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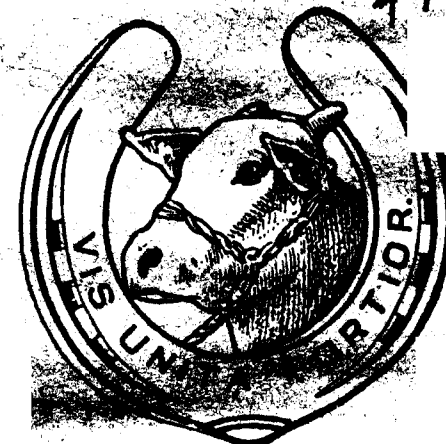
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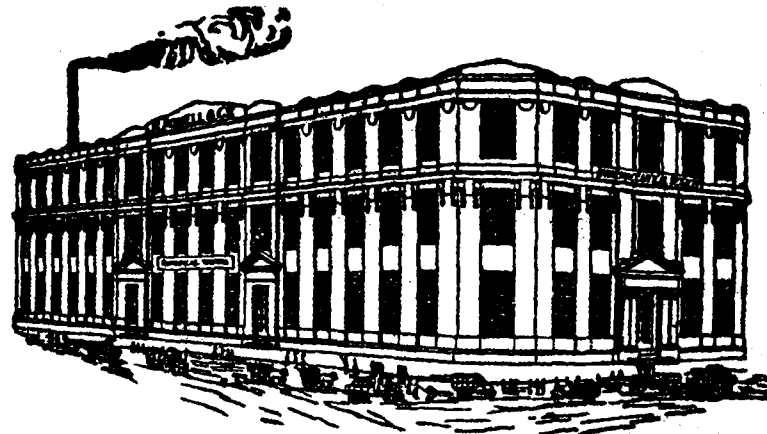
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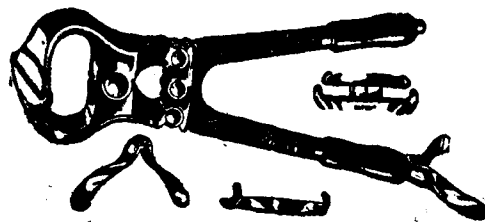
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The Indian Veterinary Journal
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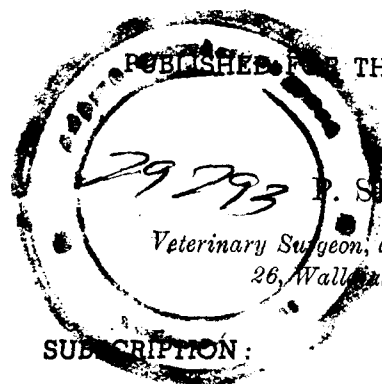
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THE

Indian Veterinary Journal

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General Articles**LIFE AND LIVE-STOCK IN PALESTINE**

BY

J. D. SAMPATH KUMARAN, B.S.A., L.V.P. (Hons.),

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of Reading), England.**Manager, Rayanakere Palace Dairy Farm, Mysore.*

The different aspects of the variegated Palestine scenes and the dynamic forces at play which have made Palestine one of the most interesting countries in the world today is being surveyed in this article, with particular reference to live stock. After my recent voyage journey to that country, numerous enquiries have been cropped up mainly with regards to the acclimatization of pedigreed dairy cattle. Even in the British Parliament this question was raised. In the fitness of things therefore an attempt is made to present it in a statistical manner. Numerous data given have been judiciously culled from various authentic sources.

An object which attracted considerable attention at British Empire Exhibition at Wembley some years ago was the German bayonet which Sir Herbert Samuel found in use as a plough share in a village in Palestine. It was a minor fulfilment of Isaiah's magnificent prophecy that "THEY SHALL BEAT THEIR SWORDS INTO PLOUGH SHARES AND THEIR SPEARS INTO PRUNING HOOKS". Beneath permanent and untimely triumphant is the simpler unheard daily work of the hands of simple, unknown

people, work that goes on seemingly interrupted, but by the long view, is as uninterrupted as time itself. "While the earth remaineth, seed-time and harvest, and cold and heat, and summer and winter, and day and night shall not cease". To-day this is as true as it was in Genesis. The land and that which derives from it are essential to life and happiness. "He that owns no land is no man". This is often lost sight of by individuals, but the nation that forgets it does so to its destruction: it withers and dies. In this lies the Jewish survival.

For nearly two thousand years the tale of Palestine is that of war, destruction and deterioration, alike for people, live stock and land. But not extinction; for while the land was deprived of trees, the mountains terraces neglected, the earth allowed to be wasted away, springs to overflow into poisonous morasses, the people divorced from the soil yet remembered it. Perhaps there is no parallel to this strange devotion in all human history. In every corner of the World and in all its great centres alike in the remote village in Siberia, in the Victorian cities of the Antipodes, as in London, Paris and New York, there were people who celebrated the harvest festival of Palestine, prayed for its rain in due season, blessed its fruits, blessed and prayed and celebrated against all seeming season, for they had never seen Palestine, their remote ancestors had been driven out of it two thousand years before, and for all they knew a further two or ten thousand years might elapse before they could see it again. Yet they kept the faith from father to the son. Disraeli understood it when he wrote "A race that persists in celebrating its vintage although it has no fruits to gather, will regain its vineyards". This faith is unique in the face of all history, in fulfilling itself in the present period. A handful of men and women scholars, traders, lawyers, clerks, every one but farmers found their way back to Palestine to break the soil; in their own life-time, to break the inborn habits of scores of generations, to change from smooth-handed townsmen to hardknuckled tillers of the earth. They bent their backs, they struggled, they suffered raids of robbery and

murder at the hands of the Arabs, they bore hunger and thirst, malaria and dysentery, but they straightened their souls. They stumbled, raised themselves up: died, were replaced; and in one generation implanted themselves, from the northern hills to the southern desert, from the Mediterranean sea to the river Jordan and beyond, in the land from which their ancestors had been uprooted.

Six settlements with 480 inhabitants comprised the whole rural Jewish Palestine in 1882 at the beginning of modern Jewish colonization. The Jewish population totalled only 24,000 so that the rural percentage was 2%. By 1914 the number of Jewish settlements had increased to 44 with about 12,000 inhabitants, accounting for 18% of the total Jewish population of the time (83,000). The census of 1936 summarises in the Survey registered 203 settlements and 98,558 rural inhabitants. The rural ratio in 1936 rose to 24% of the total Jewish population of over 404,000. The total number of farms approximate 12,000 and the average acreage per farm is about 10 acres.

These Jewish agricultural settlements offer fascinating sociological study. They are as diverse in ideology as the provenance of their inhabitants. They range from purely individualistic, capitalistic colonies, where every man must fend for himself, doing what he can employing whom he likes, on whatever terms he can extract, to purely communal communities where the individual is entirely subordinate to the group-except so far as his personal characteristics are concerned. Between these extremes lie settlements which have imposed on themselves self-denying restrictions of one kind or another. They are all further diversified by the diverse nature of the country in which they lie. Typical of the individualist settlement is Rehovoth, within easy reach of Tel-Aviv. Here is a busy village almost a town now. Its wealth based on large citrus plantations and huge dairy farms in private ownership. There is a clear distinction between the owners and the workers, reflected especially in their dwellings, in the large

villas with walled off gardens on the one side and the huts and cottages on the other. The womenfolk of the planters do not work in the fields and groves. Wages depend on plain supply and demand, for cheapness Arab labour was employed before the Arab terrorist activities started. In the same belt, a little further from Tel-Aviv, is Magdiel, typifying a somewhat different outlook. Here too, there is hiring of labour, but the village is not so long established as to make the distinction between the owner and the worker so evident externally as in Rehovoth. Many of the planters womenfolk work in the gardens. But the main difference between the two places is that the working of the economic law is modified by the voluntary restriction to Jewish labour. These settlements are largely due to the stewardship of the Jewish Colonization Association which administers the funds of the late Baron Edmond de Rothschild.

The other settlements belong to the Jewish National Fund; it is the heritage of the Jewish people, not of any individual person. These are the "Communal Settlements" which are characterized by the following:—(1) They occupy nationally owned lands, which are leased for forty-nine years subject to a renewal for another forty-nine years. (2) There are equal rights and equal privileges, *i.e.*, "strict implementation of the principle from each according to his ability and to each according to his needs". (3) There is duty and a right to work. Every body must do something and as far as possible manual labour. There is no special differentiation in the types of work. A man who does manual labour is not inferior to a man who does brain work. (4) There is no hired labour whatsoever. (5) There is no private property of any kind. No member can claim personal ownership of any property but this does not mean that in practice a member may not have his own pictures, books etc., in his room. (6) There is a complete democratic form of government — "a system of moral government and not merely a political one". There are equal rights for all. (7) There is mutual assistance, with special care for the sick. In the case of a man dying, his widow and children

stay on. Members are permitted to bring their parents to the settlements if these have no other home. Some settlements support such parents in Palestine, but not in the settlements. There is also a budget, depending on the financial position of the group, for financial assistance to parents abroad. (8) There is co-operative production, purchasing, cooking, eating and buildings of all kinds. There are special buildings for children.

At the present time there are about 100 Kvutsoth and Kibbutzim with 12,000, members, occupying 40,000 acres, most of it on a ninety-eight years lease from the Jewish National Fund. The total balance sheet value of all investments in moveable and immoveables is 1½ million pounds sterling, exclusive of the value of land, ½ of a million pounds sterling were advances by the Colonisation Agencies as loans, £ 200,000 by banks, and £ 200,000 represents the settlements own capital and reserves.

There are altogether in Palestine 857 Jewish cooperative societies on the register, of which 800 or 825 are active. The total membership individuals without duplication is about 115,000 to 120,000; therefrom 10 per cent of the total individual membership is reported by the Communitarian settlements. About 55 per cent of the membership of the Kvutsoth and Kibbutzim is male and 45 per cent female.

Long before actual settlement on the land, candidates form themselves into organised groups, and together spend a period of training as hired labourers. A member who leaves the settlement cannot transfer his tenancy rights without the consent of the whole membership. The problem of additional labour for seasonal work is solved by a system of mutual aid. The "Tnuvah" Cooperative deals with the distribution of agricultural products, and "Hamasher" purchases all the commodities and implements needed by the farms.

The development of the communitarian settlements in Palestine is one phase of a larger dynamic movement in a

country which is in the making, of which movement the driving force is the building and rejuvenating of a National Home, with a social and economic restratification of its inhabitants and a return to the soil and manual labour which has become a fetish.

Livestock

The original cattle in Palestine with the Arabs were of very poor quality. The mixed farms in Palestine therefore adopted cross-breeding as far back as 1910. The Friesian bull was chosen and crossed with cows of Damascus or local breed. The results provided a satisfactory temporary expedient, but not a permanent solution. The demand for milk was continually growing and to meet that demand cattle of deep-milking strains were imported. The prominent breeds to be found are Dutch, Syrian, and Roumanian. Incidentally it may be mentioned here that England has nearly twenty breeds out of which ten are really good milkers.

The Composition of the Breeds Per 100

Year	Local	Syrian	Mixed	Dutch	Dutch Local	Swiss	Roumanian	Bull
1919 ;	89 :	9 :	"	"	"	"	"	2
1920 .	45 :	53 :	"	"	"	"	"	2
1921 :	43	56	"	"	"	"	"	1
1922	54	30	15	"	"	"	"	1
1923	43	32.5	21	"	"	"	"	3.5
1924	35	37.5	24	0.5	"	"	"	2
1925	33	44	20	1	"	"	"	2
1926	27	50	19	2	"	"	"	2
1927	26	47	22	3	"	"	"	2
1928	22	42	27	3	3	"	"	3
1929	17	37	35	3	5	"	"	3
1930	12	30	43	6	7	"	"	2
1931	8	21	54	7	8	"	"	2
1932	4	14	63	8	9	"	"	2
1933	2	8	72	8	8	"	"	2
1934	1	7	77	7	6	"	"	2
1935	1	4	79	7	6	1	"	2
1936	0.5	7	76	9	4	1	0.5	2
1937	0.5	5	71	11.5	4	3	3	2
1938	0.5	4	71.5	14	4	2	2	2

Average Value Per Head in Palestine Pounds

Year	Mixed Breed	Syrian	Dutch	Dutch Local	Local	Roumanian	Swiss	Dutch Bulls
1919	"	31	"	"	17	"	"	"
1920	"	40	"	"	22	"	"	"
1921	"	47	"	"	23	"	"	"
1922	47	50	"	"	15	"	"	"
1923	34	38	"	"	12	"	"	30
1924	31	31	45	"	9	"	"	45
1925	29	31	41	"	10	"	"	27
1926	29	33	32	"	10	"	"	31
1927	30	32	50	"	10	"	"	41
1928	30	34	48	26	11	"	"	38
1929	32	33	50	29	11	"	"	39
1930	33	33	66	28	12	"	"	43
1931	36	33	66	29	12	"	"	54
1932	36	30	62	24	11	"	"	53
1933	33	28	56	28	10	"	"	52
1934	34	27	54	28	11	"	"	52
1935	35	26	54	29	11	"	"	55
1936	38	27	56	32	13	32	44	55
1937	38	28	53	30	13	31	40	59
1938	35	26	46	32	12	28	37	57

The number of dairy cattle on Jewish farms in 1938 was 17,994 head of which 15,563 were pure-bred, the native Arab stock having almost entirely disappeared as being unprofitable. Amongst the pure-bred the Dutch cattle have the supremacy over other breeds.

The Dutch cattle (Friesian is the native name and Holstein Friesian the American designation) originating from Holland is the largest of the dairy breeds, and probably has the longest history of any breed, for authorities give the age as over 2,000 years, and Tacitus the Roman historian, mentions the cattle of the ancient Friesians. As the agriculture of Holland has for centuries been almost entirely confined to pasturage and dairying it is scarcely to be wondered at that this little country has produced the finest of all dairy breeds. Exceptional capacity for milk production is the principal characteristic of dutch cattle and they hold all the world records. Yearly yield of over 20,000 pounds are not uncommon. Further dutch cattle are suitable for any climate, as evidenced by their popularity in Russia, America, Japan, South Africa and elsewhere. Sudden changes, moreover do not greatly affect them. They are credited with the best disposition of temperament of all

dairy herds. The Dutch cattle are regular breeders, and milk heavily over long periods. Heifers generally calve at about two years old, as it is though that, by breeding fairly young and then going about sixteen months before calving a second time, size is assured and the dairying instinct developed. The bulls for purposes of crossing are valuable. They are extremely prepotent, and their influence may be seen in their off-spring to a marked degree. The Americans use this for grading purposes. In England it crosses with Shorthorn and in Scotland with Ayrshire. In India with the local breeds it has given satisfactory results.

It is no wonder therefore that the Jewish farmers have given much attention to this particular breed. All the stock were purchased from Holland directly and they were getting them always in very large consignments.

*Number of Dutch bulls during the past 14 years.
(Imported from Holland)*

Age up to 1 year.	1 to 2 years.	2 to 5 years.	5 to 7 years.	7 years and above.	Total.
269	412	638	100	29	1453

*Number of Dutch cattle and their mortality in different
Districts of Palestine.*

Year.	Galelia.	Jesrel.	Judea.	Sherom.	% of Mortality.
1926	18	13	10	„	13.9
1930	5	30	177	„	4.4
1934	9	36	324	1	9.9
1938	10	213	187	16	8.6
Total Cattle.	188	828	4712	227	
% of Mortality.	11.7	7.0	6.9	11.0	7.7

For over twelve years in subtropical climate of Palestine the process of acclimatising the Dutch cattle has been continued with very encouraging results. At the outset the mortality percentage is 13.9 and is followed by 4.4 which is lower than that of the local breed.

Mortality in Different Breeds.

Disease.	Dutch.	Syrian.	Dutch X Syrian.	Dutch X Local.	Brown Swiss.	Rouma- nian.
Generative organs	9.0	7.1	4.5	1.4	10.8	10
Udder.	9.1	7.5	7.5	2.0	4.6	3.3
T. B.	7.4	1.6	1.4	1.4	7.6	1.7
Surgical	4.2	2.7	2.2	2.0	3.1	5
Foreign Body	8.2	6.5	5.6	4.7	9.1	13.3
Milk Fever	1.4	1.0	0.4	0.3	„	1.7
Other Causes	0.8	0.2	0.1	„	„	„
Piroplasmosis	1.9	1.4	1.4	0.3	6.1	5
Anaplasmosis	1.4	1.8	1.5	0.9	4.6	„
Theileriasis	6.0	1.9	7.4	7.0	36.8	1.4

Apart from the Government Veterinary Department, the "Haklait" which is the Live stock insurance company of the Jewish Palestine shoulders the responsibility of veterinary service to the Jewish farmers. During 1938, the following is the record of work done by the "Haklait": 22,087 cases were treated, 68,646 visits to the various farms were given, 10,461 cows were examined for pregnancy, 2828 microscopical specimens were examined, 332 post-mortems were conducted, 13,854 injections against Anthrax, 1463 for Foot and Mouth serum, and 1,815 Artificial Insemination.

The total expenditure for the "Haklait" for the year 1,938 was £P. 56,596 and the income from the Members £P. 48,858 and from the Jewish Colonization Association £P. 7,270.

The Jewish farms in Palestine now produce a third of the milk consumed by the Jewish population. The actual figure for 1938 is 32.6 million litres. Palestine Jews consume 228

litres of milk per head. The biggest distributor of milk in Palestine is Tnuvah, a co-operative organization which markets about 18 million litres of milk yearly, mostly the product of communal Jewish farmsteads. The Arab population consume very little liquid milk, the goats milk of the Arab farmstead, being made into sour cheese.

The Jewish farmer has a whole series of Co-operative agencies in production, associates who conduct experiments in the Laboratories and on the field, associates in the factories which work up the raw materials, associates in the bureaus of ramifies organizations, in co-operatives for the purchase of supplies and the sale of his products, never mind in what form they are put on the market, and in credit institutions, his efforts alone will not avail in the struggle for existence. The organizing capacity of all these associates is the decisive factor.

Palestine is not having proper agricultural encouragement and protection from the Mandatory Government. It may be of interest to mention here the position in England. Before 1929, the Government of England was maintaining a traditional attitude of non-intervention looked passively until the increasing agricultural crisis aroused it to action. The cardinal step was, of course, the introduction of tariff protection through duties and a system of import quotas. But the wider aims of the new policy were not only to protect English agriculture but also to improve its organization, stimulate its growth by financial aid, increase its internal competitive power by better marketing arrangements, etc. One of the main instruments of this policy was the Agricultural Marketing Act of 1931 which gave producers statutory power for the application of schemes to regulate the marketing of various products.

Under the procedure instituted by the Act, once a marketing scheme for a specific product has been applied for by a two-thirds majority of producers, all producers of the product in question are required to register under the scheme failing which they are not allowed to sell the product. Such schemes have since 1932 been applied to milk, wheat, potatoes

etc. The various marketing boards which administer the schemes and on which producers are represented in point of fact exercise a monopoly control over the products in question (with necessary safeguards on behalf of the Government and consumers) which enables them to rationalise their production and regulate prices.

Under the Milk Scheme, minimum pool prices have been secured for the farmer which makes milk production remunerative, while not placing an excessive burden on the consumer. The pool prices are made uniform for various districts and do not depend on the distance of the farm from the main markets. The Milk Marketing Board which administers the scheme, supervises contracts made between producers and distributors, levies contributions on milk sales to form a premium fund from which payments are distributed to qualifying accredited producers, and has been greatly instrumental in improving arrangements for distribution of milk and for publicity which has led to an increase in liquid milk consumption, on which dairy farmers' return chiefly depends. As regards the marketing of milk of manufacture into product (butter, cheese etc.) this is controlled by the Milk Acts of 1934 and 1936, administered equally under the auspices of the Milk Marketing Board. These acts provide for advances and subsidies for milk used to manufacture butter etc. which upto April 1937, have amounted to £ 2,392,000/-

An important stimulus to increased milk consumption in England has been provided by the Schools Milk Scheme. This scheme provides for the supply of milk to school-children at reduced rates, producers receiving Government Compensation. The Scheme was initiated in 1934 with the annual Government Grant of £. 500000/- to the Milk Marketing Board and enabled the provision of milk to schools at half the former price or sometimes free of charge. Whilst representing a vital contribution to National nutrition, the Schools Milk Scheme has also proved a boon to the farming community in providing an outlet for the disposal of the milk surplus. Since the

introduction of the Scheme the number of children receiving milk in their schools has almost trebled to nearly 3,000,000/- and the volume of milk consumed in schools has reached under the Scheme to about 100,000,000 litres per annum.

A highly useful role has been played in the English Agricultural policy by the National Mark Scheme, which has contributed to an improvement in the quality packing and presentation of home products. The system which provided consumers with a visible means of distinguishing between foreign products and high grade British products whose quality was guaranteed by the Department of Agriculture Mark, has met with very satisfactory results, and helped to expand considerably the sales of local produce. The National Mark was first applied to eggs in 1930.

The few experiments which have so far been made in Palestine for the introduction of measure of agricultural encouragement have passed themselves extremely useful. A mark of Origin Scheme has been applied to eggs with some success. The recently increased duty on eggs and poultry industry has served to maintain the position of the poultry industry. Before the tariff increase, duties on eggs in Palestine were 24 mils for 120 eggs comparing with 50 to 52 mils for 120 eggs in England. The new tariffs introduced in 1937 raised it to 120 mils for 120 eggs. Thus an object lesson was provided of the value of tariff safeguards for agriculture under Palestine conditions.

Industry.

The dairy industry in Palestine to-day uses some 25,000 litres of milk daily for the manufacture of butter and cheese. The fluid remaining after these processes contain nearly the whole of milk sugar, there is no by product industry at present in Palestine. Two possibilities appear to exist for its commercial exploitation: (1) the fermentation of the milk-sugar into lactic acid in presence of soya meal or similar protein materials. The resultant fluid will produce a valuable and wholesome chicken-food, which at the same time reduce the cost of chicken-breeding. (2) The conversion of milk-sugar into Acetone and Butyl alcohol.

A bacterium which is able to produce these two valuable organic solvents from carbohydrates has been discovered by Dr. Weizmann (*Clostridium acetobutylicum weizmanni*), and there is a whole group of related bacteria which are able to induce the same fermentative process. The Daniel Sieff Institute at Rehovoth, succeeded in isolating and studying a certain amount of them. Some of these are now being used for local alcohol Manufacture from the citrus juice. There is a move now to use alcohol for the production of ether and chloroform (indispensable in medical practice) and in the synthetic pharmaceutical practice) and in the synthetic pharmaceutical industry.

These Institute plans suggest in addition to alcohol manufacture the production of other valuable products by a fuller utilisation of the whole citrus fruit. Under this plan, apart from alcohol, yeast would be obtained and also citric acid isolated. The production of yeast is of importance as it represents a source of vitamins. The orange peel, according to the Institute's plan would be used in part as cattle feed (in dried form or after appropriate silage) but in part would be fermented in the summer months to give acetone and the butyl alcohol by means of the Weizmann bacteria.

Conclusion.

All these wonders were brought about by the improved methods in all branches of various forces acting in co-operation; the agricultural labourer remarkable for his perspicacity, industry and inherent teachableness; the agricultural research station and the number of training and educational institutions. The farmer had but small means at his disposal, may be as a refugee might have landed the shores of Palestine penniless, but the Jewish National Fund and allied agencies have come to his rescue and have thus built the Modern Palestine.

"The growth of the Jewish National Home and its achievements in many fields are a remarkable constructive effort which must command the admiration of the world and must be, in particular, a source of pride to the Jewish People."

ON SOME WORMS OF THE GENERA TRICHO-
STRONGYLUS LOOSS, 1905, AND COOPERIA
RANSOM, 1907, IN SOUTH INDIA.

BY

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In India, Giles (1892) and Lane (1913) appear to be the only two workers who have recorded the occurrence of *Trichostrongylus colubriiformis* (Giles 1892) from sheep in the Punjab and Assam. The present author met with *T. colubriiformis* and *T. axei* (Cobbold, 1879) Railliet and Henry, 1909, in the abomasum and duodenum of goats in Madras. About thirty per cent of the goats examined were found to harbour these worms. *T. axei* was also found in about fortyfive per cent of cattle (*Bos taurus*) and in some sheep examined in the slaughter house at Madras. In cattle and sheep, these worms were found in the abomasum, whereas in goats, a larger number of *T. axei* was found in the abomasum than in the duodenum and the reverse was the case with *T. colubriiformis*. It is interesting to note that this is the first record of *T. axei* in India, and although *T. colubriiformis* has been already recorded in North India, it is recorded for the first time now in South India.

T. colubriiformis.—The length of the male worm varies from 4.2 to 7.6 mm., while the breadth is 0.06 to 0.1 mm. in front of the bursa. The dorsal lobe is not well marked. The lateral lobes are fairly well developed. The dorsal formula is as follows:—The dorsal ray is about 0.041 mm. in length (average of ten) and bifurcates at its posterior third. Each division has two digits each ending in what looks like a knob. The lengths of the digitations on each side seem to vary in individuals. In some, the external digitations are longer than the internal and vice versa. The externo-dorsal ray is almost as long as the dorsal. The postero-lateral ray is smaller than the other two laterals and the externo-lateral is usually the broadest among them.

Paper read at the 27th Session of the Indian Science Congress held at Madras, January, 1940.

On Some Worms of The Genera *Trichostrongylus* Looss, 1905. 307

The latero-ventral and ventro-ventral are widely separated. The ventro-ventral is slender and small.

Spicules are dark brown in colour, unequal, the right being shorter and slightly broader. Both the spicules are twisted in appearance and bent ventrally. About the beginning of the posterior fourth of each spicule, on the ventral side, there is a sharp process which appears to be diagnostic. The gubernaculum is more or less boat-shaped and in some specimens its anterior end is bent fairly sharply so as to resemble 'the handle of a walking stick' as Nagaty (1932) describes it. The female worm on an average measures 7.5 mm. in length and 0.1 mm. in width at the region of the vulva. The vulva is about 1.2 mm. and the anus 0.085 mm. from the tail end. The tail end is sharply pointed and straight. The average dimensions of an intra-uterine egg are 0.085 × 0.04 mm.

T. axei.—These worms are smaller in size than the former. The male measures on an average 3.5 mm. in length and about 0.055 mm. in width, in front of the bursa. The dorsal ray measures on an average 0.047 mm. in length and at its distal end is bidigitate. Each division is short and is again bifid. The externo-dorsal ray is narrow and almost as long as the dorsal ray. The postero-lateral ray is longer and slightly narrower than the other two laterals. The latero-ventral ray is as thick as the lateral. The ventro-ventral ray is thinner than the latero-ventral and is short.

The spicules are dark brown in colour, appear more or less twisted and the left one is much longer than the right. The left spicule measures 0.095—0.120 mm. and the right 0.073—0.095 mm. The posterior end of the left spicule looks more or less like a top-boot, when viewed ventrally and this is characteristic of the worm. It has also a thin process, directed posteriorly, arising from about the middle of the dorsal surface. A similar process is also present on the right spicule. The posterior end of the right spicule is more or less blunt and rounded. The gubernaculum is about 0.054 mm. in length and spindle-shaped with the ends curved upwards. Its anterior

portion is narrower than the posterior. In its middle the chitin is thinner than at the periphery giving it an appearance as if it is perforated at the middle.

The female worms measure on an average 5 mm. in length and about 0.06 mm. in thickness at the region of the vulva. The vulva is situated 0.8 mm. from the tail end and appears as a longitudinal slit with cuticular lips. The anus opens about 0.07 mm. from the tail end and the tail is straight. Intra-uterine egg measures 0.075×0.04 mm.

The genus *Cooperia* Ransom, 1907, has not attracted notice in this country. Giles (1892) and Gaiger (1910, 1915) appear to be the only two workers who have recorded *Cooperia curticei* (Railliet, 1893) under the name *Strongylus ventriculosus* in cattle (*Bos taurus*) in the Punjab. In South India, however, two other species were found viz., *Cooperia punctata* Ransom, 1907 and *Cooperia pectinata* Ransom, 1907, in the abomasum and duodenum of cattle slaughtered in Madras abattoir. These two species were found together and often associated with *T. axei*. In two animals, which were heavily infested, ulceration of the mucous membrane of the abomasum was seen.

Cooperia punctata. — The head end of this worm is 0.025 — 0.030 mm. has its cuticle slightly inflated and bears transverse striations. Behind the head the cuticle of the body has on it fourteen to sixteen longitudinal striations. The lips and mouth cavity are ill developed. The cervical and pre-bursal papillae are absent.

The male worm measures 4.5 to 5.5 mm. in length and about 0.075 to 0.09 mm. in thickness at the base of the bursa. The bursal formula is as follows — The ventro-ventral and latero-ventral rays are thin and curve forwards. The antero-lateral ray is very stout and curves backwards thus forming a wide gap between it and the latero-ventral ray. The medio-lateral and postero-ventral rays are comparatively thin and their two ends face each other. The externo-dorsal takes its origin high up and reaches almost the edge of the bursa. The dorsal ray is bifurcate at about half its length and each

PHOTOMICROGRAPHS OF SPECULES

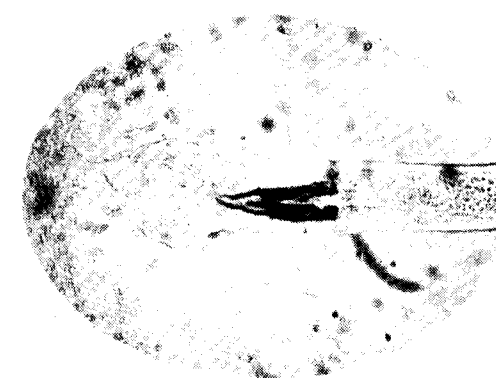
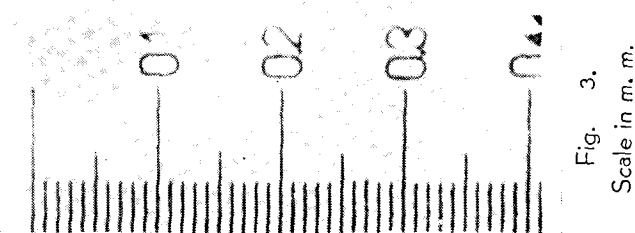


Fig. 2.
Trichostrongylus axei

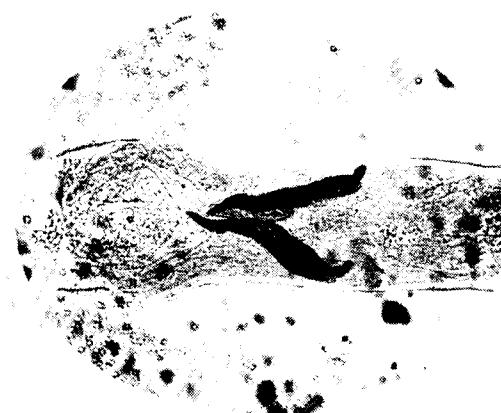


Fig. 1.
Trichostrongylus Colubriformis

PHOTOMICROGRAPHS OF SPECULES



Fig No. 5.
Cooperia punctata

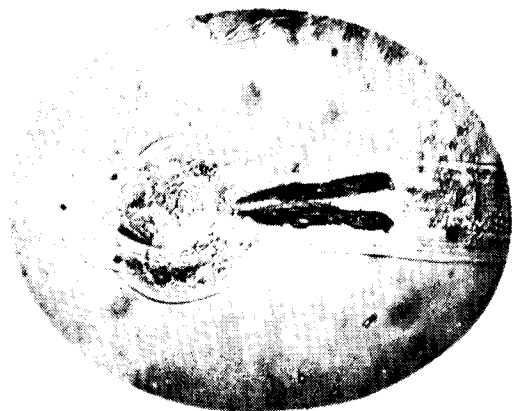


Fig No. 4.
Cooperia pectinata

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branch is bidigitate. Just in front of the bifurcation of the dorsal ray, a short ventral branch takes its origin on each side. There are fine mammilations on the bursal cuticle between the ventro-ventral and postero-lateral rays on each lateral lobe. The genital cone is semi-circular in outline and bears on it three short, spike-like projections. The spicules are brown in colour, measure 0.120—0.150 mm. in length and exhibit about the middle of the ventral aspect a deep concavity.

The female worms are 5.5 to 7.5 mm. in length and about 0.06 to 0.07 mm. in width in the region of the vulva. The vulva is marked by a longitudinal opening guarded by thick crescentic lips. The uteri are opposed and meet about the region of the vulva in a common vagina. The combined lengths of the ovjector is about 0.250 mm. The average size of an egg in utero is 0.065×0.30 mm. The tail is slender and tapers gradually to a sharp point. The anus is situated about 0.150 mm. from the hind end of the worm.

Cooperia pectinata—These worms are larger than *C. punctata* and the shape of their head-ends and the number of longitudinal ridges agree with those of *C. punctata*. The head-ends are about 0.030—0.050 mm. in diameter. The male worms measure from 5.5 to 7 mm. and about 0.15 to 0.25 mm. in diameter at the base of the bursa. The bursal formula is much the same as in the other. The postero-lateral ray is fairly stout compared to the one in the other species. The dorsal ray bifurcates behind the anterior third of its length and each limb has on it a ventral branch about half way down. There are no digitations at the ends of the limbs of the dorsal ray. The spicules are brown in colour and together, resemble the legs of one wearing riding-breeches. They measure about 0.230—0.280 mm. in length. In the middle third of each spicule on its ventral aspect, there is a corrugated ridge. The posterior third is narrow and slightly ridged anteriorly. The genital cone is semi-circular and three digitations project from its circumference. The posterior end of the central digitation bears on it four such branches. (Fig. 4)

The females measure about 7 to 9 mm. in length and about 0.12 to 0.14 mm. in diameter. The region of the vulva is thickened. The vulva is a slit transversely elongated with projecting fan-shaped lips, the posterior one being very conspicuous. It is situated about 1.6 to 2 mm. from the tail end. The uteri are opposed and the combined length of the ovjectors

is about 0.3 mm. The average measurements of the egg in utero are 0.075×0.035 mm. The tail end is as in *C. punctata* and the anus is situated about 0.175 mm. from the hind end of the worm.

REFERENCES.

- Gaiger, S. H. (1911) — J. of Trop. Vet. Sc. Calcutta, **6**, 293-306.
 " (1915) — J. of Comp. Path. & Therap. **28**, 67-76.
 Giles, G.M.J. (1892) — Sc. Mem. By Med. Officers of the Army in India, Part **7**, 45.
 Lane, C. (1913) — Ind. Med. Gaz. **48**, 217.
 Nagaty, H.F. (1932) — The genus *Trichostrongylus* Looss, 1905. Ann. Trop. Med. & Parasit. **26**, 469.
 Ransom, B.H. (1911) — The Nematodes parasitic in the Alimentary tract of Cattle, sheep and other Ruminants — Bureau of Animal Industry, Bulletin, **127**.

COPERIA PECTINATA RANSOM, 1907.

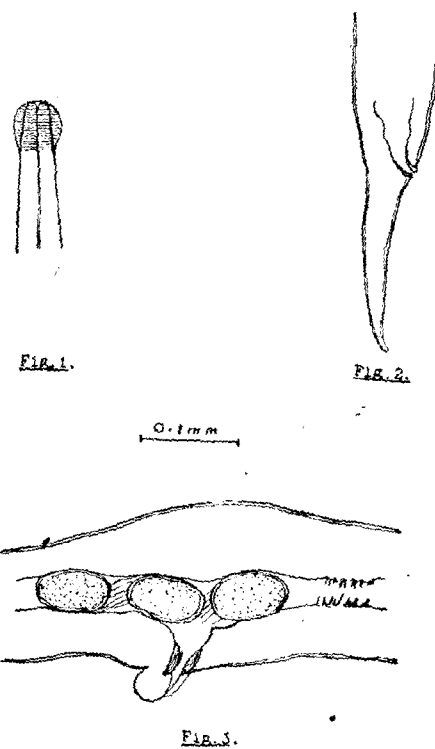


Fig. 1. Head end of female. Fig. 2. Tail end of female.
 Fig. 3. Female genitalia.

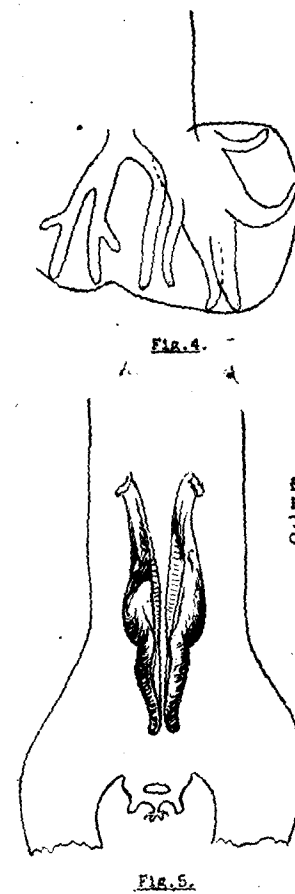
COPERIA PECTINATA
RANSOM, 1907.

Fig. 4. One half of male bursa.
 Fig. 5. Tail end of male showing spicules and genital cone.

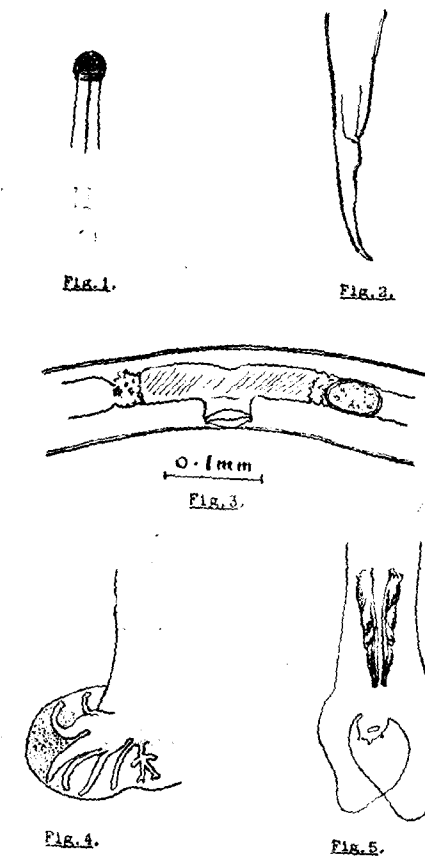
COPERIA PUNCTATA
RANSOM, 1907.

Fig. 1. Head end of female.
 Fig. 2. Tail end of female.
 Fig. 3. Female genitalia.
 Fig. 4. One half of male bursa.
 Fig. 5. Tail end of male showing spicules and genital cone.

WYNAD AND ITS CATTLE POPULATION

BY

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Wynad is one of the major taluks of Malabar District bounded by Coorg on the North-East, Mysore on the East, Gudalur of the Nilgiris on the South-East and the other sister taluks, (Ernad, Calicut, Kurumbranad and Kottayam of Malabar District) on the other sides. Though the taluk goes to form a part of Malabar District it differs from the other taluks in very many respects. A careful study of the geographical condition of Wynad may even lead to think that this was once a portion of Mysore territory or a major share of Coorg Plateau. This taluk, a plateau as it is, is made up of a large extent of reserve forests, cultivated fields, orange groves, coffee and tea estates, and pepper gardens margined by variable areas of waste-lands here and there. The climatic condition too differs from that of the other taluks mentioned above, and it agrees with that of Coorg, probably in a lesser degree. However Wynad has its own blessings of nature. Any corner of Wynad is a natural scenery and it is a joy for ever to anybody who visits the interior parts of this taluk especially during the season when the oranges are ripe on the trees grown in very extensive estates.

With all the gifts of Nature, Wynad has its own share of curses too. This touches both the inhabitants and their wealth *viz.* Malaria for themselves and epidemics among their livestock. However, much is being done to root out Malaria from Wynad, and work in this direction is in progress too.

OCCUPATION OF THE PEOPLES.

Most of the people in Wynad are fully engaged in agricultural operations. Business men are very few. Paddy is the main

and most important of all the crops. Almost all ryots keep and maintain large number of cattle, an average ryot owning approximately more than 20 to 25 in all. Buffaloes are comparatively more than white cattle in most of the herds and, with any ryot, the number of cattle both buffaloes and others put together will prove more than his moderate requirements, if he only takes a little interest to improve his breed to a certain extent. If the ryots of Wynad make it a point to improve their breed systematically on a co-operative basis, it appears to me that there is every hope to make this taluk a supplying station of a moderately good variety of cattle to the other taluks of Malabar. The present condition is that this taluk is not self-sufficient. The ryots are being educated on these lines but they are generally found to take little or no notice of these at all as the majority of these engaged in paddy cultivation are illiterates. At this stage it strikes me that demonstration farms on smaller scales on aided basis will be more appealing to them and consequently may prove a grand success.

CONDITION OF CATTLE.

The type of cattle in this taluk is a little superior to those in the other taluks of Malabar. They are generally semi-wild. They run away or begin to fight at the sight of white dress. The owners of these herds generally do not approach them. Most of the ryots cannot even say the exact number of cattle they possess. The only companions for the cattle in Wynad are the "Paniyas". They are sets of illiterate hill tribes who work in the paddy fields. As a general rule the responsibility of cattle management is theirs and probably this is the reason why the ryots of Wynad are obliged to have only a much inferior type of cattle as seen at present.

HOUSING AND MANAGEMENT OF CATTLE.

The housing arrangement is miserably poor and so also the management. In the rainy season permanent sheds are put up often by the side of paddy fields and all the cattle from the biggest to the smallest are let loose in it. There is no supply of fodder when they are in the sheds. These sheds are neither

spacious nor ventilated. The manure conservation is very poor, rather totally neglected, so much so there will be knee-deep dung in most of the sheds. There are instances when smaller calves have been buried alive in these sheds. In summer, after harvest the entire stock remain in the field throughout the day. Smaller enclosures of bamboo are put up in the open fields and all the cattle are driven inside these at night. These enclosures are called 'Pudavu' or 'pidathi' and there is no arrangement for the supply of fodder in these too.

GRAZING.

The grazing facility is not very satisfactory. The cattle stationed nearer to the reserve forest have access to it for the purpose of grazing. In other parts they wander in the harvested paddy fields, where only the stumps of the plants are left. The preservation of cut fodder other than paddy straw is never practised.

EPIDEMICS.

The most important disease prevalent is Haemorrhagic-septicaemia. There were a very large number of reports of this disease during the year 1938-39 and I had to visit almost all the villages over and over again. Inoculations have been conducted on a large scale in all the villages and consequently the ryots have begun to appreciate the modern scientific methods of protection of their cattle from contagious diseases. Ryots, in most parts, have given up their superstitious belief regarding the occurrences of contagious cattle diseases and, believe in their scientific aspects, atleast so far as their preventive measures are concerned. Next to Haemorrhagic-septicaemia is 'Foot and Mouth' and the spread of this disease is comparatively more rapid in Wynad consequent on the unsatisfactory management and housing of the livestock as detailed above. Like the other parts of the Madras presidency, Wynad cattle too are periodically affected by Rinderpest. However, Wynad people have been fortunate in that their taluk has been free from the above disease for the last few years.

Incidences of other infectious diseases are not very frequent as seen from the past record.

CONCLUSION.

Wynad is comparatively less poverty-stricken than other taluks of Malabar. The evil of drink too is not so widespread as in the other taluks of the district. Attentions are required mostly in affairs connected with the health of the people and their cattle wealth. A rural development campaign with the above two objects in view, will add much to the prosperity and welfare of the people of Wynad and the ryots in particular.

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CULTURE-STUDY ON JOHNE'S BACILLI.

BY

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Assam.

An extract from the first part of the Doctorate Thesis of the author on "Investigation of Johne's Disease with special reference to the cultural study, Allergy, Sero-diagnosis and Immunity.

Johne's disease or Paratuberculosis derived its name from Professor Johne of Dresden Veterinary College who, in 1895, described the first case of Johne's disease. Johne and his co-worker Forthingham described numerous acid-fast organisms from cases of Johne's disease staining a portion of thickened intestine after Ziehl-Neelsen's method. These organisms were believed from the year 1895-1906 to be a form of Tubercle bacilli.

O. Bang in 1906 succeeded in transmitting the disease in calves and proved rather conclusively by inoculation experiment that the causative organisms were not any recognised type of Tubercle bacilli; but he could not succeed in cultivating organisms in culture-mediums.

For the first time in the year 1911, Twort succeeded in cultivating the organisms and proved conclusively that they were not any recognised type of Tubercle bacilli but should be named as Johne's bacilli. Twort and Ingram in their attempt to cultivate Johne's bacilli were at the outset, attended with repeated failures. Finally they concluded from repeated experiments that some "Essential substance" Food-stuff or stimulant is necessary to be incorporated in the culture mediums. Their argument for the requirement of the "Essential substance" to be incorporated in the culture-mediums was this:—"Perhaps the bacillus in its saprophytic existence has lost its original virulence or pathogenic potentiality and can no longer build up its necessary food-stuff outside the animal body." They first considered allied acid-fast micro-organisms to be a suitable "Essential substance" to be admixed in the culture-mediums of Johne's bacilli. For this purpose they used Glycerin—Peptone—beef—both containing half per cent of dried human tubercle bacilli and partly succeeded in growing the organisms but owing

to the admixture of tubercle bacilli it was difficult to recognise characteristic organisms. Their next attempt was to replace this essential substance *i.e.*, human tubercle bacilli by various other acid-fast micro-organisms. The fact that so-called Timothee (Grass) bacilli (*B. Phlei*) are found to have been continually ingested by ruminants in their food and there being a probability that the bacillus might be the wild ancestor from which paratubercle (Johne's) bacilli had arisen, it was thought at once justified by Twort and Ingram to incorporate this bacillus in the culture-medium as "Essential substance" instead of dried tubercle bacilli. They succeeded in growing the bacilli in the culture-medium with the help of Timothee bacilli. Since this discovery of Twort and Ingram it has become an invariable practice to add to the culture-mediums—no matter what kind is chosen—Timothee bacilli or *B. Phlei* or their extract.

Later (1928) Major Dunkin claimed to have succeeded in growing paratubercle (Johne's) bacilli in Sauton synthetic medium without addition of *B. Timothee*. According to him, it is necessary at first to grow the Bacilli on solid nutrient mediums such as:—Egg, Agar, Potatoes containing *B. Timothee* and after several generations under laboratory condition the bacilli are acclimatised and can be grown on synthetic mediums without addition of *B. Timothee*. I have also proved it and have successfully grown the bacilli in the above manner, but I have never seen such growth to have been as luxuriant and rapid as in the case of bacilli growing in the mediums containing *B. Timothee*.

In my effort to cultivate Johne's bacilli, I have employed 21 different strains in the various laboratories of Europe and have grown such strains in different culture-mediums. Out of these 21 strains, I have worked with 7 in Hannover; 7 in Alfort (France) and 7 in Cambridge; two of them were also sheep-strains. I have observed in the course of my culture-study that the growth of bacilli is quicker and luxuriant between two and three weeks on potato-slope of Sauton Synthetic medium wherein Timothee bacilli or their extract had

been added. I have also grown the bacilli in fluid sauton syntetic medium, Lowenstein and egg-mediums. Before I describe the culture in detail, I should like to give the preparation of my mediums below :—

PREPARATION OF CULTURE-MEDIUMS.

(a) Sauton Synthetic mediums :—

Sauton Synthetic medium with potato-slope containing Timothee B or its extract.	Synthetic medium without addition of Timothee B or its extract.
No. 1.	No. 11.
Asparagin. 4 gm.	5 gm.
Depotassinum phosphate. 0.5 gm. (K ₂ HPO ₄)	1 gm.
Acid citric. 2 gm.	—
Sodium citrate. —	0.5 gm.
Magnesium sulphate. 0.5 gm.	1 gm.
Ferric Ammonium citrate. 0.05 gm.	0.06 gm.
Glycerin. 60 c. cm.	70 c. cm.
Aqua. 1000 c. cm.	1000 c. cm.
Adjust with pure ammonia to PH _{7.2} . Asparagin is dissolved in warm water. Add to this preparation 3, 5 gm. of the sterilised Glycerin extract of Timothee B. Culture-tubes are then filled one-third with this fluid medium. Potatoes, cut cunei-form, should not be soaked in water but should lie above the surface of the fluid; sterilise the culture tubes at temperature 115°C. for 40 minutes.	No adjustment of PH. Fill 4 flasks, each containing 250 c. cm. of liquid medium and sterilise the flasks at temperature 115° C for 45 minutes.
In case of fluid Sauton Synthetic medium, no potato-slope is used, but the bacilli are grown on the surface of the fluid.	

(b) Preparation of Glycerin-extract of Timothee bacilli.

Timothee cultures grown in glycerin bouillon are filtered. From the collected bacilli on the sterile filter-paper, only 5 gms are taken and the extract is prepared in the following way:—

Timothee bacilli.	 5 gm.
Aqua distill with Glycerin 20%.	 30 gm.

Heating in the autoclave at 110°C—120° C, 3/4 hour, centrifugate the above mixture. The extract is now ready. For future use, the extract is filled in tubes, sealed hermetically and can be conserved in the refrigerator.

(c) Preparation of egg-medium (Dunkin).

B. Phlei (Timothee) are grown on the surface of Glycerin broth till a thick culture appears on the surface of the medium. This culture is now collected and grounded in a sterile liver-extract and 10 c.cm of Glycerin are now added. This mixture is then boiled for a few minutes and kept overnight.

3 eggs are beaten up and added to the mixture which should be well-stirred and finally 2.5 c.cm. of 1% solution of alcoholic gentian violet are added. The whole is strained through sterile muslin and the culture-tubes are filled with and inspissated first at 80° centigrade until the medium is set solid. This process should be repeated at the same temperature for an hour next two days.

INOCULATION OF JOHNE'S BACILLI IN CULTURE-MEDIUMS.

In case of solid mediums such as Sauton syntetic mediums with potato-slopes or egg-mediums, the inoculation is done by transferring the bacilli from the cultural growth or from Johne's disease-infected organs (of course, after being treated with antiformin) with the help of a sterile platinum-wire into the

mediums and then gently smearing on the surface (of the mediums).

In case of fluid mediums, a fragment of bacillary growth is obtained from the edge of the culture with the help of a sterilised platinum-wire and this is carefully transferred on a sterile circular piece of cork (about 1 cm. in diameter) floating on the surface of the liquid mediums. The bacillary fragment being supported by cork remains floating on the surface: gradually extends in growth and does not sink at the bottom of the flask.

THE GROWTH OF THE JOHNE'S BACILLI IN CULTURE-MEDIUMS.

In Sauton synthetic mediums with potato-slants, Johne's bacilli grow, at first, as small and dull white colonies which are scarcely visible under naked eye in the first or some times in the second week. Similar growth which is also observed on the surface of egg-medium requires about three weeks' time to develop. The colonies are irregularly round; sometimes they remain singly or they may grow together (coalesce). The edges of the colonies are flat and thin and they gradually rise to the centres or show peak-formations in or between 3—5 weeks. The colonies proliferate, coalesce with surrounding ones and, when old, form continuous heaped-up cultures. After several sub-cultures, the growth of the bacilli becomes rapid and vigorous.

In fluid Sauton synthetic medium containing B. Timothee, the growth of the Johne's bacilli appears in the form of a thin dull-white film (which breaks easily at the slightest touch) over the surface of the fluid media within a month or so. With process of time the surface-growth becomes thicker, extends in area and may completely cover the surface of the fluid media. Here also the growth of Johne's bacilli becomes rapid and vigorous after several sub-cultures and in course of time, forms over the surface thick, knobby and irregular masses of layers. The growth of the shee-strains of John's bacilli is very slow.

In two such cultures which were under my observation for a considerable time, only a visible growth was noticed after a period of 6 months. They were grown in egg-mediums and the character of the growth was observed to the same as described above.

It may not be out of place to give here a brief outline of my investigation of Johne's disease in Europe. The detailed work appeared in my Doctorate Thesis and will be published in this *Journal* part by part. An opportunity afforded itself to conduct our various experiments under field conditions. Though the kind arrangements made by Professor Dr. Miessner with Dr. Ringard, the Director of the "Laboratoire National de Recherches", Alfort, France, three most infected provinces in France were selected for our experimental studies. We carried out our test on 250 animals in 10 cattle farms. Before we began our work it was necessary for us to study the cultural character of different strains of Johne's bacilli in various culture-mediums, to prepare para-tuberculin (Johnin) therefrom and to test the reliability of the product.

Johnin-tests were carried on naturally-infected herds and also on sheep which were artificially sensitised by subcutaneous injection of Johne's bacilli. The latter experiment was carried out in England in the "Institute of Animal Pathology", University of Cambridge. The faeces from all the reactors were collected and microscopically examined. Also the serums of all positive reactors were obtained and complement-fixation-tests were carried out. In order to obtain definite (and not doubtful) results we used not only tubercle-antigen but also an antigen prepared from Johne's bacilli for our complement-fixation-tests. For the latter tests, we are thankful to Major Dunkin, Superintendent of the "National Institute for Medical Research", Mill Hill, London. Our object for all such work was to arrive at a correct conclusion as to what extent the diagnosis of Johnin-tests can be confirmed by simultaneous examination of faeces and complement fixation of the serums of the reactors. A good number of cattle received intradermal tests of Johnin at

the side of the neck and also at the side of the caudal folds and the results were compared. In some cases intracutaneous injections of Johnin and Tuberculin were carried out simultaneously and the reactions were compared. In order to find out which diagnostic agent can prove to be reliable for the production of characteristic reaction, we employed different batches of Johnin, Tuberculins and avian tuberculins and tests were carried on the artificially-infected sheep. Since Johnne's disease has been reported by some authors to be congenial, it was our humble effort to test a few calves of different ages, the mother of those calves were found to be of positive reactors and ill with Johnne's disease. Having conducted the Johnin-tests it was our next effort to see vaccination-phenomenon in some cases and conclude finally whether vaccination-procedure or so-called "Premunization" can alone be taken as prophylactic and diagnostic means for Johnne's disease in cattle in field condition.

An opportunity also occurred to examine a cow in the Hygienic Institute of the Veterinary College, Hannover, which cow was found to be doubly-infected with Tuberculosis and para-tuberculosis (Johnne's disease).

My sincerest thanks to Professor Dr. Miessner who had kindly arranged my work in different Institutes of France and England. My thanks are also due to Dr. Ringard the Director of the "Laboratories National de Recherches, Alfort", who so nicely arranged my working places in different provinces of France and helped me with suitable materials. Similarly I am grateful to Dr. Glover, M.R.C.V.S., Major Dunkin, M.R.C.V.S., and Professor T. Dalling, M.R.C.V.S., who offered me the Laboratory facilities to work in their Institutes and to study the various aspects of Johnne's disease under their valuable and esteemed guidance. I am also obliged to the Directors of Veterinary Departments, Calvadoes and Aurillac for their kind assistance.

Summary.

1. The first case of Johnne's disease was described by Professor Johnne of Dresden in the year 1895 but the causal

organisms were believed from the year 1895-1906 to be a form of Tubercle bacilli by Professor Johnne and his co-workers till, in the year 1906. O. Bang proved conclusively by inoculation experiment that they were not any recognised type of Tubercle bacilli. O. Bang could not however succeed in cultivating the organisms in the culture mediums.

For the first time in the year 1911 Twort and Ingram succeeded in cultivating the organisms in the culture-mediums used for Tubercle bacilli with an addition of some "Essential substance" in the mediums. As essential substance, food-stuff or stimulant, they used first dried human tubercle bacilli but owing to the admixture of Tubercle bacilli in the mediums it was difficult for them to recognise the characteristic organisms. After repeated experiments of this nature (*i.e.*, to replace various other acid-fast micro-organisms) they finally concluded that Timothee (Grass) bacilli (B. Phlei) were the most suitable essential substance to be incorporated in the culture-mediums for growing Johnne's bacilli. Since this discovery of Twort and Ingram it has become invariable practice with workers in the line to add to the culture-mediums Timothee bacilli or their extract.

Later (1928) Major Dunkin claimed to have succeeded in growing Johnne's Bacilli in Sauton Synthetic mediums without addition of B. Timothee after acclimatising the strains under laboratory condition for several generations.

2. I cultivated 21 different strains of Johnne's bacilli in various Laboratories of Europe; two of them were also sheep-strains. I selected Sauton Synthetic mediums for cultivating Johnne's bacilli. This is a purely chemical synthetic medium and is free of protein and other nitrogenous ingredients. I succeeded in growing Johnne's bacilli rapidly and vigorously in the Sauton Synthetic mediums containing extract of B. Timothee and also in such mediums without containing it. But in the latter mediums (*i.e.*, mediums without addition of B. Timothee or its extract), the growths were not observed to be as luxuriant and rapid as in case of former mediums. One useful purpose of growing Johnne's bacilli in protein-free synthetic mediums was to avoid all complexities while preparing pure Synthetic Johnnins.

3. Description of the growth of Johne's bacilli in different mediums described. The growth of the sheep-strains of Johne's bacilli was observed to be very slow.

4. A brief outline of my investigation of Johne's disease and planning of my programme of Research in various Institutes of Europe, including the preparation of Johnins and vaccine-test of Johnins on artificially and naturally infected herds, reliabilities of the products, reaction of Johnins and vaccine, comparison of the reaction with other biological agents (Tuberculin and avian Tuberculin), confirmation of the reaction with serological examination of the serum of the reactors (complement-fixation-test) with prepared antigen of Johne's bacilli and examination of the faeces of the reactors, etc.,—these works will be published in this *Journal* part by part.

(To be continued).

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Editorial.

DEVELOPMENT OF ANIMAL HUSBANDRY IN INDIA

Presiding at the Medical and Veterinary Research Section of the Indian Science Congress held at Madras in January 1940, Dr. Haddow, Veterinary Research Officer in charge of Serology, Imperial Veterinary Research Institute, Mukteswar, delivered a well-thought out address dealing with the problems of Animal Husbandry in India and briefly indicated the lines on which those problems were to be tackled. It was a happy idea that the theme chosen for the occasion was one in consonance with the prevailing trend of events in this country where, thanks to the keen interest evinced by His Excellency Lord Linlithgow, more and more attention is being paid to questions relating to Animal Husbandry. In fact, till a few years ago, one rarely heard of anything of Animal Husbandry, much less about the problems attached to it. In this sub-continent of India, owing to a variety of conditions of climate and geographical features, the range of animals domesticated by man to serve his needs, has been very wide and different. From elephants and camels on one end, it extended to horses, cattle, buffaloes, sheep and goats on the other. In the maintenance of these animals and in their development, various factors have played a great part from time to time but the chief amongst them has been the problems of fodder supply and disease. As the Doctor says, "of much greater importance in the advancement, or, as it certainly was one time, the retrogression of Animal Husbandry was the

presence or absence of disease or famine and one was led inevitably to the conclusion that these two factors were the main, if not the sole, controlling forces in the development of Animal Husbandry." That practically sums up the crux of the whole problem. It also explains why quality had been subordinated to quantity of livestock in this country. The numbers served as the only effective insurance for the husbandman against the ravages of animal diseases. These diseases which may be viral or bacterial, protozoal or parasiticidal, continue still to be the stumbling block in the development of Animal Husbandry. To take the most important of them, Rinderpest still accounts for a heavy mortality. "It could not be said that the disease was under control or that with, perhaps, a few exceptions, the amount of wastage from this disease had been greatly reduced." Even the vaccination against the disease by the use of a strain of virus fixed in goats which is reputed to be very highly successful in some places has not been found to be so everywhere, or at least, in the Presidency of Madras. In this province, the Serum Simultaneous inoculation with either the Goat Virus or Bull Virus still appears to be the *modus operandi* against the disease. This is costly and not quite as cheap method as one would like it to be. Similarly, with other diseases of different origins. Careful and intensive research into the factors controlling the distribution and incidence of bacterial, viral or parasitic diseases is therefore necessary to evolve quite a satisfactory method of prophylaxis. Only then, can we say that the wastages from diseases are under control.

The question of fodder supply is another important problem in Animal Husbandry. There is evidence of under-nutrition and mal-nutrition everywhere. It is often said by politicians and economists that the average Indian ryot does not know what one full square meal a day is. That statement applies with greater truth and force to the condition of cattle in this country. Majority of them are half starved. They are mere skins and bones scarcely able to drag themselves along, much less do any real hard work. At times, as during harvest times, they get a large supply of food but, at other times, especially during summer,

they practically starve. Stall feeding is practically unknown to them and they go down miserably in condition. Such alternate periods of starvation and surfeit tell on their development and they become stunted in growth and puny in form. Naturally, their utility value, whether as beasts of burden or as producers of milk and meat, become lessened. They are thus a burden to themselves and to their owners. In such conditions of nutrition no breed development can possibly take place and it will be quite futile even to attempt any.

The apathy and indifference and ignorance of the average husbandman only adds to the tragic conditions of Animal Husbandry in India. He is poor and lives in a perpetual state of semi-starvation and chronic indebtedness. He has consequently lost all initiative and looks despairingly for outside help and support for any and everything. In fact, his condition has become a problem for the country and a puzzle for the administrators. As such, if he is to take a live interest in his work, he should be educated on the right lines and awakened from his lethargy. This education of the husbandman must, therefore, be the one of the foremost weapons in our attempts at solving the problems of Animal Husbandry. To quote Dr. Haddow again: "As with his animals, he (the husbandman) himself must have a fair insurance against famine and disease if he was to take an active part in the development of the industry which he controlled".

TUBERCULOSIS IN MADRAS

In the course of an editorial in the last issue of this *Journal*, we stated that, in the City of Madras, the existence of Tuberculosis in the conservancy cattle of the Madras Corporation had been proved over and over again since the year 1916, and that it had been confirmed by microscopical and biological findings. This statement of ours has since gained additional strength and confirmation. We understand that the authorities of the Madras Veterinary College recently tested about 30 cattle from the different Cattle Depots owned and maintained by the

Madras Corporation and found that nearly 40 per cent. of them reacted to the Tuberculin Test. We also understand that some of the reactors were destroyed subsequently and that definite tubercular lesions were found in those animals on postmortem.

This must be an eye-opener to the authorities in charge of the Public Health administration in this Presidency. It is often said that Bovine Tuberculosis is a very rare thing in India. And on that account a very complacent attitude is assumed by the Public Health authorities that, in this country, the possibilities of human beings getting infected with Tuberculosis of Bovine origin are very remote. This attitude is based not on proven facts arrived at after extensive investigation — because not much work has been done in this country — but more on an assumption that in a tropical country like India the disease may not be prevalent, at least to any appreciable extent. As such the above mentioned findings are of great importance from a Public Health point of view. If a casual test conducted on a few cattle taken from the well-maintained and sanitarily clean cattle sheds owned and kept by the Madras Corporation were to reveal such a high percentage of infection, we dread to think what the conditions would be in the many privately owned cattle yards of the City, a good number of which are admittedly in an extremely insanitary condition. It is therefore highly essential that the Madras Corporation as the custodian of the health of the citizens of the City should start immediately an Anti Tuberculosis Campaign in their own Cattle Depots first and find out the actual extent of the prevalence of the disease. It is quite possible that the animals affected with Tuberculosis may not show any definite symptoms till a late stage of the disease but then they act as a means of disseminating the disease all over the City when they are taken out for conservancy work. The Corporation should, therefore, take immediate and drastic steps in the matter, test all their own cattle for Tuberculosis and eliminate the reactors. Side by side, the cows in the different parts of the City should also be tested, the reactors destroyed and adequate compensation paid to the owners.

There are some people who even in these days think very lightly about the infectivity of Bovine Tuberculosis to human beings. We, therefore, make no apology for the following extracts from a very recent article on "Tuberculosis of Lymphatic Glands in the Neck" by Lt.-Col. M. M. Cruickshank, I.M.S., in the Indian Medical Gazette for September 1939.

"It is of significance to note that the bovine type of Tubercle bacilli is found in a proportion of cervical gland tuberculosis varying from 25 per cent. in Germany to 90 per cent. in Scotland and that the bovine type occurs uncommonly (1 to 2 per cent.) in pulmonary tuberculosis. The proportion in Madras so far as I know has not been worked out". Again, "Prophylactic treatment naturally comes first and is all important. Prophylaxis means protecting our children and in safeguarding their food supply. This means dealing in the first instance with milk supplies and a campaign for pure milk supply.....".

In the light of these observations, it is not wise to assume a complacent attitude under the impression that "Bovine Tuberculosis is extremely rare in India." The presence of Bovine Tuberculosis in Madras at least has been proved over and over again and it is the bounden duty of the Corporation to take immediate prophylactic measures to prevent its spread to animals and humans by organising a regular campaign against the disease in the City of Madras without any delay. Otherwise, the Corporation will be failing in its duty towards the public.

This is primarily the work of a Veterinarian and can be satisfactorily and efficiently done only by experienced Veterinary Officers trained in such line of work and therefore the Corporation should lose no time in organising one such separate Department under its control. There is already the nucleus for such an organisation in the Superintendents of the different Cattle Depots in the City—who are all fully qualified Veterinary Surgeons—and all that is required is only to increase their number, widen their scope of activity and organise them into a separate independent unit.

Clinical Cases

FOREIGN BODY IN THE FOREHEAD OF A COW

BY

V. K. CHATUPHALE, G.B.V.C.,

N. M. Wadia, Veterinary Dispensary, Barsi, Bombay.

History.—A black cow was brought to the dispensary for treatment from a village known as Malvandi with a history that it had a fight with another cow and that the sharp point of the horn of the other cow had broken and got fixed in the forehead of this cow.

I had never seen such a case, nor heard of it either. Generally, in such fights, punctured wounds are caused on various parts of the body but not in the way given out in this case.

Symptoms.—The foreign body could be seen and felt firmly fixed in the forehead *i.e.*, in the middle line of the frontal bones.

Treatment.—The cow was cast down and the seat of injury cleaned and painted with Tr. Iodine.

Extraction of the broken piece of horn was tried, but nothing could grasp it. Then the surrounding skin was dissected by taking out cross incisions and the foreign body exposed. With a pair of pincers the foreign body was removed, leaving a punctured wound about $1\frac{1}{4}$ " deep in the middle line of the frontal bones.

The after treatment consisted in dressing the wound antiseptically with Tr. Iodine.

Remarks.—The broken piece of horn was nearly $1\frac{1}{4}$ " long and it had a small hole in the middle of its base. Such a hole had been made by the owner of the cow to put on a brass ornament (known as Shemby), on the point of the horn. On account

* Paper read at the Annual Meeting of the Bombay Veterinary Medical Association, held at Poona, on the 31st December 1939.

of this hole, the part of the horn had become weakened. Had there been no hole there, it would not have broken and got fixed in the forehead of this cow.

SURRA IN A DOG

BY

SYED NURUL MOHTEDA, G.M.V.C.,

Assistant Veterinary Surgeon, I/C Laboratory, Sitarampet, Hyderabad-Dn.

For the first time, a case of Surra in a dog was detected in the State of Hyderabad-Deccan. The subject was a local bred white terrier, aged about nine months. It was admitted at the Pathergatti Veterinary Dispensary as an out-patient on 28-11-38, with the complaint that he was off-feed, dull and had a rise of temperature. Blood smears of the dog was received here the same day for microscopical examination. It was surprising to find that the blood smears showed Trypanosomes, about 30 to 40 per field.

With a view to keep this case under further observation and treatment, it was transferred to the Veterinary Hospital, Sitarampet, on 29-11-38.

The dog was debilitated, besides being dull and off-feed. He could not support his body weight on the hind limbs. When forced to move, showed staggering gait. The m.m. of the eyes and lips were pale, and partial blindness of the left eye was also noticed. There was no swelling of the dependent parts of the body. There were ticks in the ears and under the thighs and these were identified as *Rhipicephalus sanguineus*. A live tick was crushed and its contents were examined; but they were negative for the presence of any crithidial form. The blood smears were forwarded to the Imperial Veterinary Research Institute, Mukteswar, for confirmation and the following report was received:—

"On microscopical examination it revealed the presence of fairly numerous haemoflagellates morphologically indistinguishable from *Trypanosoma evansi*."

The dog weighed about 20 pounds and was treated with 5 c.c. of 5 per cent. solution of Naganol intravenously. The blood was continued to be examined daily, but it remained negative for 14 days. From the day of treatment the animal began to recover and he was bright in appearance in a few days. He was kept on milk, eggs and soup for a few days and was discharged cured on 11-12-38.

My thanks are due to Mr. M. R. Mahajan, M.R.C.V.S., Veterinary Investigation Officer, Hyderabad State, for his valuable instructions and help, given to me from time to time.

FOREIGN BODY IN THE NOSTRIL*

BY

V. K. CHATUPHALE, G.B.V.C.,

N. M. Wadia Veterinary Dispensary, Barsi, Bombay

On 7th December 1939 a bull was brought for treatment from a village named Umbarga 8 miles away from Barsi Town.

History.—The bull was lame for the previous three days, from sprain of the near hind fetlock. Instead of treating the affected part, the owner introduced the handle of a wooden spoon into the right nostril, in the common belief that it would relieve the lameness. The wooden spoon was very old and brittle and when introduced sufficiently deep *i.e.*, 6" into the nostril and twisted, broke inside; and the broken stump of the wooden handle remained in the nostril of the bull.

Symptoms.—On examination, the blunt and broken stump of the wooden handle could be felt by the index finger in the right nostril. Breathing through that nostril was completely blocked. The mouth of the bull was partly open to aid the breathing. General condition of the bull was good.

* Paper read at the Annual Meeting of the Bombay Veterinary Medical Association held at Poona, on the 31st December 1939.

Treatment.—The bull was cast down on the left side with the right nostril upwards. The muzzle was washed clean and a well lubricated index finger was introduced into the right nostril. The foreign body was found firmly fixed. It could only be felt.

Ordinary dressing forceps, Bone forceps, long-armed forceps and Oesophagial forceps were tried in turn but to no purpose, none of them could get a good grip of the broken end of the wooden spoon, because it was very thick and blunt. I therefore decided to open the nasal passage.

A site $1\frac{1}{2}$ " above the right muzzle was chosen; under the local anaesthesia, an incision 2" long was made. And then, attempts were made to push down the wooden piece by fingers and instruments, through the natural orifice; but it was not possible. At last an obstetric sharp pointed hook was fixed on the wood, and drawn out.

The incised wound on the skin outside was antiseptically dressed and sutured with interrupted sutures.

After-treatment.—The after-treatment consisted of irrigating the nasal cavity with Liq. Hydrogen Peroxide and dressing with Glycerine and Acid Tannic daily.

The incised wound healed by first intention and the sutures removed on 17th December 1939.

During the last 10½ years of my stay at Barsi, I have treated more than half a dozen of such cases.

In another case of the same type treated some four years back the handle of the wooden spoon introduced into the nostril was a bit thin and slender, but still it could not be removed. Every time I tried, it went deeper in. I then irrigated the nostril with a Rubber Tube and as a result of it the foreign body was aspirated through the posterior nares and then the bullock coughed it out through the mouth. This specimen of the handle of the wooden spoon was sent to the Bombay Veterinary College and the Principal Mr. Moheydeen, M.R.C.V.S., has kept it as a specimen in the College Museum.

In some cases I have detected tender branches of the herb known as "Ruiti." These objects are generally introduced into the nostrils of cattle by the owners to relieve cough, to induce sneezing and to relieve lameness as in the present case.

CAESARIAN SECTION IN A COW*

BY

G. G. CHEBBI, G.B.V.C.,

Veterinary Assistant Surgeon, Dharwar, Bombay.

Subject.—A Krishna valley cow, with anterior presentation, with head in an extreme downward position.

History.—She was in pains for three days, with both the front legs in the passage. Attempts had been made by local Gawalas to pull the calf out, without looking for the head. As the position of the head was deviated from normal in a downward direction, all the efforts of the quacks were not only useless, but had made the case worse. Hence she was brought to the hospital on the 4th August 1939 and admitted as in-patient. The cow was examined and attempts were made to locate the position of the head, after pushing in the prolapsed legs, but to no purpose. Manipulation of the parts were practically impossible owing to the bloated condition of the calf. And therefore, with the consent of the owner of the cow, caesarian section was resorted to, as a last resort even at the risk of the mother's life.

Operation.—The cow was cast on the left side and put under chloroform anaesthesia. On the right side, an incision of about 12" commencing from a point equidistant from the external angle of the ilium and the last rib, was carried downwards and forwards through the skin, abdominal muscles and peritoneum. The intestines were pushed aside, and the uterus

was cut open with an incision about 9" long. The hind legs were secured and the calf was gently taken out. The foetal membranes also were removed. The field of operation was then thoroughly cleaned, and the wound closed by sutures, separately for the uterus, abdominal muscles and peritoneum and the skin, putting continuous sutures for the inner parts and interrupted ones for the outer skin. The wound was dressed antiseptically and a bandage put on. All possible aseptic precautions were taken. The whole process took about one hour.

The chloroform bag was removed and the cow came round nicely and even began picking up grass in a short time. Really it was a great pleasure to find it so successfully gone through, though it was for the first time that I had to do it.

The condition of the patient continued fairly well till midnight when to one's disappointment the signs of sinking came on. In spite of the best efforts, the cow died before morning.

This case has given me hope that an attempt of this nature in properly selected cases would be of great value. I am sure that if the case had been brought to the hospital and the operation undertaken earlier, the attempt would have been successful.

I would be failing in my duty if I fail to express my thanks to the Reserve Veterinary Surgeon Mr. G. R. Kulkarni, but for whose help and encouragement, the operation would not have been undertaken.

* Paper read at the Annual Meeting of the Bombay Veterinary Medical Association, held at Poona, on the 31st December 1939.

A CASE OF PURPURA HAEMORRHAGICA IN A HORSE

BY

V. R. NARSAYA, G. B. & O.V.C.,

Assistant Veterinary Surgeon, Civil Veterinary Hospital, Sitarampet,
Hyderabad-Dn.

Subject.—A Chestnut, Indian bred, gelding, aged, admitted on 6-12-39.

History.—The animal was reported to have been ill for the previous fortnight.

Examination revealed the following symptoms.—Ulceration of the nasal m.m., more in the right than in the left;



(Fig. I)

haemorrhagic patches in the m.m. of both the eyes; swelling of the head, more prominent on the off side than the near,

which later on extended to the whole of the head giving it the appearance of the head of a Rhinoceros (Fig. I); a few plaque like swellings on either side of the neck which later coalesced; also on breast, dependent parts of abdomen, sheath, the internal aspect of both the thighs; ulcerated wounds on the axilla, thighs and legs: temperature 103.4° F, and hard breathing and asphyxia.

Diagnosis.—Purpura Haemorrhagica. (I was informed later on that the Veterinary Investigation Officer had made the same diagnosis a few hours before the case was brought over to the hospital).

Treatment.—Seven injections of 75 c.c. of 1 per cent. Liq. Iodine, were given intravenously, on alternate days, along with Mag. Sulph. and Pot. Nitrate in drinking water twice daily. Milk, lucerne, bran and good hay were given without any concentrates. Adequate supply of drinking water was provided.

The alarming symptoms of asphyxia gradually abated and finally the swelling and ulcerated wounds disappeared. In a



(Fig. II)

fortnight the animal recovered completely and was discharged cured. (Fig. II).

My thanks are due to Dr. M.R. Mahajan, M.R.C.V.S., for his kind suggestions regarding the treatment of the case, and to the Veterinary Inspector, Hyderabad Circle, for the mallein test he carried out.

Hotch Potches

Formalin for Colic in Horses.—Cremona reports treating twelve horses, overcome with colic, by giving intravenous injections of 20 c. c. of a 10 per cent. solution of formalin. All of the animals recovered after the first injection with the exception of one horse that received a second injection, 15 minutes after the first. This animal recovered slowly.

From these observations the author concludes that formalin is indeed efficacious in the treatment of colic in the horse. Formalin increases the tonus of the sympathetic nervous system and decreases vagotonia, thereby acting as an antispasmodic. Therefore, it suppresses the pain and provokes the expulsion of gas. Moreover, formalin is an excellent detoxifier, capable of neutralizing the toxins which are formed in the intestine and absorbed by the blood stream.

N. Amer. Vet. Jan. 1940.

* * *

Tuberculosis from Milk.—Three important lessons for those who safeguard human health against diseases communicable from animals to man are pointed out in a recent editorial appearing in the American Journal of Public Health. The editorial reviews an outbreak of bovine tuberculosis in humans where the disease was traced to a single cow that had recent tuberculosis of the udder.

In Horred, Sweden, since 1935, all inhabitants except those who owned their own cows were obliged to drink milk obtained from the Horred dairy. Because of objections to the taste of pasteurized milk, this milk was consumed raw.

In August and September of the following year, several children showed symptoms of tuberculosis for which no human source of infection could be found. Thirty cases were recorded by the middle of October. A total of 56 infected persons were discovered, nine being between the ages of 33 and 64. Among

102 children who did not drink milk from the tuberculosis cow there were eight positive reactors, while 29 of the 32 children who drank the milk were positive. The eleven children under school age who did not drink the milk were all negative, while 16 of the 18 who drank the milk were positive.

The Horred herd had, since 1935, belonged to a state subsidized organisation for the prevention of tuberculosis in cattle. A physical examination had been given in May 1935, and one tuberculous cow removed. No tuberculous animals were discovered in May 1936. In September, 1936, all cows appeared normal except one animal that showed clinical mastitis. Milk samples showed tubercle bacilli and the animal was slaughtered at once. Postmortem examination showed recent generalized tuberculosis and there were many tuberculous foci in the udder.

From this outbreak it becomes apparent that clinical examination of cattle to detect tuberculosis cannot be wholly depended upon. This herd was examined by competent Veterinarians, yet the tuberculous animal was not detected until after a number of children became ill.

"The second lesson is that tuberculin tests of cattle supplying milk for market purposes should be made at regular intervals. The third lesson, and perhaps the most important, is that all milk for drinking purposes should be pasteurized" said the editorial.

N. Amer. Vet Jan. 1940.

* * *

Improved Technique of Ghee Making.—Investigations of far-reaching importance to the ghee trade are being conducted at the Imperial Dairy Institute, Bangalore.

A popular method of manufacturing ghee is by curdling the milk by natural souring. This, it has been found, produces at times an undesirable flavour and form under village conditions; the resulting quality is also poor. An attempt has, therefore, been made at the Institute to find out if the addition of citric acid would provide an alternative method. The technique aimed at is so simple that it can easily be adopted anywhere. Citric acid is used for the coagulation of fresh

milk. The product is churned and ghee obtained by heating the butter. The ghee has a good flavour and is much superior in quality and quantity to that made by country method. The problem is still under investigation. Investigations on making ghee direct from cream are also being continued.

Pract. Med. November, 1939.

Radish Juice.—The therapeutic value of fresh radish juice has been proved in various ailments. It has a favourable influence on gall-bladder and liver complaints, a slight diuretic action in cardiac ailments and articular rheumatism, and a favourable influence on bronchial disorders and on intestinal function.

The fresh juice should be prepared daily. The radish is first peeled; then grated and pressed. The juice must be kept in a refrigerator and should be used the same day. The usual dose is two tablespoonfuls three times daily.

For renal or hepatic complaints the juice is administered with a pause of three days every three or four days.

Pract. Med. November, 1939.

Wheat-germ Oil Capsules and the Prevention of Abortion and Premature Birth.—Huges (M. J. Australia, 1939) reports on the excellent results obtained by the use of wheat-germ oil capsules (one capsule daily upto seven months' gestation) in 8 patients with histories of abortion and premature birth as is evidenced by the fact that all the patients gave birth to healthy infants 4 at term, 3 at 28th week and 1 at 37th week.

Pract. Med. January, 1940.

The Progress of Artificial Insemination of Live Stock.—More than fifty million head of live stock are claimed to have been produced in Soviet Russia in recent years by means of artificial insemination, many of which were shown as outstanding examples of particular breeds at the All Union Agricultural Exhibition in Moscow.

Artificial insemination seems to have been more successfully practised in sheep than in other animals, fifteen million head being produced by this method in Russia last year. It is claimed to have been so simplified that any shepherd can apply it. Eighteen thousand lambs were obtained from a single pedigreed ram on one collective farm in one year.

Collective farmers are said to be able to produce as many lambs in a year from one pedigreed ram by means of artificial insemination as may be produced from 400 rams in the ordinary way.

Although artificial insemination in other domestic animals has not been so perfected—1,200,000 cows and 120,000 mares were successfully inseminated this way last year; some experts get 99% results.

Semen used in artificial insemination is delivered by rail, motor bicycle, motor car, aeroplane, bicycle and even by pigeon post.—*The Scottish Farmer.*

Haver-Glover Mess., Jan.-Feb., 1940.

Association of Pneumonia and Rabies in the Dog.—Two cases were described where pneumonia was the cause of death in dogs which subsequently were proved to be infected with rabies, but without any previous history of the disease. Smears from the brain failed to demonstrate the presence of inclusion bodies, but inoculation of brain emulsion produced rabies. As virus has been demonstrated in the lungs of infected animals, it is suggested that there may exist a pneumonic form as well as an intestinal form.—(G. Norman Hall).

Vet. Bull. February, 1936.

Akiron R.—Akiron Rephrin—preparation used in animal Piroplasmosis. Injected intramuscularly or subcutaneously and not intravenously.

Actually, Bayer Products Ltd., have ceased the manufacture of "akiron R" and now recommended the use of "akiron,"

which has been renamed "acaprin," followed by the injection of rephrin if severe toxic symptoms develop.

"Akiron R" is said to have given good results in the treatment of canine Piroplasmosis under experimental conditions, though relapses necessitating repetition of treatment have been encountered. Good results have also been claimed for its use in equine trypanosomiasis. It has the advantages over trypan blue that a much smaller quantity of fluid is injected, abscess formation is avoided and there is no staining of the tissues or discoloration of the milk. The following doses are recommended :—

Cattle: 10 c. c. of a 5 per cent. solution for animals weighing about 500 kg. given intramuscularly or subcutaneously.

Horses: 3 to 6 c. c. of a 5 per cent. solution intramuscularly.

Sheep: 1 c. c. of a 5 per cent. solution intramuscularly.

Dogs: 1 c. c. per 10 kg. body weight of a solution made by adding 5 c. c. of a 5 per cent. solution of akiron to 95 c. c. of a sterile normal saline solution. This solution will keep well and can be used as required.

Vet. Rec. March 21, 1936.

Anti Rabie treatment:—1. When any person is bitten by an unknown dog without provocation, he should go to Coonoor or to the nearest or most easily accessible treatment centre for treatment without delay, for experience had shown that it is likely that such dog is rabid.

2. When any person is bitten by a dog which is known and can be captured, that dog should not be killed, but securely tied up.

(a) If it remains in perfect health for 10 days after inflicting the bite, the person bitten need not go for treatment.

(b) If, however, the dog falls ill or dies within 10 days, the person bitten should go to Coonoor or to the

nearest or most easily accessible treatment centre for treatment and send to Coonoor portions of the dog's brain for verification, preserved according to instruction.

(c) In the case of face bites or deep and unknown bites on other parts of the body, it is better for the persons bitten to seek treatment immediately; should the biting animal happen to show no signs of rabies during the 10 days observation period, treatment may then be discontinued.

3. Persons who are licked on the unbroken skin and those who have merely handled rabid animals and have no recent wounds need not be treated.

29th Ann. Rep. of Cent. Com. of Pasteur Institute (Appendix XII.)

Contagious Bovine Abortion. A new treatment.—A claim is made that deficiency of vitamin E and not *Brucella abortus* is the primary cause of the disease. Although infection with *Br. abortus* is fairly common in horses, abortion in the mare due to this organism is rare, due to the amount of grain (containing vitamin E) in the ration. For the same reason bulls rarely become infected. Treatment consists of a course of vitamin E. The first method tried was the feeding of wheat germ and was replaced by the subcutaneous inoculation of wheat germ oil. Three injections, each of 30 to 40 c.c., are given, one at the time of service, the second after three months, and the third after six months of pregnancy. A dose suitable for one district is unsuitable for another district. Since 1931, 7000 cows have been treated in all parts of France with "regular success and above all the disappearance of abortion."

Vet. Rec. April 18, 1936.

TRACE ELEMENTS

Copper:—Liver is a storage organ for copper, more in young than adult.

Milk contains only small traces of copper.

For formation of haemoglobin both iron and copper are needed.

Copper assists in the mobilisation of iron in the body and acts catalytically in the formation of haemoglobin. The amount of copper given being about one-tenth the amount of iron or even less.

Cobalt:—Deficiency of cobalt in pasture, causes progressive anaemia cachexia, gastro enteritis etc. in sheep.

Manganese:—Lack produces chlorosis or loss of green colour in plants.

Manganese stimulates growth and involved in haemopoietic function and in skeletal metabolism. This element is essential for ovulation and development of the foetus during gestation; and the diet of children should contain 0.2 mg. of manganese per kilogramme body weight per day.

Deficiency produces "perosis", "deforming leg weakness" "slipped tendon" of chicks.

Zinc:—Trace zinc functions in relation to physiological utilisation of one or more of the vitamins and there is some evidence of its relation to insulin function.

Boron:—This is essential to plant life and lack causes disease in cane, wheat etc.

Iodine:—Iodine is present in sea-weed. The hormone thyroxine being an iodine compound. As soon as the store in the gland falls below a certain level, the thyroid tissue increases, and to produce a sufficiency of its iodine containing hormone and thyroid hyperplasia occurs. One part of Pot. Iodide per 10,000 of dry meal or about 0.05 per cent. in a mineral mixture is sufficient and harmless.

Deficiency of Iodine causes Foetal athyrosis or hairless pig malady.

Fluorine:—Too much lack causes Dystrophia of all the permanent teeth. The teeth were down quickly and the animal

is unable to feed, reduced milk yield, exostoses of long bones and mandibles, hypoplasia of dental enamel and other features.

Selenium:—Excess in plants causes non-hatchability of eggs or hatching of monsters or weaklings.

The "blind staggers" of cattle is a more acute form of selenosis than the "alkali disease" of Dakota and liver lesions apparently lead to death before loss of hair or hoofs occurs.

This element is highest in liver and kidneys.

Molybdenum:—The scouring and reduced milk yield of cows in certain seasons may be caused by this element.

Vet. Rec. September, 10, 1938.

Preparations from the Spinal Cord in the Laboratory Diagnosis of Rabies.—(Robert A. Green, Ph. D., and Edward L. Brezeale, B.S.A. Tucson, Ariz.). In the laboratory diagnosis of Rabies, preparations are usually made from the hippocampus major, the gray matter of the cerebellum or the cortex in the region of the fissure of Rolando, because Negri bodies usually occur most abundantly in these areas. Park, Williams, and Krumwiede have stated that they "have always found bodies in the spinal cord in abundance, but here they are especially prone to be localized in discrete groups of cells".

To our knowledge preparations from the cord are usually employed for the demonstration of Negri bodies. In most of the specimens received at the Arizona State Laboratory for the Laboratory diagnosis of rabies, the head has already been removed, and the cord is readily accessible. It occurred to us that the use of the cord for this purpose would result in a considerable saving of time, and would be particularly valuable in cases where the animal had been shot through the head.

We have adopted the following procedure when the head has been removed: Preparations are made from the cord and are strained in the usual manner. If Negri bodies are demonstrated, no further examination is made. If Negri bodies are not found in the cord, then preparations are made from Ammon's

horn. So far, the results of examinations of preparations from the cord and from Ammon's horn have agreed perfectly. We feel, however, that in the event that Negri bodies are not demonstrated in the cord, preparation should be made from the brain.

The use of the cord for this purpose results in a saving of time, particularly in the case of larger animals, where the removal of the brain is not always easy.

Jour. Lab. & Clin. Med. Oct. 1939.

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HOTCH POTCHES FROM VARIOUS AUTHORS CULLED BY JATINDAR NATH NAGAR, AMRITSAR.

Best Anthelmintics.

1. For *Hoemonchus*, *Oesophagostomum* and *Trichuris* Spp. in calves and sheep, copper sulphate with kamala is the most effective combination. Both serve dual purpose, copper sulphate besides being anthelmintic, has the property of passing directly into the abomasum. Kamala kills the worms and expels them. It has proved efficacious to the extent of 90%.

2. For Tape worms in horses *Anoplocephala-magna*, *mamillana* and *perfoliata*, Areca nut 30 to 45 gm. given after fasting, if bowels do not move within 4 to 5 hours, linseed oil 1 pint should be given. It is contra-indicated in very young, old or emaciated animals. Kamala may also be used in 30 gm. doses.

3. For cutaneous *Habronemiasis* (Bursati).

Plaster of paris 100 parts, Alum 20 parts, Naphthalin 10 parts, Quinine 10 parts. Mix and make powder.

This astringent powder is to be applied daily until wounds heal.

4. Use of Tartar Emetic in Veterinary practice:—

(a) 1% solution 100 c.c. intravenously is useful in the treatment of Trypanosomiasis. 4 to 6 injections are given twice a week.

(b) 1% solution 100 c.c. intravenously is useful in Mange, Eczema and Bursati-ulcers. 3 to 4 injections are given twice a week. Similarly it is used in the treatment of *Filaria Haemorrhagica* in cattle.

(c) 1% solution 5 c.c. intravenously is useful in Dracunculiasis of dogs (*Filaria medinensis* or Guinea worm). 2 or 3 injections are given twice a week.

(d) It may some times be given intravenously to reduce the Pyrexia.

(e) Five intravenous injections of 20 gr. of Tartar Emetic at interval of 3 to 4 days are given in the treatment of Nasal Granuloma.

N.B.—Intravenous injections are contra-indicated when there is any pulmonary or gastro-intestinal complications. It should not also be given to animals with feeble pulse.

5. Magnesium sulphate when introduced directly into the blood stream is a powerful and rapidly acting narcotic poison.

Solubility recommended for injections is 100 gm. of hydrated salt in 100 c.c. of water injected at 40 to 50c.

5 to 20 c.c. injection intravenously is given for destruction of small animals as dogs. No distressing cry which is almost invariably heard with hydrocyanic acid poisoning is noticed.

6. Five intravenous injections of 5 c.c. each of Tonophosphan on alternate days cures paraplegia in dogs.

7. One pound grain ration to a cow is sufficient for 4 lb. milk.

8. Normal calving can be delayed as long as a week by milking the cow previous to freshening.

9. If the calf is left with the mother as long as the colostrum milk is secreted, there is very little chance for milk fever.

10. *Best fly repellent*:—A Mixture of Asofoetida 5 parts, Vinegar 13 parts, Water 20 parts, used only externally.

When applied to the body it keeps every kind of fly away for at least some days.

11. Calcium Aspirin in doses of 45 gr. daily by mouth or 15 gr. as intravenously gives good results in the treatment of Chorea in dogs for several days.

12. *Tobacco-lime wash for warble fly in cattle :—*

R_x

Tobacco dust 4 lb. Fresh hydrated lime 1 lb.
Water 1 gallon.

Mix fresh lime with water and to this add Tobacco powder and allow it to stand for 24 hours. Strain and apply on the warble with a sponge or brush.

13. *Milk powder for cow :—*

R_x

Pot Nitrates 1 part, Alum 1 part, Sublimed sulphur 1 part, Prepared chalk 1 part, Aniseed 10 parts, Fennel seed 10 parts, Common salt 10 parts.

All to be powdered and well mixed. 1 to 2 handfuls are to be given with the morning feed.

14. *Bird Tonic :—*

R_x

Pulv capsicum 20 gr. Pulv gentian 1 dr. Ferri per oxide 4 dr. Powdered sugar 4 dr. Syrup simple q.s.

Mix. Put a piece size of pea in cage daily.

17. . or

R_x

Tr. cinchona 13 m, Tr. iron 2 m Glycerine 1 dr.
Aqua caraway 1 oz

Mix. Put a few drops on lump of sugar in cage daily.

18. Antiseptic wash for cage birds :—

R_x

Chinosal 2 dr, Sugar burnt 20 gr, Aqua cinnamon 4 oz, Aqua 1 pint

Mix. Add 1 or 2 teaspoonfuls to bath water and allow the bird to use it. It will quickly destroy all parasites and germs in feathers. For washing the cage area, mix it with hot water teaspoonful to 1 pint of water.

19. For contracted hoof or sore feet

R_x

Lard 1 part, Yellow wax 1 part, Linseed oil 1 part,
Turpentine oil 1 part, Tar 1 part.

Mix. To be applied once a day

20. Horse colic remedy :—

R_x

Chloroform anodyne 1 oz, Spt. Ether Nit 2 oz,
Linseed oil 12 oz

Mix. Given in one dose and repeat in an hour if necessary.

College News

MADRAS VETERINARY COLLEGE.

B. V. Sc. Degree (Final) Examination, October 1939.

The following is the list of successful candidates at the B. V. Sc., Degree (Final) Examination held in October 1939 :—

Second Class.

1. Shanmugasundaram, K. S.
2. Satyendra Rao, P.
3. Paramesvaran Nair, P. N.

Association News.

THE BOMBAY VETERINARY MEDICAL ASSOCIATION.

Proceedings of the Annual General meeting of the Bombay Veterinary Medical Association held on the 30th and 31st December 1939 at Gokhale Hall, Poona City.

Gentlemen present :—

Rao Bahadur V. R. Phadke	Mr. V. N. Kulkarni,
Mr. N. L. Gurjal	„ P. G. Date,
„ J. G. Gokhale,	„ M. K. Garudachar,
„ T. R. Khalatkar,	„ K. R. Alur,
„ D. B. Sapre,	„ B. R. Kodagalli,
„ P. G. Joshi,	„ N. B. Kodbagi,
„ T. R. Kulkarni,	„ G. G. Chebbi,
„ B. V. Nagnur,	„ M. G. Kulkarni,
„ D. B. Khole,	„ G. V. Sohoni,
„ C. R. Sane,	„ V. B. Kharate,
„ S. L. Manjrekar,	„ V. P. Kirtane,
„ Y. K. Velankar,	„ P. C. Bapat,
„ T. R. Tardalkar,	„ G. H. Joshi,
„ V. K. Chatuphale,	„ V. M. Tambekar,
„ M. N. Ronge,	„ A. B. Apte,
„ M. R. Tagare,	„ L. G. Amone,
„ R. L. Jaigaonkar,	„ G. K. Khasgiwale,
„ V. L. Navalgull,	„ N. G. Kulkarni,
„ R. D. Sarnobat,	„ S. G. Dikshit,
„ G. V. Dhade,	„ D. S. Laud,
„ Parnaik,	„ B. B. Joshi,
„ D. H. Welankar	Sardar M. S. Apte, (Gwalior)

The following guests were also present :—

Mr. Popatlal Shah (President, Poona Municipality)
„ B. S. Kambhavi, (Retd. Sub-Judge).
„ R. S. Mansur. (Dy. Post Master, Poona),
„ V. H. Gumaste, LL.B.

Mr. D. N. Jejurikar,	Mr. Baburao Phadke,
„ Herlekar,	„ P. H. Deshpande,
„ Shaikh,	„ R. N. Sane,
„ C. T. Udas,	„ S. G. Nawathe,
„ B. R. Athavle,	„ Pardeshi,
„ D. K. Parvate,	„ Patange,
„ Dange,	„ H. B. Gumaste, Advocate,
„ Palsule,	„ Bombay.
„ Lutuke,	„ Khare.

Mr. T. R. Khalatkar welcomed the guests and the members of the Association in a short speech. (Copy attached).

Messages wishing success to the conference were read.

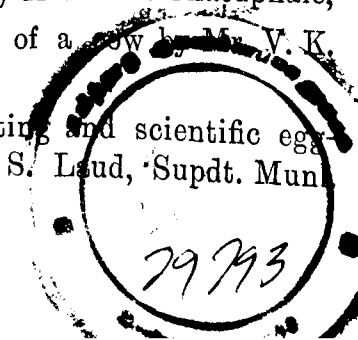
Rao Bahadur V. R. Phadke, the President of the Conference then read his address (copy attached).

The Report and Address of Khan Saheb N. D. Dhakmarwala, President of the Association, were read by Mr. P. G. Date as Khan Saheb was unable to attend the meeting due to his indifferent health. (Published in the last issue of the *Journal*.)

The President then requested the guests connected with the institutions such as Gorakhshan and Bureau of Animal Economy to enlighten the Conference with their activities and Messrs. Parvate and Navathe then addressed the meeting. (Summary attached).

The following papers were read and discussed :

- (1) Yokes, Yoking and Yoke galls by Mr. K. R. Alur,
- (2) Castration of the bull and the castration Bill by Mr. B. B. Joshi,
- (3) Foreign bodies in the Nostril by Mr. V. K. Chatuphale,
- (4) Foreign body in the forehead of a cow by Mr. V. K. Chatuphale,
- (5) Inspection of poultry for marketing and scientific egg-grading before marketing by Mr. D. S. Laud, Supdt. Mun. Mkts, Bombay.



(6) Wire-worm infestation on Tegur farm by Mr. V. N. Kulkarni,

(7) A synopsis on Rinderpest by Mr. V. N. Kulkarni,

(8) Caesarian operation in a cow with Dystokia by Mr. G. G. Chebbi.

The following Resolutions were passed.—

1. Resolved that the Bombay Veterinary Medical Association has learnt with deep regret the sad deaths of Khan Saheb N. K. Vacha, Dy. Supt. Civil Veterinary Department, Baluchistan, Khan Saheb A. I. Shaikh, Retd. Professor, Bombay Veterinary College, Khan Saheb D. F. Dubash, Retd. Supdt. City and Harbour Veterinary Department and Mr. V. E. Vakharia, Retd. Professor, Bombay Veterinary College and in their deaths, the profession mourns the loss of these distinguished Graduates and this Association places on record its expression of deep sympathy towards their families in their sad bereavement (All standing).

Further resolved that the Chairman of the Conference be authorised to forward this Resolution to the respective families.

2. Resolved that the audited statement of accounts be adopted.

3. Resolved that the entrance fee should be Rs. 3/- instead of Rs. 5/- with the usual subscription of Rs. 2/- per annum.

4. Resolved that Khan Saheb Dhakmarwala, President of the Association be requested to again request the Government to consider the Resolutions below:—

A. Resolved that the Government be requested to introduce Post-Graduate Refresher Course in the Bombay Veterinary College and the Veterinary Assistant Surgeons be deputed in batches to attend the same with a view to refreshing their scientific knowledge to enable them to carry on the duties entrusted to them efficiently;

B. Resolved that the Government be requested to amalgamate the live-stock department with the Veterinary Department with a view to carrying out the work connected with animal husbandry, Animal Health and Diseases most efficiently in this Province as has been lately done in the Province of Madras;

C. Resolved that the Association is of opinion that a small dairy and poultry farm be attached to the Bombay Veterinary College so that Dairying and Poultry Farming may be taught as the subjects in the Veterinary curriculum of this College;

D. Resolved that the Government be requested to create in the cadre of the sub-ordinate Veterinary staff, a selection grade with a pay of Rs. 160/- to those who are drawing pay according to their old scale, and with a pay of Rs. 150/- to those drawing pay according to the new scale, and that 10% of the staff be promoted to that grade as many of the Veterinary Assistant Surgeons have reached their maximum of Rs. 140/- otherwise there is every likelihood of there being no incentive for good work.

E. Resolved that the Government be requested to appoint principal examiners for all the Professional Examinations in the Bombay Veterinary College chosen from amongst Veterinarians from any part of India, outside the members of the College Staff and that the members of the College Staff be appointed as internal examiners in their own subjects in co-operation with external examiners;

F. Resolved that the Government of Bombay be requested to allot to the principal examiner only one subject in each Professional examination of the Bombay Veterinary College;

G. Resolved that the Government of Bombay be requested to award remuneration to the internal examiners also and that no invidious distinction be made between internal and external examiners;

H. Resolved that the Government of Bombay be requested to add the word "Medicine" after the word "Surgery" in the present Diploma of the Bombay Veterinary College.

(5) Resolved that the Government be requested to fix fees for private practice in the case Veterinary Assistant Surgeons on the same scale as sanctioned for the medical officers of the subordinate medical service.

(6) Resolved that the following members be appointed as Office-bearers of the Association for the next year.

Khan Saheb N. D. Dhakmarwala, *President*.

Mr. P. G. Date,	}	<i>Joint Hon. Secretaries.</i>
" G. G. Chebbi,		

" T. R. Khalatkar,	<i>Hon. Treasurer.</i>
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" J. G. Gokhale,	}	<i>Members of the Managing Committee.</i>
" D. S. Laud,		
" D. B. Khole,		
" K. R. Alur,		
" V. N. Kulkarni,		

" M. K. Garudachar,	}	<i>Hon. Auditors.</i>
" R. L. Jaigaonkar,		

(7) Resolved that the next annual general meeting of the Association be held at Dharwar during next Christmas holidays.

A vote of thanks to Mr. Kotbagi, the President Rao Bahadur V. R. Phadke and to the members of the retiring Managing Committee terminated the proceedings.

WELCOME-SPEECH

BY

T. R. KHALATKAR.

President and Gentlemen,

I most sincerely accord you all a cordial welcome and thank you for your presence here to grace this occasion.

In the first place on behalf of our Association I express my sincere thanks to Rao Bahadur V. R. Phadke for accepting our invitation to preside and open our Conference to-day. Rao Bahadur Phadke needs no introduction as most of you were his students at one time. He, as you all know, is one of the most distinguished members of the Veterinary Profession in India and had worked in various capacities most efficiently and is the first Indian who rose to the position of the Principal of the Bombay Veterinary College. We should therefore congratulate ourselves for securing the guidance of such an able and sympathetic person for conducting our deliberations.

It is with the express desire of many of our members that this Conference is held at Poona after a long time, and I am very thankful to you for making it a success by your attendance.

I need hardly say about the importance and utility of holding and attending such Conferences. Everybody can realise the various advantages that accrue by meetings of this nature. At least by meeting with each other social relations are increased which help to create sympathy for one another, besides adding to their professional knowledge by comparing notes and conferring on various matters of interest. Doubts and difficulties are removed and many problems are solved. Researches

and investigations in science coming to light every day are helpful for the advancement of professional knowledge. It is therefore evident how necessary it is to meet as many times as possible.

In addition to their usual work of treating ailments of animals and checking spread of various epizootic diseases, the Veterinary Practitioners have to give their advice in many problems associated with the economic life and welfare of the public. They are expected to know the principles of breeding and have to carry out measures in eliminating scrub bulls by castration. Their advice is sought by dairy men in connection with the selection of good milch cattle and their suitable food for increasing and prolonging milk yield. They have to find out and remove causes of abortion, sterility and mastitis which diseases cause enormous loss in the milk industry. The side industry of cultivators *viz.*, poultry farming which has recently developed, has also engaged the attention of the Veterinary Practitioners. They have to deal with the contagious diseases of poultry which cause great economic loss. The Veterinary Practitioners with the co-operation of the local bodies and medical health officers have to play an important role in public health by milk and meat inspection and by stamping out communicable diseases from animals to human being *viz.* Tuberculosis, Rabies, etc. From all this it will be seen that the services of Veterinary Profession are in increasing demand. It is therefore necessary for the Veterinary Practitioners to equip themselves with the necessary knowledge in various branches of Veterinary Science to be really serviceable and useful to the public.

Since the introduction of goat virus, the incidence of Rinderpest has been minimised and this method of control has brought down the enormous losses of livestock from Rinderpest. The rinderpest goat-virus which is being manufactured at the Bombay Veterinary College is in great demand by the surrounding Indian States. We earnestly hope that such vaccines and sera required for combating other contagious cattle

diseases also will soon be prepared in this Province and will be made available at a lesser cost.

At the suggestion of the Veterinary investigation Officer, Bombay Province, the Research Council has introduced the Tick Eradication Scheme and has started experiments by supplying two spraying machines--one in Sholapur District and the other in Kanara District. People will gradually realise the importance and utility and will voluntarily undertake such operations.

I am glad to assure you that our Association is alive with the various handicaps of the Veterinary Profession and is trying its best to bring them home to Government as can be seen from the resolutions passed by the Managing Committee and submitted to Government from time to time. I trust that with our continuous efforts and co-operation we are sure to convince Government and will be successful in getting them redressed. But to the members of our Association I have to say one thing more and that is very important. I very much regret that inspite of reminders many members are in arrears. With the expansion of the Departmental cadre there should have been more members of this Association but reverse is in this case; the members instead of increasing are dwindling down. Every body knows it well that no Association can function properly unless it has a good number of regularly subscribing members. I therefore earnestly appeal to you and through you to all other Veterinary Graduates whom you may meet that they should cast away this apathy and indifference and enrol themselves as members. I also request those who are in arrears to clear their dues without delay.

Secondly I beg to impress upon you the necessity of patronizing the *Indian Veterinary Journal* by subscribing and sending articles of interest. The Journal is the mouth of our profession through which the *Editor* has done valuable service and has very ably ventilated many grievances of our profession. It being the only organ of its kind in India, it is the duty of every member of the Profession to subscribe to it.

Lastly, on behalf of our Association I thank the worthy and distinguished guests who have shown kindness in spending their precious time among us this evening. This is a sure sign of their sympathy and goodwill towards us and the Veterinary profession in general. I pray that the same may continue in future.

I thank you all once more and request the worthy President to open the Conference.

PRESIDENTIAL ADDRESS

BY

Rao Bahadur V. R. PHADKE, G.B.V.C.,
Retired Principal, Bombay Veterinary College.

Brother Delegates and Gentlemen,

It is a great pleasure to me indeed to meet you all here and I am deeply grateful for the honour you have conferred on me by asking me to preside at this Conference of our Veterinary Medical Association. I am sure a better selection could have been made because the burden has fallen on the shoulders of one who feels diffident to bear it.

I am conscious that as a President I have an onerous duty to perform. I assure you gentlemen that I will follow in the footsteps of the illustrious Presidents of past years. I am afraid, so much has been said in Veterinary Research that really there is very little that I can add and any attempt on my part to do so may perhaps be a repetition of what has been said before. However, I suppose one has no right to deviate from the usual practice.

Our role as Veterinarians in the rural uplift in this country has really been very important but unfortunately the same has not been adequately recognised either by Government or by the public. The Veterinary Department, in this Province in particular, has suffered considerably owing to the lack of funds due to Government's financial difficulties. In consequence, we have all suffered but with all that, I think with the limited resources,

we have done great service by minimising the losses sustained by the poor agriculturists by protecting their stock by following various methods curative as well as preventive, in the light of researches during the last twenty-five years.

The Bombay Veterinary College once the premier institution of its kind in India was no exception to this curse of financial stringency and it had once to pass through a serious crisis when its very existence was at stake, but I am glad to say, it came out triumphant at last. It is a satisfactory feature to note that the standard for admission into the College has been raised and the curriculum greatly changed to suit the present day requirements and it is to be hoped that we shall be making strides and regain the lost ground. I look forward to the day when it will be affiliated to the Bombay University bringing it in line with the Sister College at Madras. I am afraid however, if I may be allowed to express my experience in Veterinary Instruction that the new curriculum to be followed which includes many important subjects, is likely to prove embarrassing to the teachers and the taught being rather overcrowded for a three years course and time and experience will show that the course will have to be extended beyond three years.

Modern Veterinary Practice is approaching the incidence of disease from a new angle. Rather than preparing to cure the afflicted, it is endeavouring to build up the power of resistance within the animal in health as opposed to ill health which is bound to yield the greatest information. To achieve this end, a daily contact with animals in health is necessary. This would only be possible when the work of Animal Husbandry as a whole is controlled by a Veterinarian. Needless to say, this point has been repeatedly stressed by eminent workers and administrators in this branch of science.

During the last 25 years great progress has been made in Veterinary Research in India. The Imperial Institute of Veterinary Research is responsible for a vast output of scientific literature and the application of its laboratory results in the field are well known to you. Of all the researches that have

been made I would like prominently to mention the one in connection with the prevention of Rinderpest (a disease as you all know that has been responsible for a severe toll of cattle life in the country for many years past) viz. the introduction of Goat Virus Vaccination which is now being practised on a large scale both in the control of actual outbreaks and as a prophylactic. This is really a great achievement over the previous expensive method of Serum alone inoculation practised for years. The credit of this Research goes to Dr. Edwards, former Director of the Imperial Veterinary Research Institute, Mukteshwar.

Another achievement is the use of a spore vaccine which may provide a solution to the problem of dealing with Anthrax a disease usually occurring in a sporadic form and as well encountered in virulent enzootic outbreaks in this country. Similarly mention may be made about the treatment of Surra a Protozoon disease in horses, camels, mules etc. by Naganol Bayer (205). Also the treatment of Bovine Nasal Granuloma, a helminthic disease of cattle (or the snoring disease of cattle) affecting large number of animals and causing considerable loss to cultivators, by the administration of Antimony Tartarate or by Antimosan a proprietary preparation by Bayer and Company. Besides many other useful biological and therapeutical remedies are available now for treating various ailments of animals. These are required to be tried by clinicians in their daily practice. You will thus observe that Veterinary Science has considerably advanced in this country as elsewhere.

A word of advice to you, my young friends, would not be out of place here. You have taken to a noble profession a profession intimately connected with the well-being of 80% of our countrymen viz. Agriculturists and the immense cattle wealth of the country and as such your duty is not only to alleviate their suffering but to prevent various diseases among them including those that are communicable to man. Veterinary medicine has really intimate connection with human Medicine. What I want to impress on your minds is that the different branches of

sciences are advancing and the Veterinary Science is no exception to it. You must keep yourselves abreast of the times by being in touch not only with books but day to day literature on matters pertaining to the live stock and the profession. You must know that knowledge is power. In short we must know our job and do it well. I associate myself with the Secretary, in recommending to you to be regular readers of the *Indian Veterinary Journal*, which is being so ably conducted by our friend Mr. P. Srinivasa Rao of Madras. You should also contribute to it original and clinical articles of Veterinary interest.

The utility and necessity of holding such Conferences annually in different Provinces cannot be adequately stressed. These serve a very useful purpose in bringing professional brothers together and stimulating interest in discussing problems connected with the profession by exchange of notes. Unfortunately I find that the All India Veterinary Conference has not been held since December 1936 and one wonders the mother Association has become defunct, since nothing is heard of its activities. I hope those responsible would bestir themselves and carry on the valuable work in the interest of our profession in general.

Our Association has been in existence for many years now and its existence owes a debt of gratitude and in this I am sure I am ventilating the feeling of all of you to the indefatigable zeal, energy and interest which our worthy President Khan Saheb N. D. Dhakmarwala, has shown in promoting its welfare. It is to be regretted he could not be present at this Conference. I wish every one of you would take interest in the activities of this Association and try to enrol as members in a greater number.

Gentlemen, we have before us very important work to do. We have to discuss professional papers and I am sure we all would be benefitted to a great extent from the deliberations that may take place in this Conference to day and to-morrow. We are fortunate in having among us here guests who are connected with Institutions such as Gorakshan and Bureau of Animal

Economy, and I have no doubt we would be profitted by listening to their activities and the work they are doing in the gigantic task of improving the live-stock of this country and thereby helping the prosperity of Indian Agriculture. We are also thankful to Mr. Popatlal Shah, the President of the Poona City Municipality who has been kind enough to find time to attend our Conference.

I thank you, Gentlemen, very sincerely for giving me this great honour of presiding over the deliberations of this Conference.

Mr. D. K. Parvate, the founder of the Bureau of Animal Economy, stressed in his speech, the importance of assuming a genuinely sympathetic attitude towards the Cattle keeping problems of the rural folk, an attitude independent of the routinal requirements of the Governmental service. He said that if that attitude was once taken, it would immensely help the improvement of livestock and the general well-being of the people, more than anything else. As regards the Bureau of Animal Economy, he confessed that that institution was yet in its infancy, and had done no work as yet worthy of mention. However, now that Rao Bahadur V. R. Phadke the President of this Conference has recently accepted the Chairmanship of the Bureau, the audience might well expect about two Cattle Breeding Farms in the Poona District, under the management of the Bureau, within the near future.

Mr. S. G. Nawate, B.A., the Hon. Secretary of the Poona Pinjrapole and the Secretary of the Maharashtra Gosamvardhan Mandal emphatically pleaded that the work of Livestock improvement be necessarily entrusted to the Veterinary Department. He made a very cogent remark that since Cattle formed the mainstay of the Indian Agriculturist, an Efficient Veterinary Department was equal to Rural Development, and Rural Development was equal to an efficient Veterinary Department. He further went on to say that the Government was doing a very grave injustice to the Veterinary Department. Scarcely a member of any other Department did half the duty which a Veterinary

Assistant Surgeon does, and he is very poorly paid for that. If there ever was a case for increment in salaries, it was first to be found in the staff of the Veterinary Department, and it was long overdue. The Veterinary Doctors everywhere are already doing a splendid national service, to which individually very little can be added.

Extract

MADRAS LIVE-STOCK IMPROVEMENT BILL, 1940

The Fort St. George Gazette

Madras, Tuesday Evening, January 30, 1940

PART IV-A—BILLS

The following Bill, together with the Statement of Objects and Reasons, is published for the purpose of eliciting opinion. Notice is hereby given that the said Bill will be considered on or after the 1st May 1940 and that any objection or suggestion which may be received with respect thereto before the said date by the Secretary to the Government of Madras in the Development Department, will be considered.

A Bill to provide for the improvement of live-stock in the Province of Madras.

Whereas it is expedient to provide for the improvement of live-stock in the Province of Madras; It is hereby enacted as follows:—

Short title, extent and commencement, 1. (1) This Act may be called the Madras Livestock Improvement Act, 1940.

(2) It extends to the whole of the Province of Madras.

(3) This section shall come into force at once, and the Provincial Government may from time to time by notification in the *Fort St. George Gazette* apply all or any of the remaining provisions of this Act to the whole or any portion of the Province of Madras from such date and for such period, if any, as may be specified in the notification, and may cancel or modify any such notification.

Definitions, 2. In this Act, unless there is anything repugnant in the subject or context—

(a) "bull" includes a buffalo-bull;

(b) "cow" includes a buffalo-cow and a heifer;

(c) "Director" means the officer appointed by the Provincial Government as the Director of Veterinary Services for the Province of Madras and includes any other person on whom the powers or duties of the Director under this Act have been conferred or imposed under section 3;

(d) "licence" means a licence granted under section 4;

(e) "licensing officer" means the Director or any other officer or person authorized to grant licences under section 4;

(f) "prescribed" means prescribed by rules made under this Act;

(g) a person is said to "keep a bull" if he owns the bull or has the bull in his possession or custody; and

(h) a bull is said to be "castrated" if it is rendered incapable of propagating its species.

Appointment of Director.

3. The Provincial Government may by general or special order confer or impose on any person all or any of the powers or duties of a Director under this Act.

4. (1) No person shall keep a bull which has attained the prescribed age except under and in accordance with the terms, conditions and restrictions of a licence granted under this section, unless it is certified by the prescribed officer that the bull has been effectively castrated by a method and in a manner approved by the Director.

Explanation.—Where a person keeps more than one bull, he shall obtain a separate licence in respect of each bull.

(2) Every licence under this section shall be granted by the Director or any officer or person authorized by him by general or special order. It shall be in such form, for such period, and subject to such terms, conditions and restrictions as may be prescribed.

No fee shall be charged for the grant of the licence.

5. (1) Subject to such rules as may be prescribed, the licensing officer may refuse to grant or may revoke a licence in respect of any bull if in his opinion the bull appears to be—

(a) of defective or inferior conformation and consequently likely to beget defective or inferior progeny, or

(b) suffering from an incurable contagious or infectious disease or from any other disease rendering the bull unsuitable for breeding purposes, or

(c) of a breed which it is undesirable to propagate in the district or part of the district in which it is kept.

(2) The licensing officer may also revoke a licence granted in respect of any bull kept within his jurisdiction (whether such licence was granted by himself or by any other officer) if in his opinion—

- (a) the licence was granted under circumstances of which the licensing officer was not aware at the time of granting the licence, or
- (b) there has been a breach of any of the terms, condition or restrictions of the licence.

(3) If a licence is revoked under this section, the other officer revoking the licence shall give notice thereof to the person keeping the bull or to the person stated in the licence to be the owner of the bull. The notice shall set out the grounds for the revocation.

(4) No person shall be entitled to any compensation for the refusal or revocation of any licence under this section.

Surrender of licence. 6. A licence granted in respect of a bull shall be surrendered without delay to the licensing officer, if

- (a) the period specified in the licence expires, or
- (b) the licence is revoked under this Act, or
- (c) the bull dies, or is certified by the prescribed officer to have been effectively castrated by a method and in a manner approved by the Director.

Inspection of bulls. 7. The licensing officer may by order require any person keeping a bull to submit it for inspection by himself or by any officer or person deputed by him for the purpose, at any reasonable time, either at the place where the bull is kept for the time being or at any other reasonable place specified in the order, and thereupon it shall be the duty of the person keeping the bull to submit it for inspection accordingly, and render all reasonable assistance in connection with such inspection to the officer concerned.

Power to order castration of bulls. 8. (1) The licensing officer may by order require any person keeping a bull which in his opinion has attained the prescribed age, and in respect of which no licence is for the time being in force under this Act, to have it castrated, within one month from the date of the service of the order, by a method and in a manner approved by the Director and specified in the order.

(2) Such castration shall be performed or caused to be performed by the licensing officer free of charge, unless the owner or other person keeping the bull desires to make his own arrangements for complying with the order.

Duty to inform owner of contents of notice, or order of castration. 9. If any notice or order is served under section 5, section 7, or section 8 on any person who is not the owner of the bull, it shall be the duty of that person forthwith to take all reasonable steps to inform the owner of the contents of such notice or order, and if he fails to do so, he shall be liable to indemnify the owner against any loss the owner may sustain by reason of such failure.

Production of licence. 10. It shall be the duty of any person who for the time being keeps a bull in respect of which a licence has been obtained and is in force, to produce such licence—

- (a) within a reasonable time, at any place where the bull is for the time being, on demand made by a licensing officer or an officer of the Veterinary Department not below the rank of Veterinary Assistant Surgeon, or an officer of the Agricultural Department not below the rank of Upper Subordinate, or an officer of the Revenue Department not below the rank of Revenue Inspector, or such other officer as may be authorized in this behalf by the Provincial Government by general or special order, or
- (b) before a cow is served by the bull, on demand made by the person in charge of the cow.

Penalties. 11. Whoever—

- (a) keeps a bull in contravention of this Act or of any rule or order made thereunder, or of any terms, conditions or restrictions of a licence, or
- (b) neglects or fails to submit a bull for inspection when required to do so under section 7, or
- (c) neglects or fails to comply with an order served under section 8, or
- (d) neglects or fails to produce a licence when required to do so under section 10,

shall be punishable with fine which may extend to fifty rupees and in the case of a second or any subsequent offence with fine which may extend to one hundred rupees.

Power of licensing officer to castrate bulls. 12. (1) If a person who keeps a bull neglects or fails to submit it for inspection, or to have it castrated when required to do so under section 7, or section 8, the licensing officer may direct that the bull shall be castrated by a method and in a manner approved by the Director and marked with a prescribed mark in the prescribed manner, free of charge.

(2) (a) If it is not known in whose ownership, possession or custody a bull is for the time being and the fact cannot be ascertained after an inquiry in the prescribed manner, the licensing officer may seize the bull or cause it to be seized, and if he is of opinion that the bull has attained the prescribed age and is unsuitable for breeding purposes on any of the grounds specified in sub-section (1) of section 5 may direct that the bull shall be castrated by a method and in a manner approved by the Director and marked with a prescribed mark in the prescribed manner, free of charge.

(b) Every bull seized under clause (a) shall, after it has been castrated and marked as aforesaid where necessary, be sold by public auction or sent to a pinjrapole or infirmary recognized by the Provincial Government in this behalf.

(c) In case the owner of any bull seized under clause (a) appears before the licensing officer within such time as may be prescribed in this behalf and proves to the satisfaction of such officer that the bull is owned by him—

- (i) in case the bull has been sold by public auction, the proceeds of such sale shall be paid to the owner after deduction therefrom

the costs, charges and expenses incurred for the maintenance and sale of the bull; and

- (ii) in any other case, the bull shall be delivered to the owner on payment of the costs, charges and expenses incurred for its maintenance.

(d) The costs, charges and expenses referred to in sub-clauses (i) and (ii) of clause (c) shall be determined in the prescribed manner.

Power of licensing officer, etc., to inspect or mark bulls and to enter premises.

13. For the purposes of this Act, a licensing officer or any officer or person authorized by him in this behalf shall have power at all reasonable times—

- (a) to inspect any bull,
- (b) to mark any bull with a prescribed mark in the prescribed manner; and
- (c) subject to such conditions and restrictions, if any, as may be prescribed, to enter any premises or other place where he has reason to believe that a bull is kept.

Duty of officers to report offences, etc.

14. It shall be the duty of all village officers and servants and of all officers of the Veterinary, Agricultural and Revenue Departments—

- (a) to give immediate information to the nearest licensing officer of the commission of any offence, or of the intention or preparation to commit any offence punishable under this Act, which may come to their knowledge;
- (b) to take all reasonable measures in their power to prevent the commission of any such offence which they may know or have reason to believe is about or likely to be committed; and
- (c) to assist any licensing officer in carrying out the provisions of this Act.

Cognizance of offences.

15. No Magistrate shall take cognizance of any offence under this Act except upon a complaint made by a licensing officer or any person authorised by such officer in this behalf.

Officers to be public servants.

16. The Director, every licensing officer, all officers and persons authorized by the Director or a licensing officer under this Act, and all village officers and servants, shall be deemed to be public servants within the meaning of section 21 of the Indian Penal Code.

XLV of 1860.

17. (1) No suit, prosecution or other proceeding shall lie against any officer or servant of the Provincial Government for any act done or purporting to be done under this Act without the previous sanction of the Provincial Government.

(2) No officer or servant of the Provincial Government shall be liable in respect of any such act in any civil or criminal proceeding if the act was

done in good faith in the course of the execution of duties or the discharge of functions imposed by or under this Act.

18. No suit shall be instituted against the Crown and no suit, prosecution or other proceeding shall be instituted against any officer or servant of the Provincial Government in respect of any act done or purporting to be done under this Act, unless the suit, prosecution or other proceeding is instituted within six months from the date of the act complained of.

19. The Provincial Government may at any time either *suo motu* or on application, call for and examine the record of any order passed by, or any proceedings recorded by, any officer or person under this Act, for the purpose of satisfying themselves as to the legality or propriety of such order or as to the regularity of such proceedings, and may pass such order in reference thereto as they think fit.

Nothing contained in this section shall apply to the orders or proceedings of any Court or Magistrate.

Power to make rules. 20. (1) The Provincial Government may make rules to carry out the purposes of this Act.

(2) In particular and without prejudice to the generality of the foregoing power, such rules may provide for—

- (a) all matters expressly required or allowed by this Act to be prescribed;
- (b) the circumstances in which duplicates of licences may be granted, the fees which may be charged for the grant of such duplicates, and the conditions, restrictions and limitations subject to which they may be granted;
- (c) the powers to be exercised and the duties to be performed by officers appointed under this Act, and the procedure of such officers; and
- (d) the service of notices and orders issued under this Act.

(3) In making a rule under sub-section (1) or sub-section (2), the Provincial Government may provide that a person guilty of a breach thereof shall be punishable with fine which may extend to fifty rupees.

(4) The power to make rules conferred by this section shall be subject to the condition of the rules being made after previous publication.

(5) All rules made under this section shall be published in the *Fort St. George Gazette* and upon such publication shall have effect as if enacted in this Act.

21. Nothing contained in this Act shall apply to a bull dedicated in good faith to a religious purpose in accordance with any religious usage or custom.

Statement of objects and Reasons.

The Royal Commission on Agriculture in India recommended that animals not required for breeding should be castrated as early as possible,

care being taken to ascertain the exact age at which castration can be carried out without interfering with the subsequent development of the animals. The Bombay Live-stock Improvement Act, 1933 (Bombay Act XXII of 1933), carried out this recommendation in the Bombay Presidency. This Bill is intended to achieve the same object in this Presidency. It is largely based on the Bombay Act.

The Provisions of the Bill are to be brought into force only in such areas and for such periods as may be determined from time to time by the Government by notification. The intention is to bring the provisions into operation only in areas where a sufficient number of stud bulls which are free from any disease or defect are available for breeding purposes within easy reach of cattle owners. The Bill requires that licences should be obtained in respect of bulls (including buffalo bulls) which may be used for breeding. All bulls which have attained such age as may be prescribed by rules made by the Government in this behalf and have not been castrated, will be within the purview of the Bill. Licences will be granted free of fee. Unless the bulls can be safely used for breeding purposes, licences will not be granted. Power has also been taken to refuse licences to bulls which belong to a breed which it is undesirable to propagate in particular districts or areas. For example, in the Ongole area, licences may be refused to bulls which are not of the Ongole breed. Provision has also been made for the revocation of a licence when the bull can no longer be used with advantage for breeding. Power has been taken to direct the castration of bulls which are unsuitable for breeding and also for the inspection of bulls, whether licensed or unlicensed. Keeping a bull without a licence has been made an offence punishable with fine which may extend to Rs. 50 in the case of a first offence and to Rs. 100 in the case of a second or subsequent offence. Neglect or failure to comply with an order for the castration of a bull, or to submit it to inspection, or to produce the licence granted in respect thereof, will also be offences entailing the same penalty. Where the keeper of a bull fails to have it castrated when directed to do so under the provisions of the Bill, or when the owner of a bull when requires castration is not known, provision has been made for the compulsory castration of the animal. Castration will in all cases be performed free of charge.

It has been made clear that bulls dedicated in good faith to a religious purpose in accordance with religious usage or custom will not be subject to the provisions of the Bill. Thus, temple bulls will not require to be licensed nor will they be liable to be castrated.

(By order of His Excellency the Governor)

P. APPU NAIR,
Secretary to Government, Legal Department.

Reviews.

Annual Report of the Civil Veterinary Department, Bihar, for the year, 1937-38.

There was no change in the strength of gazetted officers, Veterinary Inspectors and of the Bihar Veterinary College staff. There were only 136 (127) Veterinary Assistant Surgeons to serve the veterinary needs of a province of 69, 377 sq. miles with a cattle population of 232, 73, 43, according to the census of 1930:

The general condition of cattle was satisfactory. Though there were no widespread and virulent outbreaks of diseases still the principal contagious diseases of livestock, such as Rinderpest, Haemorrhagic Septicaemia Foot and Mouth Disease, Anthrax, Black-Quarter, Bovine and Equine Surra contributed 2884 (3289) outbreaks recording a total mortality of 12644 (18632) out of 35,593 (40675) attacks. The decrease in these figures was due to the absence of Rinderpest from some districts. 474091 (504219) animals were immunised against various diseases, the percentage of deaths among the protected being .005 (.08). Sera and vaccines to the value of Rs. 40749/- (52394) were all obtained from Mukteswar and Izatnagar. The local bodies which have been said to have well responded to the needs, increased the staff from 107 to 120 and the rural Veterinary dispensaries from 122 to 132 wherein 143441 (123278) cases including 38933 (38044) castrations were attended to. 100395 (97225) cases were treated in the Veterinary Hospitals whose number remained constant at 29 as in the previous year. The touring staff visited 51292 (46585) villages and treated 374203 (332072) cases including 93500 (90563) castrations.

Breeding operations of the department were confined to the Patna Cattle Breeding and Dairy Farm attached to the Bihar Veterinary college to give practical training to the students in these useful subjects. This Farm supplied 15 stud bulls and yielded 401937 (401702) lbs. of milk, the average milk yield per day per local bred cow being 10 lbs. and per Tharpaker cow being 12 lbs. The Farm grows fodder crops. Total number of stud bulls was 38 (31), all maintained by the local bodies. 38 (33) of the more important cattle and horse fairs and shows held were attended by the staff.

The report says that the Bihar Veterinary College has been gaining in popularity, the admissions being 38 (29). 17 new graduates were produced. The percentage of passes in all the examinations was satisfactory. Principal R. T. Davis retired during the year. Total number of specimens of the blood etc., examined was 4554 (1895) of which 1472 (755) were positive for various diseases.

Investigations into and experimental treatment of many diseases of live-stock were continued with "satisfactory results" by the Disease Investigation Officer financed by the I.C.A.R., in India.

Usual propaganda work was carried out by the staff. The department continued to co-operate with the S. P. C. A. in its useful humanitarian work. The department intends to include in its programme of work :—(1) A scheme for training a small band of unemployed Behari youths in Dairying, (2) Manufacture of goat tissue virus at the Bihar Veterinary College and (3) Increasing its part in the rural development scheme of the Government. The staff contributed three papers for the Jubilee Session of the Indian Science Congress.

Total expenditure on the department was Rs. 700,695, (Rs. 703, 740). Compared with the total provincial revenue the percentage of expenditure by the Government on this department, amounted to 37 (64) as per revised budget. The receipts of the department amounted to Rs. 187,522 (Rs. 180,559).

The report is a good record of increased work all round by the very limited staff.

(N.B. The figures in the brackets relate to the previous year.)

Annual Report of the Civil Veterinary Department, Orissa for the year 1936-37

This is the first report of the new province of Orissa after its formation in April 1936 from out of the old Bihar and Orissa and other neighbouring provinces. The area of this province is 32186 sq. miles with a cattle population of 5,712,956. The Civil Veterinary Department was under the administrative control of the Development Director with an Assistant Director of Veterinary Services to help him as scientific sub-head. The report itself recognises the inadequacy of the strength of the subordinate Veterinary Assistant Surgeons to meet the various veterinary needs of this new province which had 2 Veterinary Inspectors and 33 Veterinary Assistant Surgeons. Seven of the latter were in charge of the Veterinary Hospitals and 21 in charge of touring billets. The Maharajah of Parlakimedi maintains a Veterinary Assistant surgeon in charge of his Veterinary Hospital. Proposals for three more posts of the Veterinary Assistant Surgeons, a Livestock Development Officer and a Dairy Farm Manager were sent up and they were under the consideration of the Government.

Rinderpest, Black-quarter, Haemorrhagic Septicaemia, Anthrax and Foot and Mouth disease were the principal contagious diseases which contributed 1559 (2400) outbreaks. 1279 (1923) of them were attended. Total mortality recorded was 3882 (2675) out of 62950 (128409) affected animals. The increase in the mortality was due to the greater incidence of Rinderpest and Black-quarter. 138336 (106955) animals were immunised against various contagious diseases. Serum alone, sero and tissue vaccine and goat tissue vaccine were the methods adopted against Rinderpest. Sera and Vaccines to the value of Rs. 7653/- supplied from Muktesar etc.,

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were spent. The touring staff visited 10956 villages, and treated altogether 96432 cases including 19708 castrations. The 31 field Veterinary dispensaries treated 26699 (21894) cases including castrations. In the eight veterinary hospitals, 60437 patients were treated and 2402 animals were castrated.

Breeding operations were of a very limited nature and they still continued to be under the Agricultural Department. The Orissa Cattle Breeding Association newly formed during the year with H. E. the Governor as its patron and the Development Director as its Secretary, bought and supplied two stud bulls to the Agricultural Farms. The five bulls stationed at the Veterinary Hospitals and maintained by the Government and the local bodies were duly supervised by the Veterinary Department. Besides these, there were some more bulls in the jails and the Agricultural Farms.

428 specimens of blood smears etc., out of 1153 examined at the Laboratory of the Assistant Director were positive for various diseases. The Disease Investigation Officer of Bihar also attended to his work in Orissa during the year. A separate officer was since sanctioned for this province by the I.C.A.R.

Receipts and expenditure of the Department were Rs. 19024 and Rs. 89395 respectively. The report makes no mention of the percentage of expenditure on the Civil Veterinary Department to the total revenues of the province. Substantial work under the S.P.C.A. has been recorded. Propaganda on the usual lines was carried out. This Department in common with the other departments, experienced a number of difficulties incidental to the formation of a new province out of small and large areas taken from the adjoining old provinces of different degrees of development. Still the report records and the Government appreciates the useful work done by the staff during the year. It will not be too much to expect the Government to expand the Department on the lines suggested in the report, to justify the formation of a new province.

Annual Report of the Civil Veterinary Department, Orissa, for the year 1937-38.

It is the second annual report of the new province which became autonomous under the new constitution, from the commencement of the year under report. The period therefore was again a time for eager discussion rather than of active change in policy or practice and no notable addition or advance could therefore be seen in the report. The reorganisation of the department, a scheme for the improvement of Goshalas and for the training and appointing of stockmen under the Veterinary Assistant Surgeons and the proposal for the appointment of a Live Stock Officer and of a Dairy Farm Manager continued to be under the consideration of the Government. The same I.C.S. Officer continued as the Development Director to hold the charge of the Department being assisted by an Assistant Director of Veterinary Services in all scientific matters. The District Veterinary Officer continued to work during the year but it was decided to revert him to the Madras Civil Veterinary Department replacing him

by a Veterinary Inspector from the succeeding year. The strength of the district subordinate staff of Veterinary Assistant Surgeons was 29 (28) only to serve the Veterinary needs of the province of an area of 32186 sq. miles and a cattle population of 5712956.

The report says the general condition of cattle was satisfactory on the whole, although the year recorded 2043 (1559) outbreaks of principal cattle contagious diseases such as Rinderpest, Haemorrhagic Septicaemia, Black-quarter, Anthrax and Foot and Mouth diseases with 92370 (62950) attacks and 2752 (3882) deaths. Foot and Mouth disease was mainly responsible for the increase in the number of outbreaks and attacks. The staff attended 1605 (1279) outbreaks and immunised 156572 (138336) animals against various diseases using sera and vaccine to the value of Rs. 4680/- (Rs. 7658/-). The reduction in the cost of preventive inoculation and vaccination in spite of larger number of animals thus immunised was largely due to the greater use of goat tissue virus. The touring staff visited 12952 (10956) villages, treated 122840 (96432) cases including castrations and supplied medicines to 32996 cases of Foot and Mouth and other diseases. The number of Veterinary Hospitals remained 8 (8) and in these institutions 66060 (60437) cases received treatment and 3042 (2402) castrations were done.

The departmental staff continued to render all the professional help to the Agricultural Department which still keeps up all the breeding (cattle) operations in the province. The Utkal Gomangal Samiti, formerly known as Orissa Cattle Breeding Association, continued to do good work with the active co-operation of the Civil Veterinary Department and as a result of this, the number of bulls at stud increased from 7 to 45. The Government sanctioned Rs. 1500 to the Association for organising at least one cattle show in each district. Already six shows were held during the year. The Government also held out a promise to make grants to Goshalas if they get themselves registered. All these are no doubt indications of the good intentions of the Government to improve the cattle breeding. Side by side they should increase the strength of the staff of the Department and otherwise allot more liberal grants to the Department itself to enable it to include in its activities all the schemes to improve and safeguard the Animal Husbandry in the province. The expenditure on the Department during the year was only Rs. 103101/- (Rs. 89396/-). The report does not mention what percentage of the total revenues of the province is expended on the Department. We hope this information would be furnished in the future reports. The receipts amounted to Rs. 25191/- (Rs. 19024/-).

The Departmental Laboratory at Cuttack examined 1513 (1153) specimens of blood etc., and of these 503 (428) were positive for various diseases. 79 (50) pathological specimens were added to the museum. The province had no Disease Investigation Officer during the year and the officer appointed to the newly sanctioned post joined duty at the close of the year. The S. P. C. A. continued to do some not substantial work with the close co-operation of the Department.

The report records an all round increase in the useful work of the Department and the Government record their appreciation of it.

N. B. The figures in the brackets relate to the previous year.)

Annual Report of the Civil Veterinary Department, Madras, for the year 1937-38.

There was no change in the strength of the gazetted staff but the subordinate staff of Veterinary Assistant Surgeons increased from 309 to 314 including 34 (32) leave reserves. In addition, two temporary posts of Assistant Lecturers were sanctioned for the Madras Veterinary College consequent on the introduction of the B. V. Sc., Degree course. 41 students for the Degree course and 9 for the Diploma course were newly admitted. 17 out of 24 candidates were successful in the preliminary B. V. Sc., examination and 12 out of 23 in the final Diploma examination. 10 candidates attended the Refresher Course. The Hon'ble Dr. T. S. S. Rajan, Minister for Public Health, Madras, delivered the valedictory address in the Madras Veterinary College Medical Association under the presidency of the Principal T. J. Hurley.

The year was more favourable than the previous one regarding the incidence of contagious diseases. 5706 (5911) reports were received. 53 (59) were pending at the end of the previous year. 5145 (5970) outbreaks were attended. Total mortality from Rinderpest, Black-quarter, Haemorrhagic Septicaemia, Anthrax, Foot and Mouth and other contagious diseases was 7933 (5102) and 11189 (7929) deaths respectively. Out of 717884 (496353) animals immunised during the year against various diseases, 603449 were done in infected areas and 496353 in clean areas. Itinerating staff of 133 (133) Veterinary Assistant Surgeons treated 128981 (137454) cases on tours. The fall in these figures is attributed to the temporary closure of some billets for some time for want of hands. In the 111 (111) Veterinary Institutions 258791 (262774) cases received treatment. The fall in this is attributed to the ill advised and ill-timed introduction of levy of fees in all the veterinary institutions located in the municipal areas during the year and also to the lowering of the income limit from Rs. 200 to Rs. 100 per mensem for this levy. This imposition retards the normal progress of the usefulness of the institution of the young department. This should soon be abolished in the interests of both the public health and humanity—helpless suffering dumb animals.

9441 specimens of blood etc., were examined in the different sections of the Madras Veterinary College Laboratory for diagnostic purpose. Ten cases of criminal poisoning ended in conviction. The work of the S. P. C. A. was quite substantial, especially in the districts of Trichinopoly and Coimbatore. The scheme of immunising against Rinderpest all the animals entering Forest Bison areas was made permanent. The two Veterinary Assistant Surgeons on Forest Cattle Penta duty have done good work and their term of office was extended for a further period of one year. Meat Inspection by the local Veterinary Assistant Surgeons was discontinued in certain Municipalities and Panchayats and in a few others it was continued. Since it is not compulsory on the part of the Municipalities and Panchayats to engage the services of the local Veterinary Assistant Surgeons for this important branch of public health even according to the recent Public Health Act, it has become almost a question of jobbery and personal equation either to employ the local Veterinary Assistant Surgeon or not, for this purpose. This deplorable state should soon be mended.

Municipal lethal chambers for the destruction of stray and ownerless dogs were duly inspected by the local staff of the department.

Propaganda on the usual lines and with the help of the two vans was carried out. A third van was sanctioned after the close of the year.

The Serum Institute which completed the sixth year of its existence, manufactured and supplied the Rinderpest anti serum, Rinderpest bull virus, Rinderpest goat blood virus and the goat spleen tissue virus, Haemorrhagic septicaemia anti serum and vaccine. Sanction was obtained for the manufacture of Black-quarter anti serum and vaccine. Manufacture of other sera and vaccines would be soon taken up with the provision of necessary buildings and equipment. The Institute purchased and supplied other sera and vaccines from outside. The working of the Institute resulted in a net profit of Rs. 150,000/- during the year.

The report contains details of many interesting and instructive items of information of a professional nature regarding Research, Investigation and experimental work done in the different sections of the Madras Veterinary College Laboratory, Serum Institute and by the Disease Investigation Officer and other staff. We therefore commend this report to our readers for perusal.

The expenditure on the department was Rs. 11,11,947/- (Rs. 10,41,630/-) and the receipts amounted to Rs. 78,754/- (Rs. 54,010/-).

Before the close of the year under report, the Government passed orders transferring the Live Stock Section to the control of the Civil Veterinary Department from the Agricultural Department from the beginning of 1st of April 1938. This is a wise step of far-reaching importance and it has cast a very heavy responsibility on the Civil Veterinary Department to justify the transfer. The progress is being watched by all concerned.

The report is, as usual, an interesting record of yet another year's good work.

Annual Administration Report of the Civil Veterinary Department, Hyderabad - Division, for the year 1936-37

The strength of the whole Department was 132 including the Director, 5 Deputy Superintendents and 32 Salustries and Salutri Jamadars as in the previous year. There were 103 (102) Veterinary Hospitals and dispensaries which treated 285,843 (268,163) cases. 124 (119) Veterinary Officers and officials (?) of different designations and qualifications treated 71,687 (53,144) cases and castrated 34,540 (28,874) animals, on tour. 1257 (986) outbreaks were registered with a total mortality of 13,359 (13,417) from various contagious diseases. 578 outbreaks were attended and 335,475 (271,896) animals were inoculated. The Department continued to prepare the Rinderpest virus (both goat spleen tissue and blood) for its use and this resulted in "a considerable saving as is indicated by the fact that the quantity produced for Rs. 2271,

would have cost Rs. 11,109/- had it been purchased from outside". Besides the savings in the cost, this must have ensured regular and quick supply for use in the field. Similar advantages would follow if Hyderabad should soon have its own Serum Institute for the manufacture of all the required biological products for use in the Dominions as Mysore has done for her own purpose. We hope this progressive step will be taken up soon by Hyderabad.

There were 35 (33) stallions which covered 564 (513) mares, average coverings being 25 (21). There were 33 (25) bulls at stud. The Hingoli stud and Fodder Farm continued to do its good work. Col. Sir Arthur Olver and Brigadier General Collins, Director of Army Remounts, visited this Farm during the year. The Veterinary Investigation Officer appointed by the I.C.A.R., continued some useful work especially on Liver Fluke infestation and Bovine Surra in the Dominions. 3328 specimens of blood etc., were examined for diagnostic purposes and 891 of them were positive for various diseases. Details of collection of some parasitological and specimens made in the Museum, have been mentioned in the report. 56 books were added to the Library of the Department, making a total of 355 of which 82 were issued to the staff for reference and return. Bulletins on Animal Husbandry and preventable diseases were issued in Telugu, Urdu and Marathi. The staff participated actively and intensively in all the Rural Development Schemes, Agricultural, Health, Horse, Cattle and Poultry and S.P.C.A. Animal Shows, co-operating with all the other Nation building Departments. Prizes amounting to Rs. 2032/- in cash and 3045 tolas of silver bangles worth Rs. 3007/- besides one gold and 4 silver medals were awarded to the winners in the seventeen Animal Shows. It is gratifying to note that the Rajahs of some Samasthanams also actively helped these Shows and contributed prizes. 4 Broadcast talks on Veterinary subjects were given. First Aid lectures were given in the Police Training School.

The State spent Rs. 48,7740/- on the Veterinary Department. The Government while appreciating the good work in the report, emphasises the need for more intensive campaign in the villages selected for Rural Development Scheme "for an all round development" including the Live Stock improvement on approved lines "for this aspect of Animal Husbandry requires as much attention as the prevention and treatment of diseases". No better ideal could be wished for. It is up to the Department to take advantage of this splendid and encouraging advice of the Government and to put up schemes for the expansion of the useful work of the Department embracing the several phases of the Animal Husbandry work in the Dominions. The work turned during the year is a great improvement over that of the previous year.

OBITUARY.

V. K. CHATUPALE, G.B.V.C.,

It is with deep regret, we have to record the sad demise of one of our colleagues, Mr. V. K. Chatupale, G.B.V.C., Veterinary Assistant Surgeon, in charge of N. M. Wadia Veterinary Dispensary, Barsi, Bombay Presidency, of heart failure, on the 21st January 1940, at the age of 52.

He was taking keen interest in the profession. He was not only subscribing for the *journal* from its very commencement but was often contributing articles. Even in the present issue we have published two of his interesting clinical articles but we never dreamt for a moment that we may have to publish his obituary notes also in this issue.

He leaves behind him his widowed wife, two sons and two daughters and a large circle of friends to bemoan his loss. One of his sons Mr. M. W. Chatupale, G.B.V.C., has been recently appointed as a Veterinary Assistant Surgeon in Palsana, Baroda State.

We tender our heart-felt condolences to the members of the bereaved family.

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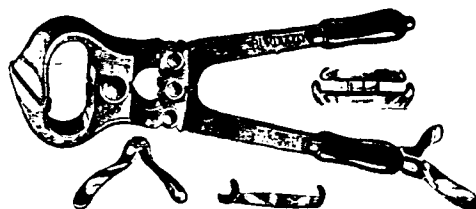
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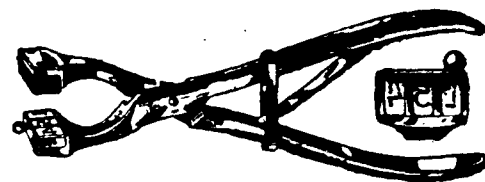
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