercise properly; but it should be taught now, and it will comprehend the meaning of this when mature.

PERFORATE SEPTUM LUCIDUM (OX)*

By

D. MARIAPA, G.M.V.C.,
(On deputation) Central Institute of Anatomy,
Madras Medical College

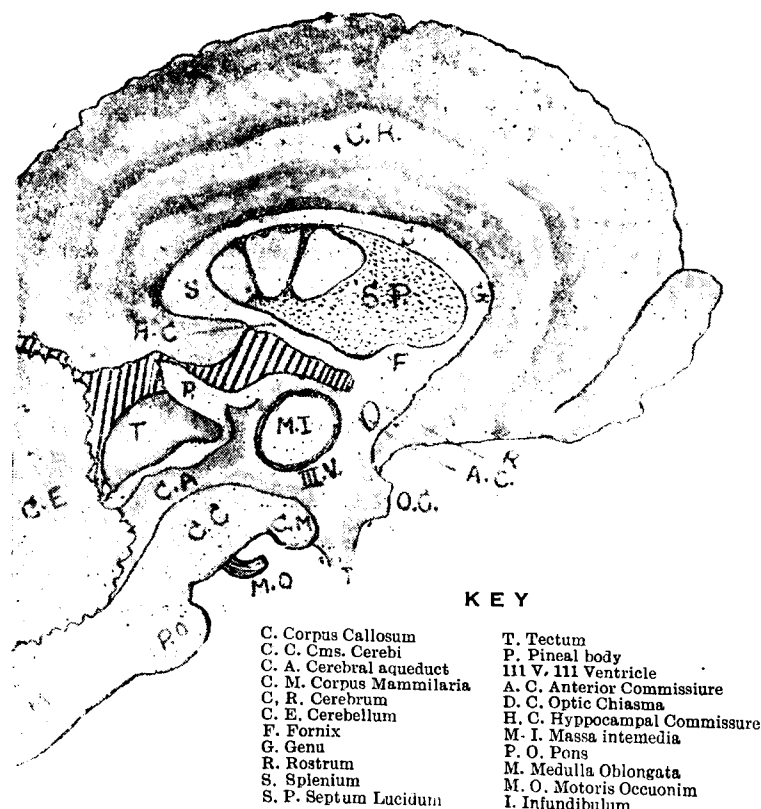
During the course of comparative study of the brains of higher vertebrates, the above condition was noticed in the brain of an aged bullock.

After exposing the right half of the corpus callosum from above and dividing it transversely to lay open the body of the right lateral ventricle, this abnormal condition of the Septum Lucidum was noticed. The forepart of the septum attached above to corpus callosum, in front to the genu and rostrum and below to the body of the Fornix and the Hippocampal commissure, is remarkable for its size, as it measures 26.2 mm. anteroposteriorly and 12.8 mm. superoinferiorly. This forepart of the septum presents a

* Paper read at the Anatomical Society, Madras, in December 1943, and at the Provincial Veterinary Conference held at Madras in April 1944.

posterior concave margin which extends from about the middle of the corpus callosum to the Hippocampal commissure, about 1 cm. from the splenium. From the lowermost part of this concave margin arise two fine strands which diverge as they go upwards to be attached to the rudiments of the posterior part of the septum that is adhering to the posterior part of the corpus callosum. It now becomes evident that the posterior part of the septum is reduced to two diverging fine oblique strands with minute fragments attached to the corpus callosum above and presenting three perforations.

(Medial View of the left cerebral Hemisphere etc.,—drawn to natural size by Camera lucida.)



Hence the two lateral ventricles directly communicate with each other and are abnormally distended as shown by the superoinferior dimension of the forepart of the septum—12.8 mm. (Normal 3—4 mm.)

This abnormal bilateral ventricular distension with resultant perforation of the septum lucidum indicates the pathological condition—Internal Hydrocephalus. The clinical recognition and diagnosis of this condition with the aid of Pneumoradiographs and indigo carmine test has been

possible in the human subject. For several reasons, it has not been possible for a veterinarian to clinically diagnose this condition in the adult domesticated animals.

The principal features of interest are:—

1. Posterior part of the septum is perforate, establishing free direct communication between the lateral ventricles.
2. Abnormal distension of the lateral ventricles.
3. Septum is solid, unilaminar and perforate.
4. Foramina of Munro and cerebral aqueduct are normal.
5. Part of the meninges with the terminal portion of the great cerebral vein was available for examination, which showed an unusual feature. The great cerebral vein instead of opening into the terminal part of the inferior sagittal sinus to form the straight sinus, took an upward and forward bend to open into the superior sagittal sinus about 1 cm. in front of its termination. It is possible that this unusual course of the great cerebral vein resulted in improper drainage of the venous blood, which would have acted as one of the factors (though not entirely) to produce ventricular distension.

I have ventured to read this paper on this abnormal condition as very few cases are recorded in Veterinary literature regarding the lesions produced on the Ventricular parieties.

Acknowledgment:—I am very grateful for the guidance and encouragement I received in the preparation of this paper from Dr. U. V. Nayak M.B., B.S., Ph.D (Lond). and Drs. A. Ananthanarayan, B.A., M.B., B.S., M.Sc., and D. S. Mudaliar, M.R.C.S., L.R.C.P. (Lond)., of the Central Institute of Anatomy, Madras Medical College, for their very valuable constructive criticism.

REFERENCES

- | | |
|-----------------------|---|
| 1. J. H. Steel | Diseases of the ox. |
| 2. E. Wallis Hoare | A system of Veterinary Medicine. |
| 3. Hutyra and Marek | Special Pathology and Therapeutics of the diseases of the domestic animals Vol. III. |
| 4. Purves Stewart | Diagnosis of Diseases of the Nervous system. |
| 5. Journal of Anatomy | Vol. LXVI 31-32 Defective development of the Septum Lucidum by Drs. P. K. Ram and D. Sivasubramanyam. |



Dr. PANGAL'S

Veterinary Institute

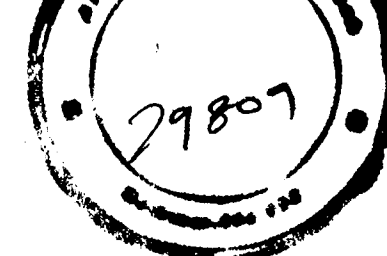
26, Wallajah Road, Mount Road,
MADRAS

A few of Dr. Pangal's Specialities to all Lovers
of Horses, Cattle and Dogs.

1. "Race Horse Brand" Equitone. A valuable Blood Tonic and conditioner for Race Horses, Polo Ponies, Hunters, etc. Quite indispensable to keep the horses in hard work always fit. Price per 2 lb. tin **Rs. 5.**
2. "Tendon Lotion." For Inflamed and Sprained Tendons, Ligaments and Joints in Horses. Price per lb. bottle **Rs. 2.**
3. "Electric Mange Cure." An excellent remedy for all kinds of Mange and is a specific for Follicular Mange. Acts like magic. Price per bottle **Rs. 2.**
4. "Scented Pulvex." Tick specific. A Wonderful Tick destroyer. Price per tin **Re. 1-4.**
5. "Canatone." Vitamin Mineral Food for Dogs. Price $1\frac{1}{2}$ lb. tin **Rs. 1-8.**
6. "Cough Electuary." A specific for Cough and Catarrh in Horses. Price per lb. **Rs. 8.**
7. "Bovotone." Best Tonic powder for cattle containing Minerals and Vitamins. Price per 2 lb. tin **Rs. 2.**
8. "Mange Dressing." A specific for all kinds of Mange. Price per big bottle **Rs. 3.** Small bottle **Re. 1-8.**
9. "Dr. Pangal's Resolvin." Indicated in absorbing—without firing—Splints, Ring bones, Spavins, Enlarged Joints, Sprained Tendons and Ligaments; and cures Sore Shins, Capped Elbows and Hocks. Price per 4 oz. bottle **Rs. 8.**
10. "Dhum-Dhum." A specific for Dhum, i.e., heavy breathing so common in horses. Acts like magic. Price per 2 lb. Bottle **Rs. 6.** 1 lb. Bottle **Rs. 3.**
11. Anodyne Paste for Horses. Indicated in Treating swollen joints, inflamed tendons and ligaments (Work not disturbed). Price per 3 lb. tin **Rs. 4.**

For Other Specialities please apply for Literature.

When writing to advertisers please mention this Journal.



THE Indian Veterinary Journal

(The Journal of The All-India Veterinary Association)

Vol. XX

MAY, 1944

No. 6

Editorial

A GOOD AUGURY

Rarely have we noticed such earnestness on the part of the Government of Madras as was manifest in the following words of Mr. S. V. Ramamurthy, Adviser to H. E. The Governor of Madras, when he opened the Provincial Veterinary Conference, held at the Madras Veterinary College in April 1944 under the auspices of the A. I. V. A. Madras Branch:—"I would be glad to have proposals of this Conference over which an experienced head of the Department is to preside as to the measures necessary both for livestock development and for fighting epidemics. You may be sure that well-considered proposals emanating from you will receive prompt and careful attention from Government." Such words emanating from an Adviser responsible for the administration of the Veterinary Department must really be heartening to the rank and file of that Department who have all along been treated as members of a service that was styled as the cindrella of the services. They have been till now treated as a thing apart and kept 'starved, humiliated and in every way discouraged'. Mr. Ramamurthy's speech in opening the Conference has given us hope that such kind of treatment would become a thing of the past. That he is keenly alive to the potentialities of this Department and that he values its services very highly, are evident when he said "Economists who had calculated agricultural and livestock wealth of the nations had found to their surprise, perhaps of

DL
KZ m2, n24
N44.20-4

themselves, and certainly of the public, that agriculture which occupies so much space did not produce as much in the aggregate as livestock which fill the eyes with much less. They have perhaps not recognised that efficiency in production of wealth increased as they passed from plants to animals and then to man. This was a subject that merited detailed study". He further observed "Government are prepared to make the full resources of the Reserve Forests available for livestock improvement. They are also prepared to develop fodder resources in the plains with irrigation wherever necessary". These are words of encouragement and guide which we are confident the profession will take advantage of for pushing on schemes for livestock improvement. We are happy over these words of encouragement. We would have been happier still if Mr. Ramamurthy had gone a step further to make the profession more attractive. The revision of salary which he has sanctioned recently places the Veterinary Service on a par with the Agricultural services and that in itself, he says, is an increased recognition of the value of their work. We must admit we are not at all satisfied with this revision. As we have often pointed out in this *journal*, a Veterinary student and an agricultural student join their respective colleges with the same preliminary qualification; but, while the latter completes his course in 3 years, the former has to study for 5 years. A course of Veterinary studies is far more arduous and risky than many a scientific course of study. And therefore the veterinary student deserves a better treatment than what he has been getting all along and what he has now been given. We do hope Mr. Ramamurthy will still look into this aspect of the matter, and do the right thing by the profession.

Mr. K. S. Nair, Principal of the Veterinary College as Chairman of the Reception Committee, gave a very succinct survey of Veterinary Education and Veterinary requirements of this Province. He regretted very much—we join him in that regret—about the fall in the admissions to the college during the last 3 or 4 years and offered suggestions for attracting the proper type of students. We would commend to the Government his

earnest plea in this respect. He said:—"The important reason for the fall in the number of admissions is that the emoluments offered to the Veterinary student after a study of long duration, a study as long as that of the medical graduates, are not attractive enough. His professional and academic attainments and the arduous nature of the work expected of him certainly deserve sympathetic consideration at the hands of the Government. Even the recent increase in the scales of pay, I regret to submit, falls short of the expectations." Equally earnest was his plea for the establishment of more breeding farms in the Province and for the appointment of Research Officers for investigating into the more important diseases of the livestock. His remark about the slaughter of animals for military requirements and his warning that there could be no excuse for the complacent attitude that such slaughter is only among the unthrifty, useless and superfluous cattle of the cultivator would, we hope, be seriously taken note of by the authorities concerned.

Mr. T. J. Hurley, Director of Veterinary Services, Madras, who presided over the Conference and who, we are delighted to learn, was unanimously applauded as an ideal President, was very eloquent in his narration of the problems confronting his department, since it took over the livestock section. "Why," he asked, "are our animals so under-nourished? Why is there such a vast difference in the size and type of our animals in the different parts of the Province?" These and other cognate subjects, he rightly stressed, required investigation by a highly trained scientific staff as it was wasting time and money to attempt it otherwise. His tribute in this connection to the Madras Veterinary Graduate that he compares favourably with the Veterinary Graduate in other parts of the world is very re-assuring. Speaking about the solutions of the problems, he complained of paucity of staff, which he said was disconcerting as there were so many things which could be done at the present time but which must be put off for want of technical staff. We must candidly admit we cannot agree to this policy of DO NOTHING on the plea of inadequacy of staff. It must be obvious that it cannot possibly bring much credit to

any organization if it did what it has to do when all the facilities it requires are ready and available. That is comparatively easy and simple. The credit arises only when such facilities are lacking or even absent. As such, it is rather difficult to believe that paucity of staff as it obtains in this department today is so serious as to constitute an obstacle to progress. We have on the authority of Mr. Hurley himself a highly trained scientific staff in this Department whose number, we think, is not small, although it may fall far short of our ideal of one officer for each taluk. This staff could, we think, be more usefully employed than as inoculators and castrators as at present. We are assured that, with a proper adjustment and judicious distribution of the staff, there is scope for an all-round betterment and progress, provided they are helped by a team of skilled assistants in the form of stockmen, fieldmen, poultrymen, etc., to carry out routine duties like inoculations, castrations, etc. Such an addition to the staff of the Department became essential when it took over the livestock section. It is still more so now in these days when there is a depletion of staff owing to war conditions. We note that a scheme to train about 30 men as stockmen *cum* compounders is afoot; but, why combine the two together? Even so, the number is not enough. We want more of such agencies and the sooner they are trained the better. The Hosur Cattle Farm, the Serum Institute, the Madras Veterinary College, all these can take up the training of such staff of skilled assistants and send them out quickly and efficiently. If this is done, the problem of paucity of staff can to a great extent be solved.

On the whole, the Conference, as can be seen from the proceedings published elsewhere, has been a great success and we do hope that the suggestion of Mr. T. J. Hurley, to make this Conference an annual event will be acted upon in future.

Clinical Articles

DOUBLE SPLEEN IN A GOAT—A CONGENITAL ABNORMALITY

By

NAZIR SADIQ, L.V.P. (HONS.)

Punjab Veterinary College, Lahore

Congenital anatomical abnormalities in domesticated animals are frequently encountered. Monstrosities—Celosomians, Syssomians, Monosomians, etc., are not rare. Duplication or triplication as polydactylism in cattle, or complete absence as Earlessness in sheep, Imperfect-anus in young born has been observed. Similar is the case with the internal organs. Several workers have recorded congenital abnormalities of various organs. Fruner (1887) has recorded a double urinary bladder in a mare which never suffered any inconvenience from the abnormality. Each bladder opened by a separate mouth into a common outlet. Wolstenhome



Photo of Double Spleen in a goat

(1892) found in a horse a urinary bladder with two large diverticula. Menzel (1905) reports a double urinary bladder in a 14 days old calf that had been slaughtered at the public abattoir. Ercolani (1893) observed in a 35 days old calf, three spleens each of which had a hilus of its own with well-developed blood vessels. Kinsley (1906) found an abnormal intestinal diverticula in a heifer. White (1906) observed in a sheep a duplication of gall-bladder. Datta (1932) records a double ceecum in a goat. Gaiger and Davis (1938) mention (i) the absence of one kidney, (ii) fusion of

two kidneys giving rise to a segmoid kidney or a horse-shoe kidney, (iii) the presence of a third kidney and (iv) the absence of a urinary bladder with the ureters leading directly into the urethra.

Such abnormalities may or may not prove detrimental to the body.

Case under report :—The case under report was a goat used for the production of anti-rinderpest-goat-tissue-virus vaccine at the Punjab Veterinary College, Lahore. On opening the abdominal cavity, two spleens were found enclosed in a single peritoneal fold. One spleen was larger than the other and they both jointly were nearly equal in size to a normal spleen and had the same anatomical relations as a normal one has. These can briefly be described as under:—

(A) *The large or the anterior spleen* :—It was triangular in outline with the base below and the apex above. It was 18 grammes in weight. The parietal surface was convex and related to the diaphragm. The visceral surface was concave and related to the upper part of the rumen. Just below the vertebral angle (apex) was situated the hilus with well-developed blood vessels. The anterior border was 4.2 cm. long, thick and concave. The posterior border was 6.0 cm. in length, thick, concave and received the anterior border of the posterior spleen. The ventral border or base was thin, convex and 6.5 cm. in length.

(B) *The small or the posterior spleen* :—It was irregularly quadrilateral in outline. It weighed 10 grammes. The parietal surface was convex and related to the diaphragm. The visceral surface was concave and divided into an anterior and a posterior part by a ridge, which extended from the dorso-anterior angle downwards and backwards. The ridge was prominent above but faded out ventrally. The anterior border was 5.0 cm. long, thick, nearly straight and overlapped by the posterior border of the anterior spleen. The posterior and ventral borders were 2.8 and 4.2 cm. long respectively and irregular in outline. The vertebral or the dorsal border was nearly straight and 3.0 cm. long. The antero-dorsal angle was pointed and just at the top of this angle was situated the hilus.

DISCUSSION

The occurrence of a double spleen is a congenital abnormality without any physiological or pathological significance. This has been stated by several workers from time to time. Smith (1921) is of the opinion that the complete removal of the spleen is not detrimental to the health of the animal. Dukes (1937) supports this contention and states that this is not necessary for animal's life. Splenectomy has been successfully performed not only on the small animals like rats and mice but also on sheep, pig, cattle and horses. When this organ is removed, other organs of the body

take over its functions in addition to their own, to make up its absence. Halliburton (1939) states that with the removal of the spleen, there is an overgrowth of the lymphatic glands. Pal and Chakravarti (1934) are of the opinion that spleen though performing some of the important functions in the body cannot be reckoned as an essential organ of the body.

REFERENCES

- | | |
|---|--|
| Datta, S. C. A. (1932). | <i>Ind. J. Vet. Sci. & Anim. Husb.</i> Vol. 11, p. 57. |
| Dukes, H. H. (1937). | <i>Physiology of Domestic Animals</i> , 4th edition, p. 42. |
| Ercolani, (1893). | <i>Vet. J.</i> 36, p. 414. |
| Fruener (1887). | <i>Vet. J.</i> 25, p. 46. |
| Guiger, S. H. and Davis, G.O. (1938). | <i>Vet. Pathology & Bacteriology</i> , 2nd edition, p. 571. |
| Halliburton, W. D. & McDowell, R. J. S. (1939). | <i>Handbook of Physiology and Bacteriology</i> , 36th edition, p. 212. |
| Kinsley, A. T. (1908). | <i>Amer. Vet. Review</i> 33, p. 460. |
| Menzel, P. (1905). | <i>Vet. News</i> , 2, p. 31. |
| Pal, R. K. and Chakravarti, A. (1934). | <i>Handbook of Modern Physiology</i> , p. 411. |
| Smith, F. (1921). | <i>Veterinary Physiology</i> . |
| White, (1916). | <i>J. Comp. Path. & Ther.</i> 29, p. 133. |
| Wolstenholme, (1892). | <i>Vet. J.</i> 35, p. 67. |

Veterinary Instruments

RE-NICKELLED, RE-SHARPENED & REPAIRED

PAUL'S ELECTRO WORKS

39, JORAPUKER SQUARE, CALCUTTA

When writing to advertisers please mention this Journal.

FRACTURE OF FEMUR IN A FILLY

By

W. V. SOMAN, G.B.V.C., P.G. (Edin.), M.R.S.I.

Chief Veterinary Surgeon, Baroda

A chestnut filly, 4 months old, was reported to have sustained an injury on the near hind on the 21st September 1943. No history of the case was available and as the animal had developed sufficient swelling at the seat of injury—stifle joint—no definite diagnosis could be given. Slight crepitus



led to the suspicion of fracture. The part was therefore X-rayed which revealed simple comminuted fracture of the distal end of the femur with lot of displacement of the broken fragments.

As the filly was a highly pedigreed one from the racing stables it was decided to give it a fair trial and try to save the animal for the purpose of breeding.

FRACTURE OF FEMUR IN A FILLY

259

The filly was rested for a couple of days with cold treatment on the injured part, but the swelling did not yield much to treatment and hence it was decided to reduce the fracture immediately to avoid further complications:



The animal was put under Chloroform and the fracture was reduced. A screening of the case was immediately done by X-ray and on satisfactory finding the part was put in Plaster of Paris bandage. The filly being of a docile type it rested sufficiently and within three weeks it



showed definite signs of improvement. As the swelling had completely subsided the plaster bandage had become a loose socket, and therefore, it was removed and a fresh bandage was put on. This also was removed after another three weeks when the filly tried to kick with the injured leg. She was discharged cured from the hospital during the next week.

During the period of sickness the general treatment was nothing beyond laxative and nutritive diet with occasional use of Cerelese H' in the feed. This was the first case of its kind treated at this hospital and hence



the photographs on different occasions were taken. The animal is now at the Baroda Stud perfectly well and gives a pleasant gallop every morning and evening.

ECHINOCOCCUS CYST IN THE KIDNEY OF A COW

By

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

Demonstrator, Punjab Veterinary College, Lahore

The Echinococci or Hydatids which represent the cystic phase of the *Taenia echinococcus*—a cestode inhabiting the small intestine of the dog and the fox occur mainly in the liver, lungs and spleen of cattle, buffalo, horse, sheep, goat, pig, deer, zebra, elephant, dog, cat, wild boar, rabbit, squirrel, turkey, various species of monkeys, and man etc., but most frequently in ruminants only. According to Monnig (1941) these cysts chiefly occur in the liver and lungs of ruminants but Newmann (1905) states that these are met with in the most varied organs, but the liver is

ECHINOCOCCUS CYST IN THE KIDNEY OF A COW 261

the favourite seat; then the lungs and after them spleen, serous membranes, heart muscles, kidneys, bones and quite exceptionally inside the skull. Hemann (1934) had recorded echinococci in almost every organ including most of the lymph glands of a cow.

In India studies of the available literature on the *Echinococci* shows that these cysts have been commonly recorded in the liver, lungs, spleen and serous membranes of cattle, sheep, goat, horse, camel, elephant, donkey, pig, rabbit and man (Bhalerao 1935); rarely in the heart muscles (Rahimuddin 1943, Maqsood, 1944) and very rarely in the muscle (Sen 1936). Under these circumstances, it is considered advisable to record the occurrence of an *Echinococcus cyst* in the kidney of a cow.

The case under report:—A red Sahiwal cow, aged about 6 years, was being treated for Metritis in the indoor section of the Punjab Veterinary College Hospital, Lahore, since the 28th of October 1943. The cow died in the hospital and was forwarded to the Laboratory Section for post-mortem examination on 30th October 1943.

Post-mortem Examination:—The carcase was in fair condition and the hind legs and tail were soiled with muco-purulent discharge. The mucous membrane of the fourth stomach was congested and the rest of the digestive tract appeared normal. Both the lungs were congested and the heart was practically normal in appearance. The mucous membrane of the uterus was acutely inflamed and was at places covered with muco-purulent exudate. Offensive pus accumulated in the horns of the uterus. The mucous membrane of the vagina was also congested.

On examination of the kidneys, a sterile *Echinococcus cyst* about the size of a pigeon's egg was seen in the cortex of the right kidney just under its capsule and the left one appeared practically normal.

The specimen was preserved for the museum of the Punjab Veterinary College, Lahore.

REFERENCES :

- AGGARWALA, A.C. (1925). *Ind. Vet. J.* 2, 37.
- BHALERAU, G. D. (1935). *Helminth Parasites of the Domesticated Animals in India*, 108.
- HEMANN, (1934), Z, Fleisch—M. Milchhyg 44, 382-383.
- MAQSOOD, M. (1944). *Ind. Vet. J.*, Vol. XX, No. 4.
- MONNING, H. O. (1941), *Vet. Helminth and Ent.* 117-121.
- NEUMANN, L. G. and MACQUEEN, J. (1905). *Treatise and Parentic Diseases of the Domesticated Animals*, 431-432.
- RAHIMUDDIN, (1943). *Ind. Vet. J.*, Vol. XX, No. 1, p. 31.
- SEN, S. C., (1936). *Calcutta Medical J.*, 31, 38-40.

TETANUS IN A BULLOCK

By

S. S. VENKATESAN, G. M. V. C.,

Veterinary Assistant Surgeon, Karanja, Berar.

A bullock brought to the dispensary for treatment on 25-5-43, presented a stiff, wooden appearance, with the head poked out, neck extended in a line with the body and abdomen tucked up. Both the hind legs were placed wide apart and the animal could move only with great difficulty. Long threads of saliva were seen hanging from the mouth.

On closer examination, typical lock-jaw was noticed and there was protrusion of the Membrana Nictitans over the eyes when the head was raised. Flexion of both the hocks was highly difficult while the musculature of the entire back and loins was stiff and board-like to the feel. The animal was reported off-feed for some days and could just suck in some water cautiously. There was no history nor even a trace of any trauma. The case was diagnosed as Tetanus Idiopathicus.

The treatment adopted was on lines similar to those recommended by the Quarter Master General, Army Headquarters, India, namely:—(1) Subcutaneous injections of Acid Carbolie (one dram in two ounces of distilled water) on the sides of the neck, (2) Oral administration of Chloral Hydras once a day in one ounce doses and (3) absolute rest.

Chloral Hydras was given only for the first three days, and the animal received four two-hourly injections of Acid Carbolie on the first and the second day. For the rest of the period two injections were given daily. Thus on the whole the animal received a course of 22 injections in 15 days. Lugol's Iodine solution was administered in drinking water in one dram doses for 8 days at varying intervals.

The animal began to take its usual feed and water and could also ruminate with ease after the fourth injection, and the general stiffness started disappearing from the fifteenth day. On the 20th day a definite improvement was noticed in the gait; and the flexion of the hock was found returning to normal. The animal was discharged after further three days and the owner was cautioned not to work the animal though it was walking sound.

Note:—(1) This is the first case of Tetanus in my experience that has terminated successfully even though the muscles of mastication had been badly affected.

(2) The animal started taking feed and water after the fourth injection.

(3) The tolerance for Acid Carbolie except for a slight local inflammatory swelling (at the seat of injection) which also subsided subsequently is noteworthy.

(4) No injection of Anti Tetanus Serum was given at any stage.

Conclusion:—My thanks are due to Mr. D. N. Bose, Veterinary Inspector, West Berar, for his examination of the case at the time of his inspection of the dispensary.

A CASE OF CHOKING IN AN ELEPHANT

By

N. C. CHIKMATH, G.B.V.C.,

Veterinary Surgeon, Kolhapur

Subject:—A tusker named 'Motya', aged about 50 years belonging to Her Highness Chatrapati Maharani - Saheb of Kolhapur.

History:—The animal was given its daily feed every evening at about 6 o'clock, the ration of corns being given to it in small bundles of hay. On the 2nd of November 1943, the Mahout gave the rations as usual, but the bundles were rather bigger. He threw the first bundle in front of the animal which it took and put it into its mouth; before it could swallow it, the second bundle was thrown and the greedy animal took that also, put it into its mouth and tried to swallow both the bundles together. Evidently, this was too much for the size of the gullet and the bundles got arrested in the neck and choked the animal.

Symptoms and treatment:—The animal became immediately restless and made strong efforts at deglutition—it broke the iron chains tied to its legs and tried to come out of its stall. It opened its mouth now and then and saliva flowed out abundantly. The animal went off its feed and drink completely. After some hours, a circumscribed swelling as big as a football was noticed on the left jugular furrow which later on extended to the right side also. The animal struggled violently, became exhausted and died after 24 hours.

Removal of the bundles wedged in the gullet was tried first by the hand without any success. As the animal was restless, it would not allow us to pass our hands into its mouth. Then I took a round rod, 8 feet in length, rolled a bandage round it and attempted several times to push the bundles through the esophagus into the stomach but that too with no effect. I then thought of pouring water into the mouth by a long tube. For this

purpose a fire fighter was brought over; one end of the long tube was fixed to the water tank and the other end was directed into the throat of the animal. By the force of the water, one morsel was dislodged from the gullet and fell on the ground. Being confident that I would certainly remove the other wedged-in bundle by the above method, I again applied the tube to force the water into the gullet. But the animal became so wild that it would have nearly killed the Mahout who was assisting me to hold the tube. So I asked the Mahout to make the animal lie down, but the excited elephant not only refused to obey him but allowed none of us to go near it. So I had to wait till the elephant lay down of its own accord. But unfortunately that was too late; the elephant took nearly an hour to sit on the ground and expired immediately.

Remarks:—This experience of mine with regard to a case of choking in an elephant may be found interesting. I am firmly of opinion that the life of the animal could have been saved if only it had not become so very wild and savage.

My thanks are due to Mr. H. N. Ghatge, G.B.V.C., the Chief Veterinary Officer of Kolhapur State, for his useful hints in treating the case.

Association News

THE ALL-INDIA VETERINARY ASSOCIATION, MADRAS BRANCH

Proceedings of the Veterinary Conference held under the auspices of the All-India Veterinary Association, Madras Branch, at the Madras Veterinary College, on the 15th and 16th April, 1944.

First Day:—15—4—44

The Conference commenced at 10 A.M., on Saturday the 15th April 1944 in the tastefully decorated Central Hall (Upstairs) of the Madras Veterinary College.

The following were present:—

Messrs.	Messrs.
1. K. Kailasamier, Rao Sahib (President of the Association)	9. Chandrasokharan K. P.
2. K. S. Nair, Chairman R. C.	10. Cheah Phee Phay.
3. Aboobacker K.	11. Chelva Ayyangar, Rao Sahib H. N.
4. Anantaraman M.	12. Dharmarajan M.
5. Azizuddin I. M.	13. Duraiswamy K. P.
6. Balagurunathan G. B.	14. Frank D. Wilson
7. Balasundara Doss V. J.	15. Ganapathi M. S.
8. Baradwajan C.	16. Govindaraja Ayyar V.
	17. Govinda Sastri K.

Messrs.	Messrs.
18. Govindaswami R. N.	49. Rangaswami H. R.
19. Gurumurti V.	50. Rangaswami Ayyar M. A.
20. Hanumantha Rao B.	51. Samarasimha Rao K.
21. Hanumantha Rao O.	52. Sankaranarayanan M. V.
22. Hariprasada Sarma B.	53. Sastry M. S.
23. John C. I.	54. Satyanandam Jacob
24. Kadambavanasundaram P.	55. Satyanarayana K. V.
25. Kotaiya K.	56. Seshadri Ayyangar S.
26. Krishnamurti A.	57. Souri Rajan R.
27. Krishnamurti D.	58. Srinivasa Rao Pangal.
28. Krishna Rao M. V.	59. Srinivasan P.
29. Madhava Menon P.	60. Srinivasan G. S.
30. Mahadevan V.	61. Subbu Singh C. K. Lieut.
31. Md. Yakub	62. Subrahmanya Sastri M. R.
32. Mallikarjuna Rao K.	63. Subbarama Rao V.
33. Mangrulkar M. Y.	64. Subbarayalu P.
34. Mariappa D.	65. Swaminathan R.
35. Muthiah V.	66. Thillainayakam P. M.
36. Nagabhushanam A.	67. Thulasiram Singh E.
37. Nagappa Pai K.	68. Umapathi Rao M.
38. Nagarajan E. R.	69. Vaithyanatha Mudaliyar S.
39. Nair M. K. V.	70. Vaidyanathan S. N.
40. Narasinga Rao R.	71. Velayudhan Nair C. K.
41. Padmanabhan C. V.	72. Venkatsewara Rao C.
42. Parameswara Ayyar L. S.	73. Venkatarama Ayyar S.
43. Parthasarathi K. V.	74. Venkatraman R.
44. Pattabhiraman D.	75. Venkatraman V.
45. Pillai M. V.	76. Vinayaka Mudaliar T.
46. Purushothaman K.	77. Viramani Iyer R.
47. Ramanujachari G.	78. Viswanathan G. R.
48. Ramaswami S.	79. Viswanatha Pillai P.

Among the visitors there were:

Mr. P. P. Aippuru, Dr. K. V. Gopalakrishna Ayyar, Dr. M. R. Guruswami Mudaliar, Dr. M. K. K. Menon, Dr. T. S. Tirumurti, and Students of the Madras Veterinary College.

Rao Sahib K. Kylasamier, President of the Association, requested Mr. S. V. Ramamurthy, M.A., I.C.S., C.I.E., and others to join him in praying for the successful termination of the War.

Then Mr. K. S. Nair, G.B.V.C., M.R.C.V.S., D.T.V.M., Chairman of the Reception Committee in welcoming Mr. S. V. Ramamurthy, Adviser to H. E. the Governor of Madras, Mr. T. J. Hurley, M.R.C.V.S., D.V.S.M., I.V.S., Director of Veterinary Services, Madras, Delegates and Visitors, said:—

On behalf of the Reception Committee of the Provincial Veterinary Conference, I have great pleasure in welcoming you to this Conference. We congratulate ourselves that we have Mr. Ramamurthy, the Adviser in

charge of the Development portfolio to open this session. His presence is a source of immense encouragement and augurs well for the future of the Association; and, to guide us wisely in our deliberations, we have Mr. T. J. Hurley, the Director of Veterinary Services. All these seem to have a flavour of an official Conference. We wish it were, as our discussions would principally be about livestock disease control and Veterinary education.

For various reasons, such as finance, war conditions etc., we have not been able to hold a full dress Conference in this Province since December 1935. It is our sincere desire to hold a Conference every year henceforth and I would appeal to my professional brethren to cooperate with the officials of the Association and thus make it possible for us to hold a Conference at least once a year.

Eight momentous years have passed since we last met in conference, and as it is not possible within reasonable time to review all that has happened during this period, I shall only endeavour to point out some of the salient features. One important fact is the transfer of livestock to the Civil Veterinary Department. It is only seven years since this important work was entrusted to the veterinarians. Government have constituted a "Provincial Livestock Improvement Board" of officials and non-officials since 1940. I take this opportunity of giving a short resume of the activities of livestock improvement with certain suggestions which we consider important. The Adviser on a previous occasion reminded us that we have long been accustomed only to the healing art, to what he described as "negative work"; but now that the improvement of livestock has been handed to us, it is upto the profession, to show what we can do in this field of activity.

During the past seven years, the department has been able to distribute about 800 breeding bulls. This is no small achievement for improving the stock. As to the adequacy or otherwise of the number I shall request one and all of you to read carefully the appendices in section V of the annual report of the Civil Veterinary Department. In this matter, the provincial requirements are 50 thousand approved bulls and therefore we have to exert a hundred-fold to make up this figure. Let us not be dismayed at this colossal demand, but find ways and means of meeting it. The department is mainly concerned with the breeding bulls as "bull is half the herd," and grading up and selection are the policy pursued in this Province. The crux of the problem is rightly included in the two main heads "Feeding and Breeding" by the Royal Commission on Agriculture.

It has been pointed out by many forest administrators that no great extension of grazing land is possible in forest areas. Therefore our methods of improvement of cattle food lie in controlled grazing in forest

areas, restrictions of grazing rights on waste land, enclosure of grass lands and fodder storage. Each is a problem by itself and will have to be tackled at once.

There is a great need for a survey of existing grazing lands of every district. We also desire to know the actual possibility of extension of these lands, irrigation requirements and facility of water storage in each district. The Royal Commission on Agriculture recommended that it should be possible to mark out areas of grass lands which they termed "oases" and which can be used by the stock during the hot seasons of the year. This is a suggestion worthy of adoption. In all this work who are better fitted than the District Veterinary Officers of the Department? Further we would like to see propaganda being carried out among the ryots about haymaking and conservation of straw. The ryot is a good grasscutter but has never been a haymaker. Silage making is cheap and easy, but it is necessary to demonstrate to the ryot these methods and the usefulness of silage feeding. Every Veterinary Assistant Surgeon is capable of doing this work if sufficient facilities are given him.

Now coming to the question of breeding, we are happy that fine breeders are in existence providing foundation stock. Unlike the western countries where the stock breeder takes the initiative in livestock improvement by providing the required number of male breeding stock, the Indian breeder has not been able to do much in this direction.

As breeding farms are unremunerative and as private breeders are few and unprogressive, it has become the special duty of the Government to step in and do the needful. As pointed out early in this address, a small beginning has been made. But it is quite inadequate. We would like to see at least one breeding farm established in the midst of every breeding tract, within the year. It is said that the Pungannur breed is dying out. It should be possible to retrieve a few of these and start a breeding farm. Bhurghur breeders require careful handling and a breeding farm solely for breeding Bhurghur cattle has become a necessity.

There is always a controversy about the buffalo, whether this class of animal requires any encouragement. It is not necessary for me to bring to your notice that the dairy animal of India is the buffalo, that she will thrive on poor food, and is a more economic animal to keep than the cow. In addition to all this the he-buffalo is an efficient farm animal. Therefore let us not neglect this important class of livestock.

I do not like to tire your patience by cataloguing all our needs and these are only a stray example of two among many that require immediate attention.

In reviewing the disease position, it has been pointed out, by the Royal Commission on Agriculture that the fear of loss from contagious diseases tempt many to keep larger stock than is necessary. This finding is partly true. We in this Province have been successful to a great extent in keeping under control the contagious diseases of animals, since we had an efficient Serum Institute in Madras, which manufactured sufficient quantities of biological products. But at the present moment it is functioning under uncongenial surroundings, in a cramped situation at Coimbatore. During the scare of 1942, the Institute was hustled away to Coimbatore and although all the other public offices returned to their original place in the City, it has been the lot of this Institute to be in Coimbatore. Good work cannot be carried out in a temporary location and it has become imperative to bring it back to Madras without the least delay.

I put it to this Conference the suggestion that the time has come to have full time officers to tackle the problem of the major contagious diseases. Special officers to deal with rinderpest, hæmorrhagic speticæmia, blackquarter as well as parasitic and protozoan diseases have to be appointed early. There are other diseases such as T. B., Rabies, Brucellosis which from a public health point of view call for closer collaboration with Department of Public Health, Local Boards, Municipalities etc. These experts who will be in constant touch with the disease conditions of the Province can effectively check outbreaks and prevent their spread.

The appointments of the Veterinary Investigation Officers are in the right direction as we have several diseases which require to be enquired into.

Since the last time we met in Conference great strides have been made in the field of education and research. Teaching in the Veterinary College was thoroughly reorganised, and the College itself was affiliated to the University, gaining the status of a constituent college. The Diploma Course is now of four years duration, while the Degree course which originally was of 3½ years, has been extended to five years. Several batches of highly trained Diploma and Degree holders have left the portals of this Institution since 1939. Many of these young men are now members of the Civil Veterinary Department of Madras. It should be our earnest desire to see that these enthusiasts are given all facilities in the Department to make themselves capable Veterinarians and expert livestock men.

It is a known fact that in the past three or four years there has been a fall in the number of candidates seeking admission to this College. The causes are probably more than one. But one important reason is that the emoluments offered after a study of long duration, a study as long as that of the Medical graduate, are not attractive enough. His professional and

academic attainments and the arduous nature of the work expected of him certainly deserve sympathetic consideration at the hands of the Government. Even the recent increase in the scale of pay, I regret to submit, falls short of the expectations. To attract the proper type of the student, at least during this crisis, I would suggest that a system of liberal scholarships should be instituted in the College.

A remedy that is sometimes offered is the shortening of the present course in the College; but certainly when all the advanced countries have found it impossible to impart adequate instruction in Veterinary Science in less than a full five years of study, how is it argued that India does not require a lengthened course and that this country should be satisfied with only half the knowledge that is required for the making of a Veterinary Surgeon? It is realised that a cheaper agency is needed to cope with the routine work such as preventive inoculation, castrations, stock supervision etc., and there is nothing more suitable than stockmen for this kind of job and these should be trained in larger numbers to supplement the staff. There is however one anomaly which can disappear without loss of efficiency and that is, the present Diploma which is superfluous and can be done away with.

A matter of self congratulation is the offer of Emergency Commission to our Diploma and Degree holders in the Army where till recently the membership of the Royal College of Veterinary Surgeons of Great Britain was the sole qualification considered to be good enough to hold King's Commissions.

In the field of research, although an educational institution cannot fully organize itself into research units, teaching in this College has not divorced itself from research activities.

Pathology, Parasitology and Anatomy Departments are the three such sections that have developed research. When the college has its full equipment, buildings and personnel, it is the earnest hope that some original work would be started in Pharmacology, Nutrition and Genetics, not to say anything of the other sections.

Gentlemen, I have come to the end of my address, but I shall be failing in my duty if I do not say a word about the way in which the war is affecting our progress. The slaughter of animals for military needs will always be a controversial question, since the civilian has no idea of the needs of the fighting forces. Nevertheless there is no excuse for the complacent attitude that such slaughter is only among the unthrifty, useless and superfluous cattle of the cultivator. The Department is undermanned as a good number are serving in the Army, and there are not too many taking

up to this profession. Building programme is held in abeyance. Equipment like microscopes, other scientific appliances and chemicals could not be obtained; because of the travel restrictions and other causes, many of us are unable to go to other places in India and abroad to gain first hand knowledge. All these have a cumulative effect and probably dim our vision of the future. However I am happy in the thought that the war is taking a favourable turn and it may not be long before some of the above said handicaps are removed and we rise to the full stature of our expectations.

I conclude by extending to one and all of you a hearty welcome to this Conference.

I now request Mr. Ramamurthy to open the Conference.

Mr. S. V. Ramamurthy in declaring the Conference open said :—

Let me thank the Indian Veterinary Association, Madras Branch, for the honour it has done me in asking me to open this Conference. I am glad to associate myself with a Conference which deals with subjects in which the Government equally with Veterinarians and the general public are vitally interested. The Veterinary Department of this Government has had a long career like the Agricultural Department but it is only recently that its first pre-occupation with disease has given place to a fuller interest in livestock. Cure and prevention of disease is a negative good. The rearing and development of breeds of livestock is the positive good that the Veterinary Department is now entrusted with.

So long as the scope of the work of the Veterinary Department was restricted to disease, it is not to be wondered at that it did not attract the attention of the Government or the public to the same extent as the Agricultural Department with its wide array of interest and the striking results of its work by way of new and improved strains, increased yields and valuable aids to nutrition besides the provision of materials for industry. It is only since the Veterinary Department has been given the former livestock section of the Agricultural Department that a parallel area of work with equal scope for research and development has been made available to Veterinarians. Economists who have calculated agricultural and livestock wealth of nations have found to the surprise perhaps of themselves and certainly of the public that agriculture which occupies so much space does not produce as much wealth in the aggregate as livestock which fills the eye much less. We have perhaps not recognised that the efficiency of production of wealth increases as we pass from plant to animal and thence to man. This is a subject that merits detailed study. It is quite clear that in the production of physical, mental and moral energy, man is a more efficient machine than animal and that animal is a

more efficient machine than plant. But the statistics of economists seem to imply that even in the production of physical energy alone, plant, animal and man are in ascending order of efficiency. If this be verified to be correct, the result need not surprise us.

The fact however does surprise one that there has been more development in plant life and human life than in animal life. Plants are more docile than animals. Plants need not be tamed before they are used. Hence perhaps agriculture has always held a primary interest for man. According to a theory of Professor Vaviloff, sometime President of the Russian Academy of Sciences, the original home of half the crops and animals used by man is the area comprised of South Eastern India and southern China. Somewhere in this area an unknown woman—be she Indian or Chinese—first tamed a cow and fed her children with its milk. All honour to her, so also all honour to the unknown woman who first tamed a fowl and obtained eggs or tamed a sheep, shorn it and made a rug. What however I would draw the attention of Veterinarians to is the fact that livestock development has been much more stationary than plant development and that in our farms we see hardly more than cattle, poultry and sheep, the use of which was discovered long ago. With what vision should the first woman who tamed them have sensed the possibilities of doing so, with what courage should she have pursued them, with what joy of creation should she have achieved them. I put it to modern Veterinarians that they may well emulate the vision, faith and achievement of their ancestresses. Nature is not stale, so the mind and heart that are fresh. Surely the joy of creation is still possible to adventurous spirits even of the present day. Particularly so it is in India where life is as undeveloped as a forest but is therefore as glamorous and as full of the possibilities of new developments and creations as a forest.

It is as Veterinarians recognise the opportunities that remain unfilled in spite of India's vast resources that the public and the Government will appreciate their work. In livestock improvement, they have in their hand valuable breeds such as the Ongole breed, the Kangayan breed, the Sindhi breed of cattle besides the Murree buffalo breed which flourishes in this Province. There are varieties of poultry and sheep that can do well. It is up to Veterinarians to maintain these breeds, extend them over large areas so as to replace poorer breeds therein and to improve their quality still further. The Government are prepared to make the full resources of the reserved forests available for livestock improvement. They are also prepared to develop fodder resources in the plains, with irrigation, where necessary.

In the matter of disease, it should be the aim of the Veterinary Department not only to find remedies for diseases which at present they

are not able adequately to tackle but immediately to provide without limit all the remedies which the outbreak of disease at any time needs. It is no good to develop serum and virus for rinderpest when you do not have arrangements to produce them as rapidly as disease may threaten at any time. Provision of reserve equipment and trained staff should be made so that no excuse of lack of serum and virus may ever be pleaded as it has been recently. I would be glad to have proposals of this Conference over which an experienced Head of the Department is to preside as to the measures necessary both for livestock development and for fighting epidemics. You may be sure that well considered proposals emanating from you will receive prompt and careful attention from the Government.

As regards Veterinary education the Government have recently revised the salary of the Veterinary Subordinate Service so as to attract suitable students to the College. This revision which places Veterinary Service on a par with Agricultural Service is itself an increased recognition of the value of your work which you have now won. The claim to be treated on a par with medical graduates may well be made when your services to the country can be claimed to be as valuable.

Your opportunities are great. You have won and in increasing measure you will win public recognition as you succeed in serving the public in new and more efficient ways. I wish the Conference all success in its deliberations so that both the Government and yourselves may thereby be helped in developing the livestock wealth of this province to the fullest extent possible.

Mr. K. S. Nair, Chairman of the Reception Committee, then requested Mr. Hurley to occupy the Presidential chair and Mr. T. J. Hurley occupied the Chair amidst great applause and spoke as follows:—

I must first of all thank you for asking me to preside on this occasion because it gives me an opportunity of meeting in a body many members of the Veterinary profession, hearing and taking part, I hope, in the discussions on Animal Husbandry matters which are of interest to the welfare of this Province.

Conferences of this kind give you an opportunity of meeting your professional colleagues, exchanging ideas and discussing matters of professional interest, all of which help to broaden your outlook and stimulate you to give forth of your best in your day-to-day work.

Your Secretary informs me that the last Provincial Conference was held in 1935. This is rather disappointing and I do hope that you will find it possible to hold a Conference annually from now on. He also informs me that there are only 40 members of the Association at present which is also very disappointing. I would, therefore, like to take this

opportunity of appealing to all non-members in the Province to join the Association and help to make it a live concern (Applause).

It is usual for the President on occasions like this to introduce the proceedings with remarks on some appropriate subject and I propose to make a few general observations on Veterinary matters in Madras.

I may say at the outset that the Veterinary Department today has more varied duties to perform than in the past. It has to interest itself not only with the treatment and control of diseases but also with the general improvement of the animals by improved breeding methods, better feeding and management. The study of animals in health and the essentials necessary to keep them healthy is, perhaps, more important than the study of diseased animals and the essentials necessary to cure them. The Veterinary Graduate of today must have a good knowledge of genetics and all it stands for, he must be able to give sound advice on the nutritional requirements and general management of the various species of animals especially the young stock until they reach maturity and he must be capable of investigating on the spot at least some of the problems which are responsible for the under-development and stunted condition of the animals in various parts of the Presidency. This under-development of our animals may be due to climatic conditions, obvious starvation, a deficiency in the diet, protozoa, intestinal parasites, etc., one factor or all combined but the Veterinary Surgeon to appreciate and find out which factor or combination of factors is responsible must have a sound training in Veterinary Science. I merely quote this is as an example to show how essential it is to have a well trained staff if sound solid work is to be turned out. The study of diseases, factors responsible for their appearance and disappearance, the investigation of what I might call hidden diseases, nutritional protozoa, intestinal parasites all call for a sound training and a good general knowledge of Veterinary Science. It has to be remembered that while specific diseases, as for example, Rinderpest, Haemorrhagic Septicaemia, Contagious Caprine Pleuro-pneumonia, to mention a few of the important ones, cause very serious losses—a substantial proportion of the mortality and morbidity of our animals is the result of nutritional deficiencies. This may operate as in gross malnutrition as observed during the dry season or in periods of famine or in a less obvious manner when there may be sufficient food but it is deficient in some essential, a mineral, a vitamin or a trace element predisposing the animal to microbial or helminthic infestation. This for example may be one of the factors responsible for the very prevalent nature of Rinderpest at the present time—the animals being below par as regards their nutritional requirements. In the past we have concentrated more on the specific causes of diseases microbial or helminthic and have based our methods of treatment and control accordingly whereas a considerable

proportion of the mortality from disease has its basis in the under-nourished condition of our animals. This is very true in worm infestation of the alimentary canal and many scientific observers hold the view that the same applies to microbic and virus diseases—in other words that nutritionally deficient animals are more prone to these diseases. This may explain to some extent why there is so much disease present among our stock. Why are our animals so under-nourished? Why is there such a vast difference in the size and type of our animals in the different parts of the Province? In some of the coastal areas and irrigated areas like the West Coast and Tanjore the animals are small while in some of the drier tracts like Coimbatore and Ongole the animals are larger and better developed. Or again in some of the hilly forest areas where there is a good deal of pasture and one would expect to find better developed animals they are usually small and puny. Is it the result of the climate, the soil or disease? These are questions which require investigation throughout the Presidency so that suitable action can be taken to counteract the adverse conditions prevailing. To have work of this kind carried out a highly trained scientific staff is required and it is simply wasting time and money to attempt it otherwise. We have endeavoured as far as possible to provide in the Madras Veterinary College a training suitable for the purpose. I do not intend going into details about the progress made in Veterinary Education in this Province but I should like to say that with the facilities now available for practical work in the hospital, the laboratories attached to the College and the Hosur Cattle Farm where the students spend 3 months the graduate from the Veterinary College, Madras, should compare very favourably with Veterinary Graduates in other parts of the world (Applause). In our enthusiasm however, to prolong the Course and bring the training in the College up-to-date the prospects of the students after graduation did not receive the same attention with the result that admissions to the College decreased considerably resulting in a very serious shortage of Veterinary Graduates becoming available for appointment in the Department. This has now been rectified as the pay and prospects of the Departmental staff have been greatly improved from the 1st April and our thanks in this connection are due to Mr. Ramamurthy who is in charge of the Veterinary portfolio for these benefits (Applause). I sincerely hope that this improvement in pay and prospects will result in more students joining the College. As I have often stated there is no unemployment in the Veterinary profession and not likely to be for many years. In fact there is an acute shortage at the present time and any new schemes initiated mean a further depletion of the District staff. This shortage of staff is very disconcerting as there are so many things which could be done at the present time but which must be put off for want of Technical staff. The war has increased the demand for technical Veterinary staff tremendously both for Civilian and Military needs. The problem is how

can this demand be met. Some say shorten the course which will result in more graduates being turned out in quicker time. I personally do not agree with this view and consider it a short-sighted policy. I think the present training of Veterinary Surgeons should continue, but to meet this increased demand a cheaper agency should be made available such as we have already in Madras. I refer to the training of Stockmen-Compounders. There is a 12 months practical course in vogue now in this College for the training of such men and they will undoubtedly find a place in the general organisation. This year it is proposed to increase the number of admissions from 12 to 30 and next year it can be further increased if the conditions call for such a course being taken.

As many of you are aware, the Department received a big set-back when the Serum Institute was transferred about 2 years ago from Madras to Coimbatore. This Institute had been working for about ten years at Madras and had been gradually developed until at the time of its removal it was an Institute which the Department felt proud of. Its removal at the time seemed a sound procedure as there was a possibility of bombing and even an invasion by the enemy but its working under temporary conditions is a most unsatisfactory arrangement. It is not necessary for me to emphasize the importance of having a first class Institute for the manufacture of biological products in this Province. The bullocks required for agricultural and transport purposes, the cows for milk production, the poultry for their supply of meat and eggs as well as sheep and goats for their production of mutton, all require to be protected against the ravages of contagious diseases which are so rampant in this Province. The products necessary for protecting all these animals against contagious diseases are so essential towards the economy of the Province and the welfare of its people that I consider the creation of a first class Biological Institute of primary importance and I hope that it will be found possible to do so in the near future (Applause).

I am pleased to see by the agenda that you have included some very important and appropriate subjects for discussion. I do not propose to touch on these subjects now but I should like to refer to one subject which is of primary importance especially at the present time. I refer to the production of more milk. As you are aware the production of milk in this Province has always been very low but with the curtailment of imports of processed milk and other dairy products and the influx of more milk consuming people into the Province the milk problem has become very acute. To increase production is a big problem and not easy of solution. I have been asked on many occasions how can the production of milk be increased and my reply has invariably been either to introduce more cows into the area or arrange to have the cows in the area better fed or both. These replies to the problem however are not very

helpful because if you take cows from one area to another you are simply increasing milk in one area at the expense of the other. This perhaps would be alright if there are areas in which milch cows are surplus but the trouble is such areas in the Province are really non-existent. When considering the various practices adopted in connection with the dairying industry in this province, adulteration of milk, starvation of the calves, etc., the fact that the ordinary cow in Madras is a comparatively poor milker is, I am afraid, very often overlooked. The amount of milk given by many cows is barely sufficient to rear the calves and one great danger in endeavouring to meet the present demand for milk and dairy products will be a tendency to neglect still more the young growing stock. The basic cause of the present trouble is that the average Madras cow is unable to feed both the calf and the baby and according to the practice adopted one or other suffers. Have you ever asked yourself how many of our cows are economic producers? How can the professional milkman with cows producing, say 8 to 10 lbs. of milk a day obtain a living wage by the sale of his milk and at the same time feed his calves as we consider they should be fed not to speak of his children. Is it not asking for the impossible?

As I have already said the main cause of the present unsatisfactory condition of the dairy business is the low standard of our cows and our aim should be to remove this cause—in other words improve the milk yielding capacity of the cows. This can only be done by judicious breeding and better management but results must not be expected in a day, a week or a year. There is no magic method; it takes years before appreciable results are obtained.

Why are our cattle on the whole such comparatively poor specimens? The reasons I think may be grouped under four main headings—Genetical, Environmental, Nutritional and Pathological.

Cattle owners, generally speaking, are not very interested in the subject of breeding; no attempt is made to breed from the best; quantity rather than quality is their motto. Why is this apathy present in an agricultural province like Madras? There are many factors responsible but the chief one is bound up with economic coupled with the fear of losing many animals from disease. If the monetary value of an animal is low there is no incentive to improve the type, and in the past, when thousands of animals were wiped out by disease, and nothing could be done to check it, the policy was, and rightly so, quantity rather than quality, as there is nothing more disheartening than to have valuable animals which may have taken years to bring to a high standard killed by some contagious disease. The result was that very little attempt was made to improve the type. The position, however, is changing and I am pleased to say that in many parts of the

Province a lively interest is now being taken in the breeding of better animals.

Under environment I may say that some areas are definitely unsuited for the breeding of certain species of animals. Sheep for example cannot be bred satisfactorily in very wet areas.

Nutritional causes I am afraid are responsible to a very large extent for the under-development of our stock and if any headway is to be made on their improvement, I consider it very essential to have systematic surveys of the various districts and even taluks undertaken which would give a true picture of the chemical characters of the soils and the deficiencies in essential elements prevailing. With the information thus obtained it would be an easy matter to make good the deficiency in the diets of the animals.

We have a certain amount of information about the pathological conditions responsible for the stunted condition of our animals but here again the information is not complete and very much more work on the subject requires to be done.

Can the present organisation deal efficiently with some of the points I have just mentioned? I am afraid not; it requires to be expanded in many directions and two branches of the work I would give priority to are Genetics and Nutrition. Sections dealing with these two subjects are I consider essential in any Animal Husbandry organisation but their creation in the Department will have to wait until after the war as the staffing of them with first class men would give some difficulty—at the present time.

Gentlemen, I have made a few general observations which I think we must keep constantly before our minds if we are to benefit the stock owners in this Province. I have not gone into them in any detail as I think details are better reserved for the discussions which will take place later in the Conference. The agenda before me is a very ambitious one and we shall have to waste no time if we are to get through it in the time at our disposal. With your permission, I shall, therefore, take up no more of your time but before closing I should like to thank you once again for giving me an opportunity to preside on the occasion and now that I am in the Chair, I should personally like to thank Mr. Ramamurthy and all the other guests who so kindly accepted the invitation to be present.

Rao Sahib K. Kylasamier in thanking Mr. Ramamurthy and visitors said:—

It is my pleasant duty as President of the Association to thank Mr. Ramamurthy and other distinguished visitors present here today. Mr. Ramamurthy's presence is a source of great encouragement to the members of the Veterinary profession in this Province for nobody else is better acquainted with their needs and aspirations.

I would, however, crave your indulgence to make a few observations.

It is not sufficiently realised that the many-sided activities of this Department are of utmost importance during the present crisis, for it is difficult to explain otherwise the postponement or even curtailment of the many schemes for the development of the department. The opening of a model dairy farm as an adjunct to the College proposed nearly ten years ago is still held in abeyance. The addition to the number of the District Veterinary Officers is another. In 1929 the designation of the then four circle officers was changed to District Veterinary Officers and the number was increased to twelve, the idea being that each Revenue District will have one such officer by the addition of at least two annually. But, now, how far have we progressed? During these fifteen years, there has been an increase of only four, making a total of sixteen for the Presidency. It is about seven years since the livestock work was transferred to the Veterinary Department. The work of the District Veterinary Officer has increased considerably; yet we are far from the ideal of having one District Veterinary Officer for each district. I have heard it said that the number of Touring Veterinary Assistant Surgeons and institutions has not proportionately increased to stick to the original proposal of increasing the strength of the District Veterinary Officers by two every year. I need hardly point out that such an argument is no longer tenable. The number of Touring Veterinary Assistant Surgeons in a district should not be the criterion for one District Veterinary Officer for each Revenue District. The work of the District Veterinary Officer has become so varied and intense as to cover not only disease control but all aspects of Animal Husbandry which has a direct bearing on War effort. It is difficult to believe that when most of the allied services are allowed ample scope for expansion and increased activities as a war measure, this department which is no less important at this critical period, has been allowed to stagnate. We hear of strenuous efforts being made for increased production of milk and milk products; also working bullocks and plough cattle to bring more land under cultivation. But the Veterinary Department which should play a very prominent part in guiding and advancing these efforts is hardly in evidence. Surely there is something wrong somewhere. It is not yet too late to rectify those matters. And, therefore, I appeal to the authorities concerned, in all earnestness, to formulate their policy and programme of work so as to enable this department to take its rightful place in the scheme of things.

The Secretary of the Association then read messages from the following gentlemen wishing the Conference success:—

Messrs.

1. Abdul Karim Khan.
2. Alagappa Pillai.
3. Alexander E.
4. Ambrose E. J.

Messrs.

5. Anantapadmanabhan T.
6. Anantaraman T. L.
7. Anantanarayana Rao, Rao Sahib M.
8. Aswathanarayanayya U. S.

Messrs.

9. Bertie D'Souza
10. Bhuvvaraha Achari, K. S.
11. Hanumantha Rao M.
12. Janakirama Ayyar V.
13. Krishnaswami Ayyangar M. T.
14. Krishnamurti S.
15. Madhava Rao M.
16. Mahadeva Ayyar A. S.
17. Md. Barkatulla
18. Mantramurti I. D.
19. Margabhandu P.

Messrs.

20. Raghavachari K. V.
21. Ramanarayanan S.
22. Ramaswamy A.
23. Ranganathan K.
24. Sambamurti B.
25. Sivaraman P. N.
26. Sundarachari S. C.
27. Stott H. Major General
28. Sagaram G.
29. Venkatachala Ayyar V. V.

Mr. S. V. Ramamurthy, Mr. T. J. Hurley and other members went round the Exhibition, which had been so kindly arranged by the Principal and Staff of the Madras Veterinary College. There were a number of interesting exhibits of scientific value. A model of a byre, a dipping tank and pictorial representation of Artificial Insemination added interest to the exhibits.

Mr. S. V. Ramamurthy and visitors then left the meeting.

After their departure, the following professional papers were read and discussed with Mr. T. J. Hurley, President, in the chair.

1. Some problems of Bovine Surra—by Mr. S. Vaidyanatha Mudaliar, Lecturer in Parasitology, Madras Veterinary College.
2. Brucellosis Infection in animals and human beings in Madras Presidency—by Mr. G. R. Viswanathan, Veterinary Investigation Officer, Madras.
3. Recent advances in the life history studies of Anoplocephalaine Cestodes—by Mr. M. Anantaraman, Helminthology Research Scholar, Madras Veterinary College.

The Conference then adjourned to meet in the afternoon.

The Conference resumed its sittings at 2-30 P.M. with Mr. K. S. Nair in the Chair and resolved itself into a Subjects Committee to discuss the resolutions to be placed before the General Body next day.

After considering the various resolutions, the Committee adjourned for Tea at 4-30 P.M. after which there was a Cinema Show in the College Hall on 'Hygienic Milk Production, Cattle and Sheep Dipping and Horse-Breeding'.

With this, the first day's session concluded.

Second Day—16-4-44

The Second Day the Conference began at 8 a.m. with the President of the Association (Rao Saheb K. Kylasamier) in the Chair for transacting a business meeting of the Association. The proceedings of this meeting appear elsewhere separately.

At 10 a.m., the Conference resumed its session with Mr. T. J. Hurley as President. The reading and discussion of the following papers then took place :—

1. Avian Leucosis in Madras—by Mr. R. Venkataraman, Asst. Disease Investigation Officer, Poultry, Madras.
1. Perforate Septum Lucidum (Ox)—by Mr. D. Mariappa, Veterinary Asst. Surgeon, Madras Veterinary College on deputation, Medical College, Madras.
3. Artificial Insemination—by Mr. R. Viramani, Glanders and Farcy Inspector, Madras.
4. Some Aspects of Prevention and Control of Rinderpest, Haemorrhagic Septicaemia and Black-Quarter—by Mr. K. S. Nair, Principal, Madras Veterinary College.

The discussions were over by 12-30 p.m., when the Conference adjourned to meet in the afternoon.

The following other papers were taken as read for want of time :—

1. A note on Chronic Luxation of Patella among Bovines with Special Reference to its Etiology—by Mr. M. Ramakrishna Pillai, G.M.V.C., Veterinary Asst. Surgeon, Hosur Cattle Farm.
2. Surra in a Pony—by Mr. A. R. Madhusuthan, G.M.V.C., Veterinary Asst. Surgeon, Namakal.
3. Suggestions for improving our work in the Districts—by Md. Rahimuddin, G.M.V.C., P.G. (Edin.), District Veterinary Officer, Vizag.
4. Post-War Reconstruction-Livestock—by V. Venkataraman, G.M.V.C., Veterinary Asst. Surgeon, Tallakulam.
5. In the Realm of Indian Veterinary Medicine—by Mr. A. Krishnaswami, G.M.V.C., Veterinary Research Officer, Medical College, Madras.

6. A study on the principles of Genetics with regard to parental disposition and the possible potentialities of progenetical inheritance—by Mr. A. Krishnaswamy, G.M.V.C., Veterinary Research Officer, Medical College, Madras.
7. The Role of Livestock in the National Wealth and Public Health—by Mr. V. Venkataraman, G.M.V.C., Veterinary Asst. Surgeon, Tallakulam.

Resuming the sittings at 2-30 p.m., the Conference took up the resolutions for discussions with Mr. T. J. Hurley in the Chair.

At 5-30 p.m., the Members adjourned for Tea.

Reassembling after tea, the Conference considered the following resolutions and passed them :—

1. *That in the opinion of this Conference it is essential that the Madras Serum Institute be brought back to Madras from Coimbatore and for this purpose a first class Institute be built immediately.*

*Expl. Note :—*The Veterinary Department in Madras has been successful to a great extent in keeping under control the various contagious diseases of animals, since it had an efficient Serum Institute in Madras, which manufactured and supplied sufficient quantities of Biological Products essential for the combating of these diseases. At the present moment, this Institute is functioning under uncongenial surroundings in a cramped situation at Coimbatore, to which place it was shifted during the scare of 1942. Consequently its work is seriously handicapped and it is not able to meet the demands for Biological Products. It cannot be too strongly emphasised that, unless the contagious diseases which carry away thousands of animals year after year are prevented and controlled by adequate and timely prophylactic measures, the available supply of dairy stock and other animals will soon go down. The Serum Institute is intended to produce and supply the necessary Biological products to check the ravages of contagious diseases and therefore it has now become imperative to bring it back to Madras immediately.

2. *That this Conference views with grave concern the alarming increase in the price of cattle foodstuffs and requests the Government to take immediate steps to ensure the regular supply of these articles at reasonable rates, as otherwise, it will seriously affect the animal welfare of the Province.*

*Expl. Note :—*The chief articles of foodstuffs for animals are (1) Straw, (2) Wheat Bran, (3) Oil Cakes, (4) Pottu (Bengal Gram Husk), (5) Kumbu (a special feature in cattle feeding in Madras), (6) Kulthi or Horse Gram.

The prices of these articles have, during the past 3 years, gone up very high at an alarmingly increasing rate, as will be clear from the comparative statement given below :—

	1941	1944
1. Straw ...	Rs. 12-0-0 per cart load	Rs. 40-0-0 per cart load
2. Wheat Bran ...	Rs. 4-14-0 per 140 lbs.	Rs. 15-8-0 per 140 lbs.
3. Oil Cakes ...	8 to 10 Viss per Rupee	2½ to 2½ Viss per Rupee
4. Pottu (Bengal Gram Husk) ...	30 ms. per Rupee	8 ms. per Rupee
5. Kumbu ...	8 to 10 ms. per Rupee	1½ ms. per Rupee
6. Kulthi or Horse Gram ...	8 to 10 ms. Rupee	1½ ms. per Rupee

Consequently, the maintenance of cows and draught animals has become very costly and uneconomic. Further, the supply of these articles in good quality and in adequate quantities is very uncertain—some of them often disappear from the market; at other times, their quality is very unsatisfactory. These factors interfere with the proper and correct method of feeding animals and their maintenance in a state of health. Lowered milk yield, disordered digestion and steady loss of general condition are the results of improper and insufficient feeding and many a good animal is ruined in this way. And, therefore, in the interest of animals and their welfare, it is essential that, regular supply of foodstuffs for them is made available at reasonable rates and of good quality.

3. *That in view of the paucity of approved breeding bulls and lack of private breeders this Conference is of opinion that Government should establish livestock breeding farms in each district.*

*Expl. Note :—*In all attempts at improving the livestock of the country, great attention has to be paid to the "Sires", that are used for breeding purposes, because, as is well-known, 'the Bull is half the herd'. Approved bulls of the requisite type and standard are not readily available to meet the enormous requirements of this Province, which is nearly 50,000. Further, each District has got its own distinctive features with regard to the cattle population and therefore the work of livestock improvement by selective breeding and grading up can be speeded up only by the opening up of Breeding Farms in each District. Facilities for the opening up of such Farms do exist in Districts and it will be easy for the Government to select such suitable sites with water and grazing conveniences. These farms will also act as Demonstration centres where the ryots can see for themselves the effects of careful breeding in the course of a few years.

4. *That it is the consensus of opinion that there is no further need for having two courses of studies at the Madras Veterinary College viz., Diploma and Degree, and that the Diploma course be abolished forthwith.*

*Expl. Note :—*This subject has been discussed at length during the last few years and it is the unanimous opinion of the profession that there is no need for two courses of study at the Madras Veterinary College. The Degree can be taken up only after obtaining the Diploma and, as both the courses are run together, it is a great strain on the students to sit for two examinations every year. The Diploma course is not popular, as will be seen from the admissions, where the majority of students seek only the Degree course. Further, the two courses of study have contributed to the creation of caste distinctions in the profession, which is a very unfortunate thing. As such the Conference is of opinion that the Diploma course should be abolished immediately.

5. *That in the considered opinion of this Conference it has become imperative to have one District Veterinary Officer for each Revenue District so that the stock development work and control of diseases, which should go hand in hand, may be effectively carried out.*

*Expl. Note :—*The work of the District Veterinary Officer whose jurisdiction is ordinarily over two Districts has considerably increased during the last decade. In the beginning, his duties lay chiefly in effectively combating outbreaks of contagious diseases and he was confining his activities only to disease problems of animals, both on the curative and prophylactic side. But, now with the transfer of livestock section to the Veterinary Department, his work has become very varied and extensive. He has now not only disease control to attend to but also the various problems of Animal Husbandry. Cattle breeding, sheep rearing, poultry management, fodder problems, feeding and management of livestock and other matters pertaining to Animal Husbandry are now his added concern. Local conditions are to be studied very closely for a correct appreciation of the needs of each locality. For all these duties a small jurisdiction is necessary as otherwise it will not be possible for him to do full justice to his charge.

It is said that the number of Touring Veterinary Assistant Surgeons and institutions has not considerably increased during the last few years to justify a proportionate increase in the strength of the District Veterinary Officers. This argument is not tenable now because, as mentioned above, the work of the District Veterinary Officers has become far too varied and wide. The Conference is therefore of opinion that each District must have at least one District Veterinary Officer.

6. *That this Conference notes with regret that, in spite of repeated representations the Veterinary Assistant Surgeons are the most competent persons for the inspection of Meat and Slaughter Houses, Hackney Horses and Ponies, their services are still not fully utilised for these purposes and requests the Government to make it obligatory on the authorities concerned to utilise the services of these officers for the above mentioned purposes.*

*Expl. Note :—*This resolution has become necessary because there are still some Municipalities and Local Bodies in the Presidency which do not utilise the services of qualified Veterinary Surgeons, even where they are available, for the inspection of meat intended for human consumption. It is therefore desirable in the interest of Public Health, that the inspection of Meat and Slaughter Houses by qualified Veterinary Surgeons is made obligatory on the part of these Local Bodies.

As regards the inspection of Hackney Horses and Ponies by qualified Veterinary Surgeons before licensing, it is regrettable to note that this is seldom done, even in big Cities, although it is obvious that such an inspection is essential, not only on humanitarian grounds but also in the interests of the general public. It must therefore be made obligatory that the licensing of these animals should be only on production of a 'Certificate of Fitness for work' from a qualified Veterinary Surgeon.

7. *That this Conference feels confident that the recruitment to the Emergency Commission in the I.A.V.C., can be speeded up and the scope for selecting the best candidates increased by considering all Graduates of Indian Veterinary Colleges eligible for such recruitment, instead of restricting the field of selection to only a limited number of Veterinary Graduates as at present.*

*Expl. Note :—*The Military Authorities have now been pleased to grant Emergency Commission to the Graduates of Madras Veterinary College, provided they are (1) Diploma holders after a study of 4 years or (2) a B.V. Sc. degree holder after a study of 5 years. This announcement has been greeted by one and all as a great advance in the recognition of Veterinary Education imparted in this College. At the same time the Conference feels that the field of selection should not have been so very restricted. There are Graduates and Degree holders of this College whose period of education had not extended to the period stipulated by the Military Authorities; because, at that time, the course of studies at the Madras Veterinary College did not extend to the period now stipulated. And therefore the Conference feels that the Military Authorities may advantageously increase their field of selection without any sacrifice to efficiency. The Conference also feels it necessary to bring it to the notice

of the Military Authorities that, in the adjacent colony of Ceylon, Emergency Commission is given to Diploma holders of Veterinary Colleges in India where the course of study does not extend to 4 or 5 years.

8. *That this Conference resolves that steps be taken to compile a Register of Veterinary Surgeons for all India and as a preliminary, commence with a Provincial Register.*
9. *That this Conference, while placing on record its grateful appreciation of the recent revision of the pay of the services, would request the Government to be so good as to fix the salaries in the revised scales of pay of the Veterinary Assistant Surgeons already in service, both in the Government and Local Bodies, taking into consideration the number of years of services they have already put in, as was done on previous occasions.*

*Expl. Note ;—*The Government has been pleased to sanction a revised scale of pay from 1-4-44 for the subordinates of the Civil Veterinary Department. The scale of pay is as follows :—Grade 11 :—75-7/2-105-15/2-150. Grade 1 :—155-15/2-200. The Government has also ordered that the fixation of pay in the revised scale should be according to Fundamental Rule 22-a-ii in the case of men already in service. This provision takes away the good effects of the order as it will not benefit a good number of Veterinary Assistant Surgeons, at least for a few years to come. For example :—Many of the senior Veterinary Assistant Surgeons have reached the first grade after years of stagnation on Rs. 120/-, which was the maximum pay of the second grade in the pre-revised scale, and they are now very near the end of their service. These officers will not be benefited by the revised scale of pay for another two years if their pay is fixed under Fundamental Rule 22-a-ii.

Again, a Veterinary Assistant Surgeon in the pre-revised scale after putting in a service of nearly 9 years would be drawing a pay of Rs. 88/- per mensem. By the application of Fundamental Rule 22-a-ii, his pay in the revised scale would not be affected for another 2 years. He will only draw a pay of Rs. 82/8/- plus a sum of Rs. 5/8/- as personal pay which will merge later on in his future increments. On the other hand, a new entrant would draw the same pay of Rs. 82/8 after a couple of years of service.

Still again, a new entrant to the service will draw a pay of Rs. 75/- on the date of entertainment, whereas a Veterinary Assistant Surgeon already in service in the pre-revised scale would have put in anything up to 6 years of service and still would draw the same amount of Rs. 75/-

The Conference feels that these anomalies are not just and fair to the men in service who have put in years of hard work in the Department. As the Government is well aware, the subordinates, of this Department have

been petitioning the Government for over two decades for better pay and prospects. Their petitions have not borne fruit to any substantial effect. Their sufferings have continued without much relief and therefore the Conference requests the Government to take note of this continued suffering of the subordinates in all attempts at improving their pay and prospects. With this object in view the Conference requests the Government to be so good as to fix the salaries of the Veterinary Assistant Surgeons already in service (1st and 2nd grade) taking into consideration the number of years they have already put in each grade, and not under Fundamental Rule 22-a-ii. This request does not involve any new departure in Government procedure. The Government have on previous occasions been pleased to fix the scale in the revised scale of pay taking the past years of service of the officers into consideration. And therefore the Conference prays the Government will be pleased to adopt the same procedure now also and so remove the great discontentment and suffering of the subordinates of the Civil Veterinary Department.

10. *Now that the maximum pay of the Selection Grade in the subordinate service is the minimum of the gazetted rank, the Conference requests the Government that Officers drawing the maximum in the Selection Grade be given at least one increment on promotion to Gazetted rank.*
11. *That this Conference authorises the Secretary of the Association to communicate the above resolutions to the concerned authorities.*

The President in his concluding remarks said that the Conference has been a great success. The last Provincial Conference being held in 1935 and the present one in 1944 leaves an interval of 9 years which is rather disappointing. I appeal to you to rectify this so that the Conference is held every year in future. I should like to take this opportunity of stressing the importance of recording your observations on professional matters and then writing articles for the *Indian Veterinary Journal*. You have ample opportunities of seeing interesting cases every day about which articles can be written. I would therefore appeal to you to do your utmost in this direction. I would also appeal to the District Veterinary Officers to concentrate on this line of work and help and guide the staff in preparing these articles. The *Indian Veterinary Journal* with its Editor Mr. P. Srinivasa Rao has been doing good work and deserves every support from one and all of us.

I should also like to appeal for increased membership of the Association. It is highly desirable that all of you should become members so that the organisation may function satisfactorily.

I find that most of the professional papers read yesterday and today were confined to purely veterinary matters. As 50 per cent. of our work now is confined to livestock improvement work, I hope that in future conferences many more papers on that subject will be read.

The President concluded his remarks by thanking one and all.

Rao Sahib K. Kylasamier thanked the President for accepting the Presidentship and apologised to him for making him overworked. He has been putting up with our shortcomings in our discussions. He has been very enthusiastic as you know already and he has made an excellent President of the Conference in Madras. I do not think we could have had a more conscientious and more painstaking and more sympathetic officer to preside over this conference and on behalf of the Association and on behalf of you all I wish to tender our heartfelt thanks to him for coming and presiding on the occasion.

I should also like to thank the Delegates who have come at great sacrifice to attend this session. I hope the remarks of the President regarding the livestock work would be borne in mind.

My thanks are also due to the Principal of the Veterinary College (Mr. K. S. Nair) for his hearty co-operation and facilities afforded to us, to the students of the college who have functioned as volunteers and lastly to the Secretary, Mr. R. Swaminatha Ayyar who has put in a good deal of unostentatious work. The Association is really fortunate in having him as the secretary.

On behalf of the Delegates, Mr. V. Venkataraman from Madura proposed a hearty vote of thanks to the Reception Committee and volunteers for the excellent arrangements made for their boarding and lodging.

The Conference concluded with three cheers to the President.

R. SWAMINATHAN

Secretary,

A. I. V. A. (Madras Branch).

**Proceedings of the Annual General Body Meeting of the A.I.V.A.,
Madras Branch, held at the Madras Veterinary College
(Central Hall) on 16-4-44 at 8-30 A. M.**

Members present :—

Messrs.

1. Kailasam Ayyar, Rao Sahib K,
President, in the Chair.
2. Aboobacker, K.
3. Azizuddin, I. M.
4. Balasundara Doss, V. J.
5. Baradwajan, C.

Messrs.

6. Chandrasekharan, K. P.
7. Choluva Ayyangar, Rao Sahib H.N.
8. Duraiswamy, K. P.
9. Frank, D. Wilson
10. Ganapathy, M. S.
11. Govindaraja Ayyar, V.

Messrs.	Messrs.
12. Gurumurthy, V.	35. Sastry, M. S.
13. Hanumantha Rao, B.	36. Satyanarayana, K. V.
14. Hanumantha Rao, O.	37. Seshadri Ayyangar, S.
15. Hariprasada Sarma, B.	38. Souri Rajan, R.
16. John, C. I.	39. Srinivasa Rao, Pangal.
17. Kadambavanasundaram, P.	40. Srinivasan, G. S.
18. Krishnamurthy, D.	41. Subrahmanya Sastri, M. R.
19. Krishna Rao, M. V.	42. Subbarama Rao, V.
20. Madhava Menon, P.	43. Subbarayalu, P.
21. Mallikarjuna Rao, K. V.	44. Swaminathan, R.
22. Mangrulkar, M. Y.	45. Thillanayagam P. M.
23. Mariappa, D.	46. Thulasiram Singh, E.
24. Nagarajan, E. R.	47. Umapati Rao, M.
25. Nair, K. S.	48. Vaithyanatha Mudaliyar, S.
26. Nair, M. K. V.	49. Vaidyanadhan, S. N.
27. Narasinga Rao, R.	50. Velayudhan Nayar, C. K.
28. Padmanabhan, C. V.	51. Venkateswara Rao, C.
29. Parameswara Ayyar, L. S.	52. Venkatrama Ayyar, S.
30. Purushothaman, K.	53. Venkatraman, R.
31. Ramaswamy, S.	54. Venkatraman, V.
32. Rangaswamy, H. R.	55. Vinayaka Mudaliyar, T.
33. Rangaswamy Ayyar, M. A.	56. Viramani Iyer, R.
34. Sankaranarayanan, M. V.	57. Viswanathan, G. R.

The Secretary presented the following report of the Managing Committee together with a statement of account:—

This report covers the period from 29th January 1942 to 16th April 1944.

Membership: The number of members on the roll on the 1st January 1942 was 100. As the arrears of subscription were very high, the Managing Committee, subject to the approval of the General Body, decided to write off all the arrears of subscription that had accrued till the end of 1941, reduced the subscription from Rs. 2/- to Re. 1/- per annum and also introduced a life membership on a lump sum payment of Rs. 10/-. At present, the number of members is 101.

Meetings: The Managing Committee met fourteen times during this period. It arranged for a Conference in December 1942 but could not hold it for reasons beyond its control.

Activities: To perpetuate the memory of the late Mr. M. R. V. Panikkar, the Principal of the Madras Veterinary College, the Association decided to award a prize or a medal to the best out-going graduate of the College, and in pursuance of that decision, inaugurated a Panikkar Memorial Fund. The total amount of subscriptions to this Fund stands to-day at Rs. 925-2-0 which includes two lump sums of Rs. 100/- each, one from the

mother of the late Mr. Panikkar and the other from the Madras Race Club. In addition to this, there is a War Prize Bond for Rs. 10/- kindly given by Mr. Cheah Phee Phay—an old student of the Madras Veterinary College and at present a war stranded V. A. S. from Malaya. The collections so far made are satisfactory and it is hoped that the target figure of Rs. 1000/- would soon be reached. Our thanks go out to one and all of the subscribers.

The Association presented a portrait of the late Mr. M. R. V. Panikkar to the College.

In January 1943, a tea party was given to Mr. F. Ware, the Animal Husbandry Commissioner with the Government of India. It gave an opportunity to the members of the profession in Madras to meet their old chief on the eve of his retirement.

On 6th October 1943, Dr. Tunnicliff, Specialist in Veterinary Pathology, U. S. A., gave an informal talk to the members of the profession.

Dr. R. L. Kaura and Dr. R. M. N. Naidu delivered lectures under the auspices of this Association, the former on "Sheep Breeding" and the latter on "Fowl leukosis."

The statement of Receipts and Charges of the Treasurer is appended below.

Receipts			Charges		
By Opening Balance	Rs.	317 8 4	To Postage	Rs.	17 3 6
„ Interest		13 4 8	„ Entertainment charges		121 2 3
„ Subscriptions		155 0 0	„ Expenses in connection		
„ Panikkar Memorial Fund		925 2 0	with Panikkar Memo-		
„ Subscription to the 1944			rial Fund		44 8 0
Conference		400 0 0	„ Printing		3 12 0
			„ Miscellaneous Expenses		6 7 0
			„ Balance on hand and in		
			the Savings Bank.		1556 1 3
Total Rs.		1810 15 0	Total Rs.		1810 15 0

R. SWAMINATHAN
Lecturer, Madras Veterinary College

Mr. K. S. Nair moved the adoption of the report.

Mr. K. Mallikarjuna Rao seconded it and it was carried unanimously.

The following amendments to the rules and bye-laws of the Association that had been recommended by the Managing Committee were unanimously adopted:—

1. Writing off the arrears that had accrued till the end of 1941.
2. Reduction of subscription to Re. 1 per annum.
3. Introduction of a Life Membership on payment of Rs. 10.

The President said that a suggestion had been made to him about the advisability of changing the name of the Association. A discussion ensued in which Messrs. M. S. Sastry, L. S. Parameswara Ayyar, K. S. Nair, P. Kadambavanasundaram and others took part. Finally it was decided to retain the *status quo*.

The President moved a resolution fixing the quorum for a General Body meeting at 20 and this was carried unanimously.

The election of the President and the Managing Committee then took place.

Mr. S. Seshadri Iyengar proposed Rao Sahib K. Kylasamier to be the President, Mr. V. Venkataraman seconded it and it was carried with acclamation.

The following members were elected to the Managing Committee :—

- | | |
|-------------------------------|-----------------------------------|
| 1. Mr. K. S. Nair, | 11. Mr. V. Gurumurti, |
| 2. „ M. Y. Mangrulkar, | 12. „ P. Srinivasa Rao |
| 3. „ S. Vaidyanatha Mudaliar, | 13. „ G. R. Viswanathan, |
| 4. „ T. Vinayaka Mudaliyar, | 14. „ M. S. Sastry, |
| 5. „ Md. Azizuddin, | 15. „ P. Kadambavanasundaram, |
| 6. „ V. J. Balasundara Doss, | 16. „ S. N. Vaidyanathan |
| 7. „ L. S. Parameswara Ayyar, | 17. „ C. V. Padmanabhan, |
| 8. „ P. M. Thillanayagam, | 18. „ Rao Sahib M. Anantanarayana |
| 9. „ E. J. Ambrose, | Rao, |
| 10. „ R. Swaminathan, | 19. „ L. A. Sarma. |

With a vote of thanks to the Chair, the meeting terminated.

PANIKKAR MEMORIAL FUND

List of Subscription from 6-3-44 to 1-5-44

(Continued from page 274, March 1944 issue of I.V.J.)

	Rs.	A.	P.
Brought Forward	809	0	0
Mrs. B. V. Chalapathi Rao	1	0	0
„ R. Nilakantan	2	0	0
„ B. H. Sarma	3	0	0
„ Ratnavule, K.	5	0	0
„ Madras Race Club	100	0	0
„ T. Vinayaka Mudaliar	5	0	0
„ H. R. Rangaswami	5	0	0
„ P. Subbarayulu	5	0	0
„ M. V. Krishna Rao	5	0	0
„ M. K. V. Nair	5	0	0
„ M. S. Sastry	2	0	0
Rs.	947	2	0

College News

GOVERNMENT OF BENGAL

Bengal Veterinary College

The undermentioned students have passed in order of merit the Diploma Examination of the Bengal Veterinary College for the session 1943-44.

No. in order of merit	Name	Place of origin	Passed with distinction in
1	2	3	4
1	* M. P. C. Rao	Hyderabad	(a) Veterinary Surgery and Obstetrics; (b) Parasitology and Meat Inspection (c) Soundness, Ageing and Pathological Shoeing.
2	* V. D. Sharma	United Provinces	(a) Veterinary & Preventive Medicine (b) Parasitology and Meat Inspection (c) Soundness, Ageing and Pathological Shoeing
3	* R. K. Lahiri	Bengal	(a) Parasitology and Meat Inspection
4	* A. H. Khan	Hyderabad	(a) Milk Hygiene including Milk Inspection (b) Soundness, Ageing and Pathological Shoeing
5	* J. P. Singh	United Provinces	(a) Soundness, Ageing and Pathological Shoeing
6	* V. D. Sadekar	Hyderabad	(a) Parasitology and Meat Inspection
7	R. Srivastava	United Provinces	
8	R. N. Singh	do	
9	* P. K. Sinha	Bengal	(a) Soundness, Ageing and Pathological Shoeing
10	* K. D. Pandey	United Provinces	(a) Soundness, Ageing and Pathological Shoeing
11	R. S. Singh	do	
12	* Md. Kasem Ali	Bengal	(a) Soundness, Ageing and Pathological Shoeing
13	* Md. A. Ali	Bengal	(a) Soundness, Ageing and Pathological Shoeing
14	A.M. Chowdhury	Assam	

No. in order of merit	Name	Place of origin	Passed with distinction in
1	2	3	4
15	* Md. S. Ali	Assam	(a) Soundness, Ageing and Pathological Shoeing
16	N. K. Das	Bengal	
17	U. C. Brahma	Assam	
18	M. A. Hamid	Bengal	
19	A. S. Ahmed	Bengal	
20	S. N. Chatterjee	Bengal	
21	R. C. Namasudra	Assam	

A. LATIEFF, B.H.V.S.,
Principal, Bengal Veterinary College.

Belgachia, Calcutta, 27th March 1944.

BIHAR VETERINARY COLLEGE, PATNA

The following students are declared to have passed the Diploma Annual Examination for the session 1943-44 held in March and April, 1944:—

- | | |
|-------------------------|----------------------|
| 1. N. B. Saxena | 21. G. C. Mukherji |
| 2. Bharat Sinha | 22. R. B. P. Sinha |
| 3. N. S. Chauhan | 23. G. S. Verma |
| 4. D. A. H. Khan | 24. R. S. Pawat |
| 5. J. Prusty | 25. R. T. Singh |
| 6. Md. Mahboob Ali Khan | 26. O. S. Srivastava |
| 7. K. N. Srivastava | 27. D. S. Srivastava |
| 8. K. N. Tewary | 28. M. A. Khan |
| 9. J. N. Panda | 29. Abdul Qoodos |
| 10. B. N. Roy | 30. D. B. Singh |
| 11. Md. Azhar Hussain | 31. S. S. Singh |
| 12. R. L. Mehrotra | 32. Sidheshwar Sinha |
| 13. Anirudh Singh | 33. S. P. Singh |
| 14. I. P. Joshi | 34. S. A. H. Rizvi |
| 15. R. N. Juyal | 35. S. A. Hussain |
| 16. Z. M. Khan | 36. M. Malihuddin |
| 17. G. S. Rawat | 37. G. A. Dattatraya |
| 18. Lakshmi Narayin | 38. K. M. Prasad |
| 19. V. N. Sahay | 39. R. P. Sinha |
| 20. R. K. Roy | |

Patna, }
27th April, 1944.

P. G. MALKANI, B.A., B.SC., M.R.C.V.S.,
Principal,
Bihar Veterinary College.

BOMBAY VETERINARY COLLEGE

List of successful candidates at the Diploma examination of the Bombay Veterinary College:—

OLD CURRICULUM

1. M. S. Vaidya
2. A. M. Kazi
3. A. G. Shende
4. B. D. Desai
5. M. S. Mehta
6. S. I. I. Nagamia
7. H. R. Iraddi
8. L. D. Chaudhary
9. J. T. Shukla

NEW CURRICULUM

1. C. V. Kannan
2. L. N. Nakhasi
3. L. S. Hiregoudar
4. M. Y. Bhatavdekar
5. T. N. Koul
6. G. M. Cheppu
7. A. H. Bijani

Parel, Bombay, }
12th April 1944.

M. MOHEYDEEN, M.R.C.V.S., J.P.,
Principal,
Bombay Veterinary College.

MADRAS VETERINARY COLLEGE

Results of the Final Diploma Examination held in March 1944

- | | |
|------------------------------|---------------------------|
| 1. Abdullakan, C. K. | 12. Satyanarayana Rao, K. |
| 2. Basheer Ahmed Shirazi | 13. Sivadasan, C. G. |
| 3. Chalapathi Rao, M. V. | 14. Sundaram, S. |
| 4. Chandran, K. | 15. Unnikrishnan, V. |
| 5. Krishnamurti Vasanth, J. | 16. Venkatachalam, M. |
| 6. Narayana Rao, P. L. | 17. Venkatasubba Rao, D. |
| 7. Narayanaswami, S. | 18. Abdul Majid Khan, W. |
| 8. Nilakantan, P. R. | 19. Maduranayagam, P. V. |
| 9. Ramamurti, V. P. | 20. Ramachandran, A. |
| 10. Ramakrishnananda Rao, U. | 21. Ramanathan, C. |
| 11. Rathnasabapathy, V. | 22. Md. Ramzan, K. |

Madras, }
1—5—1944.

K. S. NAYAR, G.B.V.C., M.R.C.V.S., D.T.V.M.,
Principal,
Madras Veterinary College.

BIHAR VETERINARY COLLEGE, PATNA

NOTICE

The next session of the Bihar Veterinary College will commence from 1st July, 1944.

1. Candidates desiring admission should submit their application on the prescribed forms together with the following certificates, so as to reach the Principal on or before the 1st June, 1944. The certificates will not be returned.

(a) Age and moral character certificate from the Head Master of the School or Principal of the College which he last attended (true copy).

(b) University certificate or a certificate from the school or University authorities to show that he has passed the Matriculation Examination (true copy).

(c) Medical certificate of fitness from an Assistant Surgeon.

(d) Certificate from a Gazetted Officer to the effect that he is a Bihari or domiciled in Bihar (applies to candidates claiming Bihar domicile).

(e) Letter of identification from some well-known person stating that the candidate is known to him and the statements made in the application form are correct (in original).

(f) Letter from his guardian stating that all expenses incurred by his ward during the latter's period of study at the College will be paid (in original).

2. An applicant must be a Matriculate of a recognised University. Preference will be given to a candidate who has passed the I. A. or I.Sc. Examination. A good knowledge of English is essential. Height should not be under 5'-4" and chest unexpanded, not less than 30". A candidate must not be below 16 and over 25 years of age on the 1st July, 1944.

3. A non-stipendiary candidate will have to appear before the Governing Body of the College when called for interview.

4. Fees must be paid in advance according to the scale under rule 8 of the College rules, the initial payment due at the time of admission being Rs. 35-8 only.

5. A candidate on admission may be required to reside in the College hostel.

6. Admission forms may be had free on application to the Principal. Prospectus will be supplied on receipt of *As. 4 by money order*, for each copy required. Stamps sent in lieu of money will not be accepted.

7. *For candidates from the Province of Bihar only*—A candidate for a District Board stipend to assist him while under training at the College should apply in the first instance to the Chairman of his home District Board, with necessary certificates as soon as possible so that when selected he may be interviewed and approved by the Director of Veterinary Services, Bihar, before he is recommended for admission. Such a candidate should in addition to the certificates required in para 1, produce at the time of admission a letter from the Director of Veterinary Services, Bihar, or the Chairman, District Board, concerned regarding his selection as a Stipendiary.

8. *For candidates from Provinces other than Bihar and from Indian States*—A candidate from other Provinces and Indian States should apply to the head of the Veterinary Department of his Province or State for reservation of a seat for him, on payment of an annual contribution by the Government of his Province or State. Applications received direct from such candidates will not be considered.

9. The scale of pay of the Bihar Veterinary Service is as follows:—

Provincial	...	Rs. 200-20/2-220-30/2-280-20/2-400.
Subordinate	...	(a) Veterinary Inspectors.—1st Grade Rs. 170
	do	2nd Grade Rs. 135
	do	3rd Grade Rs. 100
		(b) Veterinary Assistant Surgeon Rs. 50/-
		to 100/-

(Fixed travelling allowance. Free house or house allowance in lieu thereof)

Note:—Revision of the above scale of pay is under the consideration of Government.

10. No post card will be attended to. A stamped addressed envelope must be enclosed for replies to queries etc.

Patna, }
10th April, 1944 }

Principal,
Bihar Veterinary College.

Announcement

INDIAN ARMY VETERINARY CORPS

A further list of Veterinary Assistant Surgeons employed as V.C.Os. in the I.A.V.C.:—

Open Market			
1. Regtl.	No. V/313	Jemadar	C. D. Watkins
2. "	No. V/314	Ris. : II	M. R. Krishnaswami
Civil Veterinary Assistant Surgeons			
Serial No.	Regtl. No.	Rank	Name
1.	5037	Jemadar	Razi-ur-Rehman
2.	5038	"	R. V. Nair
3.	5039	Ris/Class III	Autar Singh
4.	5040	"	P. Mukerjee
Ambala Cantt. }		O. C., I. A. V. C. CENTRE,	
15-4-44 }		(Record Office)	

IMPERIAL DAIRY RESEARCH INSTITUTE, BANGALORE

The Government of India have sanctioned a scheme for the Imperial Dairy Department by which the Imperial Dairy Research Institute at Bangalore will be taking two honorary research workers from July 1944 for carrying out advanced research work for a period of one year. The problems for research will be confined to those bearing on the Chemistry and Bacteriology of milk and milk products, technology of milk processing and manufacture of milk products and Cattle Husbandry and coming within the purview of the present activities of the Institute. The workers will be exempt from payment of any fees but subject to the other conditions and rules of discipline prescribed at the Institute. They will also have to make their own arrangements for boarding and lodging. The candidates will have the facilities of doing post-graduate work for the M.Sc. and Ph.D. degrees of the Bombay University and other Universities by whom the Institute has been recognised as a suitable centre for the purpose. Intending candidates, who are Graduates of Indian or European Universities, and preferably with First Class M.Sc. or B.Sc. Honours qualifications may apply to the Director of Dairy Research, Bangalore, at an early date giving full particulars of their age, qualifications, research experience, nature of problem desired to be studied, etc., etc.

Extracts

DAIRY RESEARCH IN INDIA

Bangalore, April 18, 1944

During the last three years since its inception, the Imperial Dairy Research Institute at Bangalore has been engaged in a number of important investigations which are of value not only in the immediate war period but which are also likely to be of great use for the development of dairying in the post-war period. Some of the simple processes evolved are of immediate importance in this war period and are likely to be made available to the industrialists and the public in general.

A simple method of preparing both sweetened and unsweetened evaporated milk has been evolved with an equipment not involving complicated machinery, easy to handle under village conditions. A simple process for producing milk sugar, which is used in large quantities by the manufacturing pharmacists as a sweetener, diluent and whole, in the preparation of medicines in tablet form from whey, a bye-product in the manufacture of cheese, channa or acid casein, has been evolved. With a view to conserving skimmed milk from the standpoint of increasing the food resources

of the country, a simple method for the production of nutrition casein, and which combines the advantage of unlimited keeping quality, has been evolved with success.

A simple method of testing fat in milk, dispensing with the use of a centrifuge, has been evolved and perfected with a simple equipment specially designed to make it adaptable under village conditions.

A suitable use of ghee residue and waste product available in large quantities in India to-day derived from the ghee refining centres, as a concentrate feed for cattle has been perfected after conducting long-range feeding trials.

A new type of colour made out of a forest product easily obtained in this country has been evolved. Its speciality is that it can be used for both butter and cheese-making, whereas the present commercial colour obtainable in the market is either for butter-making or for cheese-making.

A number of the above processes is about to be handed over to the industrialists for their further commercial exploitation.—F.O.C.

Hindu, April 25, 1944.

ANIMAL HEALTH: THE FUTURE OF VETERINARY PRACTICE

It is significant of the re-orientation of view now taking place in the public mind regarding the importance of the veterinary profession in the national health and economy that comments on the future of veterinary practice are appearing in novel quarters. For the most part practical and well considered, they are thus to be welcomed, and among them that to which *The Estate Magazine* devotes the first article (by Mr. W. E. Barber) in its January issue is worthy of note.

There are (he writes) many professions and industries which will find themselves at the end of this war called upon to take a completely new view of their opportunities and public responsibilities.

At the moment we think most urgently perhaps of the immediate task facing the building industries and the architectural and allied professions. Their opportunities for service to the nation in the post-war period need no underlining. The same is true not only of the agricultural industry (if it be given its chance) but of the skilled professional men whose job it is to design machinery and to continue to develop our modern knowledge of cultivations, fertilisers and seeds.

It is true above all of those whose knowledge and skill will be increasingly required in supervising the health and treating the ailments of our animal population and in giving advice regarding their breeding and physical welfare. The turn which war-time agriculture has taken though it is based on an immediate expansion of cereal crops, is bound to lead in the long run to an increase in the importance of our herds, and the policy which makes national nutrition the criterion of farming practice has already put them well in the forefront. This new emphasis makes more glaring and regrettable our past and present mishandling of the problems both of animal breeding and disease. A month or so ago this country was

visited by a number of well-known American farmers who came to see our war-time farming effort and to take back news of it to their colleagues in the States. It is no secret that they were profoundly shocked by our negligent treatment of the problems of animal husbandry. The latest figures available with regard to prevalence of disease and the provision of facilities for its treatment and eradication are indeed disturbing. (Here follows an admirable summary of the addresses by the past President and others speaking at the 1943 Congress N. V. M. A.). Something must be said, the article proceeds, in discussing the future of the problem (common to the whole of the medical world) of the "State Service." There has always been a tendency in this country to imagine the veterinary practitioner as an infrequent and not always efficient consultant on the health of domestic pets. Some people know that race horses of great value have their own medical attendants whose photographs occasionally appear in the newspapers in company with those of their charges. But here the townsman's knowledge ends. The veterinary surgeon is still unfortunately tied too much to the occasional care of individual animals. But it should be clear by this time that looked at from the point of view of the nation the importance of the animal group eclipses that of the individual. The task of the veterinary profession is concerned with the herd or flock rather than with the single animal, and it is in this sense that Dr. Wooldridge's statement that "the veterinary practitioner is the physician of the farm and the guarantor of the nation's food supply" should be interpreted. Curative medicine, although invaluable in cases of highly prized individual animals, and although giving greater opportunities to the physician or surgeon, is relatively unimportant. The chief medical justification for the existence of the profession is its ability to improve animal health and control their diseases in the mass. In dealing with large scale problems of this kind the State would obviously take a hand, and (without expressing any view as to the expediency of universal state control in medicine) it should be pointed out that the State Veterinary service which was set up with enlarged functions and personnel by the Agriculture Act of 1937 is obviously bound to grow. Its objects are at present to organise, guide, and control veterinary effort and not to supersede it. This service, which comprises about 340 whole-time and just under 900 part-time veterinary officers is bound greatly to extend its programme for the improvement of animal health, a fact which has given rise to a considerable apprehension among practitioners, despite the assurance of the Minister of Agriculture that the whole-time service will not develop to the detriment of the private practitioner. The need for such a reassurance, and the hope of general co-operation among the profession which it gives, must be generally obvious.

*

*

*

*

Long-Term Agricultural Policy Based on Live-stock

In a paper entitled "What of our herds?" presented recently to the Farmers' Club, Mr. A. P. McDougall said that time might prove to have been a regrettable error the advice given by our experts in 1939 that there should be a drastic reduction in all livestock with, perhaps, the exception of the dairy cow. Nothing that the research student had yet done, he continued, and produced a synthetic food that could displace the products and by-products of livestock.

If the cattle beast, as would seem to be so clearly proved from Continental experience, was a more thrifty wealth producer than the sheep, the duty of the state was to encourage the production of one against the other. The price policy pursued by the Ministry of Food with, he thought, the connivance of the Ministry of Agriculture,* for war purposes, of encouraging grain farmers and discouraging meat production must be speedily changed. Were it not for the deep implanted love of the farmer for his livestock, and did he think only in terms of money, there would not be a cattle beast feeding in the yards of England today.

Even if a sane policy were adopted of laying now exhausted lands down to leys and of filling straw yards and cattle courts, and rebuilding those that were derelict, we were facing what might be described as famine conditions in the numbers of stock available. It was two years since he heard the Minister himself admit the need of an increase. The policy then was based on compulsion. What had been done? Literally nothing, though the need was now greater than ever. For these reasons the people of this country should demand that immediate consideration should be given to the need of a long-term policy based on stock. He used the phrase "the people of this country" advisedly, because it was to their benefit as much as to that of the farmers, and perhaps more, that wise decisions should be made.

There was one further reason. We could only guess and fear what the livestock position of Europe would be when peace came. We were warned of the holocaust in every land where the foot of the German soldier had trodden. The greater the slaughter of stock, the more difficult would it be to get the wheels turning again, and to set the people themselves to the rebuilding of their civilisation. Any shortage of grain, or even vegetables under modern conditions, with such enormous reserves of power available need only be temporary. That was not so with the products of livestock, without which the children were bound to suffer. Vitaminised chocolate was not enough. Where were the foundation stocks to come from? Should we not be prepared to play our part, and how could we do so if we ourselves were grievously short?

Veterinary Record, Vol. 56, No. 9.

IMPROVEMENT OF LIVESTOCK

Among the most important problems thrown up by the impact of war on India is the inadequacy of her agricultural output to feed a growing population; and in any scheme for improving agriculture, the problem of livestock constitutes a major item. The speeches delivered at the All-India Cattle Show opened at Ongole show how keenly the paucity of good cattle has come to be felt by the people and the Government alike. For, in the rural economy obtaining in India at present large-scale mechanisation of agriculture is a virtual impossibility and bullock power has become the indispensable mainstay of the peasant cultivator. "Without the ox no cultivation would be possible; without the ox no produce could be transported". The importance of good cattle cannot therefore be exaggerated; nevertheless the erstwhile indifference of the authorities to this aspect of the question has resulted in the deterioration in quality,

necessitating employment of more numbers and consequent impoverishment of individual units. There can be no other explanation for the fact that although India possesses one-fourth of the world's stock of cattle and two-thirds of its stock of buffaloes (the largest proportion per head of population or per acre of cultivation, as Mr. S. V. Ramamurthy remarked) and the annual monetary value of her cattle products is Rs. 1,000 crores—this is Dr. N. C. Wright's estimate for 1937, it might be much more now—the annual yield of milk from our cows and she-buffaloes is only 62 crores maunds. In other words, with 18 times the number of Canada's cattle India produces only four times more milk than Canada; with seven times the number of Germany's cattle she produces even less milk than Germany does! It has been computed that the average annual milk yield of the Indian cow is only 487 lbs., whereas the corresponding figure in Denmark is 7,005 lbs. While this is so in the case of our milch cattle, the quality of our draught cattle is even worse. They are pitiful specimens indeed—underfed, undersized and uneconomic workers at the plough and with the cart.

This deterioration, depletion and progressive destruction of India's cattle wealth has been brought about by various factors, and the earlier they are properly tackled the better for her agriculture and animal husbandry. Proper feeding and breeding are acknowledged to be the essence of improved cattle. But lack of proper fodder, lack of experience among breeders, poor finance, inadequate grazing facilities and above all official apathy have so far conspired to relegate the cattle problem to the dust-bin. As an article in the "Eastern Economist" says, starvation is perhaps the greatest single factor in the causation of our cattle degeneracy. As it is, our cattle do not get enough of those valuable concentrates, their daily per capita consumption being less than 4 oz. as against 2 lbs. available to European cattle. The pressure of growing population on the food output of the country has naturally increased the pressure of crop lands on grazing areas. But the bringing of marginal lands under the plough alone would not have deprived the cattle of valuable pasturage if a keen eye had been kept on the conversion of thousands of acres of waste lands into pastures. This was not done, however. Even the technique of "dovetailing the arable and the animal husbandries into a system of mixed farming which would have provided food for man and fodder for cattle," adopted in England as early as two centuries ago, was lost on this country. And man, land and cattle were allowed to languish.

Mr. S. V. Ramamurthy's address at Ongole therefore comes with a refreshing touch or realism. He has assured that the Government have been, after all, jerked out of their lethargy and are seriously contemplating steps to improve the cattle wealth of the province. South India is famous for its Ongole cows, Kangayam bulls and Guntur buffaloes, and was once a market for international competition. But continued absence of an organised effort to improve the stock has affected the breed, and the restrictions placed on the export of quality cattle from Mysore and Hyderabad have aggravated the situation further. Mr. Ramamurthy's eight-point plan of development is therefore welcome and deserves to succeed. "The Ongole cow is a thing both of beauty and utility," he rightly said. "I ask you to maintain and develop this breed whereby you both gain profit and give service. On behalf of the Government, I can assure you that their utmost assistance will be given to you in this valuable task." The general adoption

of mixed farming and scheduled crop rotation, economic exploitation of existing pastures through controlled grazing and development of new resources like fresh pastures and fodder bearing trees, improved methods of hay-making and, last but not most important of all, selective breeding can be incorporated in the plan. Since the bulk of grazing areas is under the Revenue authorities or in private ownership, even fresh legislation may have to be devised to enforce their proper utilisation. Improved methods of cultivation must increase the crop output of better lands, enabling the marginal ones to be released for purposes of grazing. The Adviser's idea of total castration of inferior bulls in due course is also commendable. A great deal of the deterioration of our cattle is due to the habit of letting the cows loose on the village common where the scrub bulls are free to choose their mates. The Government would do well to investigate the possibilities of artificial insemination for the quick improvement of cattle which has been so successfully practised in Soviet Russia. The suggestion for a Central Livestock Board empowered to lay down national policy on the above lines after due consultation with the provinces will be found very useful, but pending the setting up of some such machinery, the Adviser's plan must be put through in all earnestness.

"Indian Express," 13-4-44.

STANES MINERAL MIXTURE

Stanes Sterilised Fine Bonemeal for Cattle

The only Tonic at low prices with high tonic value. Prevents diseases due to deficiency in CALCIUM and PHOSPHORUS. Largely used by all the Agricultural Research Stations in Madras, and by the Veterinary Departments.

Sold in bags of 14 lbs., 28 lbs. and 56 lbs. for supply in the Madras Presidency.

For further particulars apply to:—

T. STANES & CO., LTD.
COIMBATORE

"IDEAL" TATTOO OIL

For simple and permanent marking of Cattle, Goats and Sheep

We have great pleasure in placing the above oil manufactured by us on the market. This has extensively been tried at the Government Cattle Farm, Hissar, with excellent results.

Price per oz. bot. Rs. 3/8/-
Packing and Postage extra.

We also supply Tattooing Forceps

DR. JAI SINGH & SON
LAHORE

CHLOROCAIN

Manufactured by:
WILLOWS, FRANCIS, BUTLER & THOMPSON, LTD.
LONDON, ENGLAND



Sole Agents for India:
SMITH STANISTREET & CO., LTD.,
18, Convent Road, Entally, CALCUTTA.

The Local Anaesthetic of the Century

The Madras Agricultural Journal
THE PREMIER MONTHLY AGRICULTURAL
JOURNAL IN INDIA

Published at the Agricultural College
and Research Institute, Coimbatore

Subscription Rs. 4/- per annum. Single Number As. 6.

Specimen copy Free on request

Apply to
THE MANAGER,
Madras Agricultural Journal
Lawley Road, P.O., Coimbatore.

When writing to advertisers, please mention this Journal.

An antiseptic solution of Dimol which sterilises wounds and immediately stops bleeding.

THIS POWERFUL GERMICIDE prepared and standardized to an exceptionally high bactericidal efficiency, with its special properties of safety and convenience, (being free from causticity, and harmful chemicals or drugs) may be applied pure or in any concentration to the most delicate flesh or skin.

The solution applied as directed to a wound will immediately stop bleeding, without the usual smarting associated with many antiseptic lotions of a spirituous nature, such as Iodine, Friars Balsam etc. The flesh and skin are not cauterised or burned by the application, but a healthy healing is rapidly promoted.

DIRECTIONS FOR USE

BLEEDING WOUNDS. Apply solution freely on cotton wool, dress with lint and bandage.

FOR WASHING WOUNDS, CUTS, ABRASIONS ETC.

Dilute with four times its volume of water, use freely.

ANTISEPTIC LOTION. For general use two table-
spoonsful to a quart of water will give a lotion with
five times the germicidal properties of carbolic lotion.

Should be kept in every dispensary

Bottles of 1 oz. As. 8, 4 oz. Rs. 1-4 & 16 oz. Rs. 4/-.

The Anglo-French Drug Co. (Estn) Ltd.

P. O. Box 460

BOMBAY

[illegible]