C.S.

LIVESTOCK.

No. 62 | 32.

1932.

S. of S. Circular.

1931.

24th December.

Previous Paper.

SUBJECT.

MEMORANDUM ON ANIMAL HEALTH IN REGARD TO THE POSITION OF ANIMAL INDUSTRY IN THE COLONIES.

MINUTES.

1-2. D. of D. Circular despatch of 24th December, 1931.

Veh Off.

For report, accordingly,

Hess.

16.2.32

Ref 3. Hon. Col. Secy.

Report herewith please

J. Howden.
22. 2. 32.

Subsequent Paper.

Y.E.

Brief general report called for by the Sec. of State Submitted together with draft covering despatch.

2. The points raised in para: 2 of the Sec. of States despatch are replied to in paras 8, 9. 10 of the report.

M. Ranji Haidar
Ag. C.S.
9. 3. 32

Ag. C.S.
Noted
Draft of despatch
Approved
J.P.G
10-3-32

Despatch to S. of S. No. 49 of 12/3/32. W-O.

Y.E.

Despatch No 49 Submitted for Signature.

M. Ranji Haidar
Ag. C.S.
15. 3. 32.

P.A.
15/3/32

O/S. Circular of 7th Feby. 1933. 607.

C.S.O. No. 62/32

Inside Minute Paper. *Sheet No. 2*

Vet. Officer

To 2a

J.h. 27. 3. 33.

24. 3. 33

P. Myn. 27. 3. 33.

(8) Letter from Supt. Bureau of Animal Health

Stock Inspector.

Can You furnish the information referred to in Ref (8) please?

J E C S 14/5/36

Hon. Col. Sec.

I have no knowledge of such a disease ever having existed in these Islands.

A.M.B. J.J. 15/5/36

(9). Letter to W. A. Podd, Esq., d/ 19/5/36.

P.A. 20/5/36.

The Position of Animal Industry in the Colonies.

MEMORANDUM BY THE ADVISER ON ANIMAL HEALTH.

The term Animal Industry may be held to embrace every phase of development associated with domestic stock, including production, maintenance, and utilization, and is not capable of limitation to any single aspect, or minor combination, of these closely inter-related and arbitrary divisions. In Britain and in some of the Dominions development has so far progressed as to permit of a degree of specialization now being possible ; but the judging of external form, or a practical knowledge of certain aspects of animal life do not constitute the whole, and premature specialization should be avoided or one sectional interest may gain an ascendancy to the detriment of a balanced industry. In some Colonies however the circumstances may be opportune for increased vigour in certain directions so as to bring about a state of equilibrium or, by a more rapid expansion of " utilization," to offer cause and justification for an increased attention to the other and more primary aspects of the subject.

There can be no doubt that in the course of economic production both in the Colonies and elsewhere the Animal Industry has not developed as rapidly as could be desired. Reasons for this are not hard to find. In the larger animals procreation and development are lengthy processes ; ownership is not infrequently in the hands of those who are indifferent or unaccustomed to progress, and who require a tangible demonstration for their enlightenment. This latter, of necessity a Governemnt educational measure in most Colonies, is expensive, and results cannot be obtained within a single year. For utilization, capital is required, and this is not always readily available.

By comparison, the development of economic crops has been more rapid ; demonstration is more easy, and commercial organizations for the absorption of the products are more available. When the grower has produced his surplus with the object of selling, it is already in a form transportable to the world's markets, or can readily be made so ; and having been produced it does not readily deteriorate or require peculiar and expensive storage.

The nearest parallel in the animal industry is that of hide and skin trade, which in most Colonies constitutes the sole exportable commodity of the live stock ; and in many cases this is a reflection of preventable death rather than of full economic realization.

Among owners who have not yet had the opportunity of learning by demonstration how in number or quality their animals can be made to supply some of the needs for milk- and meat-products in their own countries or in the consuming centres of the world, their stock wealth does, however, even at present, play a most important rôle. The health and stamina of cattle-owning tribes in Africa are customarily superior to those who are unable to obtain cheap meat and milk. Among such people true marriage and the resulting family life is more common. In their stock they possess an asset against starvation, and with the establishment of markets they and their Government have a factor that can maintain a steady purchasing power at times of the year other than that of the crop season and during periods when the crop markets are depressed.

Live stock can be increasingly used for cultivation and transport in place of manual labour. The importance of mixed farming is becoming more and more recognized. In some Colonies crop production is even now dependent upon the use of manure on the land ; in all countries its employment would greatly add to the value of the harvest and the increased productivity of the soil.

In the present crisis, although the consuming power for the many forms and grades of animal products is somewhat diminished, a demand continues and prices have depreciated less than those of the non-food and many also of the food plant commodities. In a state of normality, the increased need for meat and dairy

products ensures demand from the ever increasing population in consuming countries, and improved habits of life and greater expenditure of labour require their use by populations to whom they have previously been unobtainable luxuries.

Conditions in several Colonies are such that production of animal life can be effected more cheaply than in many of the older communities, and it is well to remember that fifty years ago those countries which we now look upon as examples of perfection were devoid of any such claim, that their animal industrial life had not then commenced, and that, indeed, it is within a much more recent period that any real progress has been made. These examples may be copied elsewhere, and the search for or the development of markets for this industry should not await complete perfection of the present stock, but should anticipate this and, in conjunction with demonstration, furnish a direct incentive to additional production.

In many of the Colonies the fundamental requirements of pasturage and water occur in abundance ; in some there are already large numbers of stock awaiting utilization. Prior to introduction by the early colonists of South America, Australia, and New Zealand, these huge areas were devoid of domestic animals and of their zoological relatives. In contrast with this position is that of Africa and Asia, where from the earliest days wild and domestic ruminants have grazed the lands, building up a medley of enemies in the shape of disease, and influenced also by the habits of the peoples, changing sometimes adversely the original character of the pasture. Yet despite these drawbacks, the cycles of disease have left an enormous number of hardened cattle as a foundation stock and a pasture state now adequate. By comparatively little assistance from science the latter is capable of being greatly improved in quality, and the major diseases of being eradicated.

In addition to cattle there exist many millions of goats and sheep. The latter constitute an admirable foundation for the breeding up of both wooled and mutton sheep where other conditions are suitable. Pigs and poultry thrive even at present, and offer great scope for improvement and industrial development.

There exists in most Colonies an ample area of grassland and also a plentiful supply of those foodstuffs which elsewhere are employed as supplements for the increased production of work or milk and for the quicker and better feeding of young stock and those intended for slaughter. Cotton seed, coconuts, groundnuts, and various beans and their by-products, in addition to grains, may be cited as being among the extra foodstuffs available for conversion into animal products.

ECONOMICS.

Some 17 million cattle, 27 million sheep and goats, and 700 thousand pigs are recorded as living in those Colonies, Protectorates, and Mandated Territories for which the Colonial Office assumes responsibility. The distribution is as follows :

Group.	Cattle.	Sheep and Goats.	Pigs.
East African	11,000,000 ...	17,000,000 ...	90,000
West African	3,500,000 ...	7,000,000 ...	75,000
Far Eastern	2,000,000 ...	875,000 ...	275,000
West Indian	370,000 ...	150,000 ...	102,000
Mediterranean	130,000 ...	1,100,000 ..	45,000
Other Colonies, etc. ...	250,000 ...	1,000,000 ...	110,000

In addition to the foodstuffs supplied by these animals for local use importations of animal products to these Colonial groups amounted to nearly £8,750,000 in 1928. Of this sum the quantity of non-edible animal produce, such as wool and hides, is negligible.

	£
East African	465,000
West African	672,000
Far Eastern	4,885,000
West Indian	1,527,000
Mediterranean	432,000
Other Colonies, etc.	758,000

From these figures it is clear that a considerable internal trade awaits development, and it should not be forgotten that among many native tribes in East and West Africa the use of animal foodstuffs is as yet still a luxury and that much can be done to bring about a better local distribution.

In regard to an export trade few of the Colonies under consideration can yet consider the feeding of Britain with meats, yet she imports from foreign countries to the extent of 48 per cent. of the beef and 51 per cent. of the pig meat consumed. The fact should not however be overlooked that 50 years ago there existed no industry comparable with that now operating in Southern America, and upon which Britain has grown to be so dependent.

There are, however, other animal products required in Britain, which do not demand the high standard of perfection insisted upon in the case of carcases. Fats, tallow, casings, bone, blood and meat meals, in addition to hides and skins, are in constant demand, and the quantity likely to emanate from these Colonies will not bring about any saturation of the markets. For prepared meats, such as canned (corned or boiled) and beef extract, it is not imperative that the highest quality animals should be used, exclusively, and for these purposes the type already existing in Africa is quite suitable.

Of these commodities Britain alone imported in 1929 :—

	From Foreign Countries.	From British Possessions.	Total.
	£	£	£
Beef Extract and Essence	1,206,639 ...	77,505 ...	1,284,144
Canned Beef	3,353,491 ...	72,409 ...	3,425,900
,, Mutton	99,117 ...	16,652 ...	115,769
,, Pork	1,166,473 ...	71,974 ...	1,238,447
TOTAL	£5,825,720 (96%)	£238,540 (4%)	£6,064,260

There is consequently evidence that, both locally and for export, animal products are in demand, and this should serve as an incentive for the production, maintenance, and utilization of stock in all Colonies.

In considering this it is necessary, of course, that the cost shall not exceed that ruling for products from other producing countries. In the African Colonies the actual cost of production to the native owner is extremely low, and it is suggested that he might be encouraged to breed and to sell in order to fill some of these requirements and, through the establishment of the necessary factories, to provide him with the means of disposing of that surplus now giving rise to a serious state of over-stocking in several parts of the continent.

In most Colonies, however, considerations of an export trade will only follow an improved internal distribution, and in all of them this is to be aimed at. A survey of the various animal commodities imported will reflect the local demand to be met, and an improved disposal of meat and milk is of first importance. The small centre established for the collection of milk and the preparation of ghee can develop, as supplies become available, into a creamery for the manufacture of butter and cheese and be associated with an industry in pigs and poultry, while the keeping of milking goats can be fostered in places unsuited for cattle raising.

It may be necessary to stimulate trade, not only by the provision of factories for the preparation of these perishable products, but also by encouraging disposal among the owners. Until this is done, neither buyers nor sellers can come together on a footing of equality, and the slogan of " supply and demand " is not effective. The establishment of organized market centres should be encouraged with the object of steadily developing the contact between these two constituents. Already in a small way such steps are being taken in many Colonies, with great advantage to the dealer in live stock, butter-fat, and hides and skins, and through these markets it is more possible to encourage improved methods of production that will ensure a better financial return and a more quickly stabilized industry.

The means whereby these objectives can be achieved is clearly one for local enquiry in the first instance, but it may be accepted that private enterprise can hardly be expected to undertake alone what is tantamount in certain areas to a wide educational movement. The desirability of Governments themselves taking the initiative or, alternatively, of obtaining commercial assistance through a co-operative arrangement is suggested for consideration.

A market for the home-prepared and non-perishable hide or skin has for long existed, but the attention which more recently has been paid both to preparation and to marketing show to how great an extent Government assistance and encouragement is of benefit.

PASTURE AND WATER.

Mention has already been made of the large area of pasture land available in some Colonies. Consequent upon long periods of alternative tropical sun and storms and the seasonal burning down of grass, changes of the grass species inevitably take place and, although some areas will have been improved under a system of European husbandry, others, usually those little used or over-used, will have tended to deteriorate. Means of correction are now available by the introduction or encouragement of the good species and the control of the others. Recent researches have shown that within a single species strains of varying and markedly different food value are procurable. During the periods of transition, deficiencies whether of mineral or of organic constituents can be replaced in the form of supplements or in certain measure by means of fertilizers to the ground, thereby replacing the past wastage from fire and rain-wash.

The problem of land desiccation consequent upon pasture exhaustion is one which faces parts of Africa very acutely and is deserving of urgent attention. The removal of animals surplus to the present-day carrying capacity should be carried out. Pastures suffering from the effects of over-stocking and which are as a result denuded of many of the nutritious cover-grasses should be rested and by a system of rotational grazing be allowed to return to a state approaching that which formerly obtained.

Experimental observations have shown that by improved systems of management grasslands can, not only be made to return to normal, but can be improved by simple methods so as to carry a number of stock which would otherwise bring about a state of over-stocking.

An adequate food supply has been shewn to afford animals a tolerance against various common disease states, and the value and quality of the milk and meat are enhanced. Striking results have already been obtained throughout the world by a more complete understanding of an animal's requirements and the consequent adjustment of its natural diet. The need for fodder preservation, in the form of hay or ensilage, or for the growing of accessory crops is clearly shown in many Colonies where periods of drought and starvation are to be anticipated.

The demand for an improved water supply has already influenced the Governments of several Colonies to institute surveys and trial borings. The fact that in so many tropical countries the rainfall is not evenly distributed throughout the year makes the question of water finding or conservation of especial importance.

GENETICS.

The qualitative improvement of animals on a scale other than one artificially restricted becomes a more practical proposition when the quantitative improvement has been secured through the control of serious disease and the safeguarding of the natural pastures.

It must not be forgotten that the breeds of Britain have been evolved, each in its own area, according to the circumstances of pasture and food supply and to the objectives of the owner. Only in rare instances is it possible to translate all these three factors—type, habitat, and destiny—to a strange land. It has been done in the Americas and the Antipodes, where, however, disease did not arise as an opposing factor, where pasture was found to be suitable, and where management was continued by men possessing the same methods of husbandry.

Too often experimental importations have been made without due regard to these factors and without even a true conception of the type of animal desired.

Government Stock Farms with branches and stud stations in various localities selected both for utility and for observation upon the effect of environment are a pivotal point in this advancement. Private importation may well be supported but records, co-ordinated to considerable accuracy, cannot be expected from many individuals as they can from a central organization. These foci should serve also as demonstrations to the neighbours as well for the maintenance of health as for the improvement through breeding or feeding, which cannot be made available in any other way, especially to native peoples.

The methods open, excluding one of populating with an exotic type, are (1) grading up by means of imported sires, and (2) the selection as parents of those among the indigenous stock which possess the desired qualities in the highest degree. The choice of the method will depend upon the circumstances of habitat including disease, pasture, and husbandry customs of the owners, and upon the objective or destiny of the progeny.

It is not improbable that observation and experiment will disclose types among the indigenous animals as diverse in character as, say, the Ayrshire and the Aberdeen Angus, and with an understanding of these foundation factors a definite and more rapid progress is to be expected.

The apparent inheritance of a tolerance, almost amounting to an immunity, towards certain African diseases is deserving of full enquiry, and may very well prove of value both in the control of disease and in the more ready establishment of a pure-line, breeding from which will be less disturbed by mortality from the related disease.

[OVER]

DISEASE.

Constant or recurrent losses from disease are fortunately not common to all Colonies; their occurrence is higher in those African territories which, from the possession of large numbers of animals, already offer considerable economic advantages for the establishment of a sound animal industry. It will be appreciated that no security to such an industry is possible while a menace from disease is constant.

Research work, especially during the past 30 years, in various Colonies has clearly identified the more important diseases and has furnished means for their eradication. Rinderpest, bovine pleuro-pneumonia, anthrax, blackquarter, and contagious abortion may be cited from among many other of those which were formerly wide-spread and which are now capable of complete control. To these may be added others of a more restricted distribution, though of equal importance.

With the passing of the major epizootics, diseases previously of small significance attract attention and demand control. Investigations into these are proceeding wherever adequate facilities are available, and it may now confidently be stated that, granted the means of applying knowledge arising from research, not only are most of the major contagious diseases no longer a menace, but the minor affections are also steadily yielding to enquiry.

Present investigations also are simplifying the methods applicable or rendering them more effective, or, further, by a reduction in costs, more capable of wider use.

The rate of activity in the process of control is limited by factors of finance and of human understanding. Too frequently disease extends through malpractice on the part of an owner, over whom jurisdiction is difficult, unless co-operation from administrative officers is complete, and necessitates the protection of large surrounding areas.

Control measures are frequently accompanied by the imposition of quarantine, the economic losses due to which may exceed those from the disease itself; emphasis is therefore laid upon the desirability of prompt and comprehensive action so as to permit of a return to normal life without undue delay.

COLONIAL OFFICE,

October, 1931.

(2)

CIRCULAR.

Downing Street,

24th December, 1931.

Sir,

I have the honour to transmit to you, for your information, a copy of a memorandum by my Adviser on Animal Health in regard to the position of Animal Industry in the Colonies, which was recently considered by the Colonial Advisory Council for Agriculture and Animal Health who recommended that it should be circulated to all Colonial Governments.

2. *I regard the question dealt with in this memorandum as of great importance in connexion with the development of local resources and I should be glad to be furnished with a brief general report on the position of the animal industry in the territory under your administration, with special reference to the following points :—*

(a) *the prevalence of disease or other deterrent factors, with an account of the steps which have or are being taken to minimize or eliminate them ;*

(b) *the position in regard to markets, centres, or factories where animals and animal produce can be disposed of ;*

(c) *the possibilities of establishing or developing an industry in animal products* (i) *with a view to rendering the territory self-supporting ;* (ii) *with a view to exporting to other Colonies or to disposal in this country.*

I have the honour to be,

Sir,

Your most obedient, humble servant,

P. CUNLIFFE-LISTER.

The Officer Administering

The Government of

Animal Industry in the Falklands.

Statistics are prepared annually in the Falkland Islands from information furnished in accordance with the provisions of Section 13 of the Live Stock Ordinance 1901.

The following is a summary of the Annual Stock Returns taken from the Falkland Islands Gazette of November 1st 1931.

	Sheep.	Cattle	Horses	Swine.
1927 - 28	631,405	9231	3695	71
28 - 29	613,052	8818	3400	26
29 - 30	606,882	9446	3545	26
30 - 31.	608,914	9669.	3485	37.

Romney Marsh blood predominates in almost every flock in the Falkland Islands. The Romney breed appears to be best fitted to withstand the severe weather conditions which prevail throughout the islands and produce wool to meet the popular demand.

Lambing percentages in the colony are low. The average figure for the past four years is 55. The low lambing percentages result from lack of pasture in the early spring and the severe weather experienced at lambing time.

The Islands are free from disease and parasitic pests of the skin are uncommon. The mortality rate is high; often as high as 20%. and is largely due to severe conditions and lack of pasture in Spring.

With low lambing percentages and a high death rate it is only with difficulty that flocks are maintained up to the carrying capacity of the station.

After the demands of the colony have been supplied there are no surplus animals suitable for the freezing trade. Any surplus stock is boiled down

for tallows.

(Proposals to erect a plant and centralise the boiling down of surplus stock have been considered by the Government of the Falkland Islands but these proposals proved to be impracticable.)

The horses in the colony are all riding animals. A few are bred in the island but most of the animals are imported from South America.

The cattle are of very mixed origin. Hereford Devon, Galloway Aberdeen Angus Shorthorn and Ayrshires have been introduced. Before the introduction of sheep the Falkland Islands raised excellent cattle but the stock in the islands at the present day are poor milk animals and make indifferent beef. Cattle are run mainly with the view to pasture improvement.

J Hamilton.

28. 2. 32.

Report on the Annual Industry of the Falkland Islands.

1. Statistics are prepared annually from information furnished in accordance with the provisions of Section 13 of the Live Stock Ordinance, 1901. The following is a summary of the Annual Stock Returns for the period 1927-28 to 1930-31:-

	Sheep.	Cattle.	Horses.	Swine.
1927-28.	631.405	9,231	3,695	71.
1928-29.	613,052	8,818	3,400	26.
1929-30.	606,882	9,445	3,545	26.
1930-31.	608,914	9,659	3,485	37.

2. During the year 1898, the Colony was carrying 807,000 Sheep, but owing to overstocking and the gradual decline in the carrying capacity of the pastures the number carried in the year 1931, was reduced to 608,914.

3. The Romney Marsh type predominates in the Colony. This type of sheep has proved more suitable than any other for the climate and soil conditions. The Romney when well bred and well fed produces the best paying fleece of long-woolled breeds of sheep, and also produces a carcass suitable for market.

4. Lambing percentages are low. The average during the past four years has been 55%. The approximate percentage of lambs born is 90%, this gives a death rate of 35%, up to the time of dipping. The cause of this heavy mortality is the exhaustion to which the pastures have been subjected as a result of overstocking, and as a result of the defective nutrition the lambs are very weak at birth this being followed by failure in their development. Another cause is the retention of old ewes for breeding purposes owing to the fact that the annual increase of young sheep is insufficient to maintain the flocks without any culling.

5. With low lambing percentages and a high death rate it is only with difficulty that flocks can be maintained up to the carrying capacity of the various Stations.

6. The cattle in the Colony are of very mixed origin. Prior to the introduction of sheep the Colony raised excellent cattle but at the present time the standard of quality is low, due partly to inbreeding and partly to the fact that cattle are run

mainly with a view to pasturage improvement. Cattle are only raised in sufficient numbers to meet local requirements.

7. Horses are bred for riding purposes but in insufficient numbers and importations have to be made from South America.

8. All classes of Stock are free from diseases of a contagious nature. Parasitic pests of the skin are unknown. There is also a total absence of footrot.

9. Under conditions obtaining locally, markets, centres, or factories where animals or animal products can be disposed of are not required. Surplus animals and animal produce are disposed of in the Colony. After local demands have been satisfied there are no surplus animals available for the frozen meat trade.

10. So far as the supply of Sheep and Cattle is concerned the Colony is self supporting and importations are not necessary. Animal products are exported to the United Kingdom.

Falkland Islands
9th March, 1932.

GOVERNMENT HOUSE,

STANLEY.

FALKLAND ISLANDS.

12th March, 1932.

No. 49.

Sir,

With reference to your Circular despatch dated the 24th of December, 1931, transmitting a copy of a memorandum in regard to the position of Animal Industry in the Colonies, I have the honour to transmit, in compliance with the request contained in para: 2 of your despatch, the accompanying brief general report on the position of the animal industry in this Colony.

In duplicate.

I have the honour to be,

Sir,

Your most obedient
humble servant,

JAMES O'GRADY.

THE RIGHT HONOURABLE
SIR PHILIP CUNLIFFE-LISTER,
G.B.E., P.C., M.C., M.P.,
SECRETARY OF STATE FOR THE COLONIES.

Printed for the use of the Colonial Office

Miscellaneous
No. 436

ANIMAL INDUSTRY IN THE COLONIES, ETC.

SUMMARY OF REPLIES FROM COLONIAL GOVERNMENTS TO THE SECRETARY OF STATE'S CIRCULAR DESPATCH OF 24TH DECEMBER, 1931

January, 1933

Printed for the use of the Colonial Office

Miscellaneous
No. 436

ANIMAL INDUSTRY IN THE COLONIES, ETC.

SUMMARY OF REPLIES FROM COLONIAL GOVERNMENTS TO THE SECRETARY OF STATE'S CIRCULAR DESPATCH OF 24TH DECEMBER, 1931

January, 1933

SECTION I.

THE PREVALENCE OF DISEASE OR OTHER FACTORS DETERRENT TO THE DEVELOPMENT OF ANIMAL INDUSTRY, AND THE STEPS TAKEN OR BEING TAKEN TO MINIMIZE OR ELIMINATE THEM.

I. WEST AFRICA.

Gold Coast.

For many years *Rinderpest* has been the dominating disease. It is estimated that twenty-five years ago, there were at least five times as many cattle in the Colony as at present.

Latest figures (1930–1) of domestic livestock are :—

Cattle	137,500 head.
Sheep and Goats	684,200 head.
Pigs	86,810 head.

This head of stock is small in comparison with other African Dependencies. The population of the Colony at the last census numbered over 3 million.

This paucity of cattle is due primarily to the ravages of rinderpest and the prevalence of tsetse fly.

Remedial Measures.—Up till 1929, segregation and isolation of sick and in-contact animals, strict veterinary-police control supported by legislation, and the use of serum alone in actual outbreaks were the steps taken. These proved expensive and futile and it was decided to immunize all the cattle of the country by double inoculation of virulent blood and serum, thus conferring permanent immunity, and then to immunize the young stock annually. This is considered to be the only sure prophylactic against rinderpest for this Colony, surrounded as it is on all sides by French Dependencies.

Immunization by this method was begun in 1930. So far, 60,000 cattle have been rendered permanently immune and it is hoped to complete the initial immunization of all the cattle of the country by 1934. The programme depends, however, on the freedom from sickness of the European veterinary staff which, owing to the financial situation, has been cut down to a minimum. The majority of inoculations have been carried out by field veterinary officers with serum manufactured by them at bush camps under bush conditions.

Contagious Bovine Pleuro-pneumonia is next in importance as a killing disease, but has never become really epizootic. Slaughter of all sick and immediate in-contacts and the use of field vaccine are the measures at present employed to combat it. With the gradual elimination of rinderpest, it is likely to secure increased importance and vaccination will have to be undertaken.

Trypanosomiasis.—Local humpless cattle have a very high resistance to this disease but are not definitely immune. Treatment by intravenous injections of tartar emetic solution has been extensively and successfully employed, but research, clearing on a large scale along rivers, and various experimental work are essential for future stock improvement.

Tick-borne diseases are encountered and dealt with as far as feasible under present conditions.

Nigeria.

The present position in regard to *Rinderpest*, *Blackquarter* and *Pleuro-pneumonia* is very satisfactory. No serious outbreaks during last two years. This is attributable to the immunization of cattle which has taken place on a large scale during the past few years, no less than one million head having been inoculated against rinderpest, three quarters of a million against blackquarter, and 80,000 against pleuro-pneumonia. It is hoped by continuing and extending this policy to eradicate rinderpest completely in a few years and to have the other epizootics well under control.

Gambia.

The disease position is serious. Existing herds of cattle are decimated annually by *Rinderpest* and *Pleuro-pneumonia*, and until these losses are substantially checked, development of individual ownership cannot be expected. It is estimated that there are some 35,000 head of cattle in the Colony. There being no veterinary service in the Colony it has not been possible to do anything to control these diseases beyond the adoption of such elementary precautions as the isolation of sick animals and the prevention of the movement of cattle from infected areas.

Sierra Leone.

Two serious outbreaks of disease have occurred in recent years, namely, an outbreak of *Pleuro-pneumonia* in 1916, which died out in the following year, and an outbreak of *Rinderpest* in 1930, which died out in the same year. So far as it was possible to enforce it, the movement of cattle in the affected area was prohibited.

A few outbreaks of *Anthrax* have occurred since 1922.

Steps have been taken by means of various Ordinances to minimize or eliminate diseases.

The rearing and breeding of cattle is precluded in parts of the Territory by the extensive tsetse fly areas.

II. EAST AFRICA.

Kenya.

The most important diseases are *Rinderpest*, *Pleuro-pneumonia*, *Trypanosomiasis*, and *East Coast Fever*.

Control measures are gradually eliminating the incidence of disease in those parts of the Colony where veterinary services can be given, and 1931 will register the lowest on record. All native reserves and native areas are in quarantine for one or more of the major diseases. The problem presented both in relation to the provision of veterinary staff and the application of control measures is so great that there is no early prospect of these quarantines being entirely revoked.

Other deterrent factors are the presence of uncontrolled squatter stock in alienated areas, the activities of itinerant traders (chiefly Somalis), and overstocking in certain native reserves.

Uganda.

The two most serious epizootic diseases occurring in the Protectorate are *Contagious Bovine Pleuro-pneumonia* and *Rinderpest*. These diseases have been attacked with very successful results by the officers of the Veterinary Department, the chief difficulties encountered being the suspicion or hostility with which native cattle owners at first regarded their work, and, especially in regard to rinderpest, the impracticability of preventing re-infection of areas by game. The Department has now succeeded in gaining the confidence of the natives throughout the greater part of the country, with a consequent lightening of their task. An example of this change of attitude was supplied recently in Buganda, where the natives guarded in a highly efficient manner, and at their own expense, a quarantine line of some 120 miles.

Bovine Pleuro-pneumonia which in 1920 was found to exist in nearly 340 centres, has been eradicated—and no outbreak has been recorded for five years.

Rinderpest was regarded as almost enzootic in the Eastern Province, but in spite of numerous difficulties, the Protectorate was entirely freed from the disease in 1925. A re-infection was successfully resisted in the following year, but two years later the disease again entered from the north-east border, its spread being accelerated by the existing drought and famine, and the infection extended to the game areas. It was generally necessary to attempt to save cattle by inoculation. To illustrate the success obtained, out of 250,000 head inoculated in 1930 only 14,000 perished ; whereas in 1919, when comparatively few head were inoculated, about 222,000 cattle died after natural infection.

Outbreaks of rinderpest are met by the serum-virus method of inoculation, pending the introduction of improved methods, and by strict quarantine. Since, during the last 10 years, the number of

cattle in the Protectorate has doubled (from 1 million to 2 million), it may be claimed that this disease is well under control, although for some time to come the possibility of re-infection from adjacent territories will exist.

The principal major enzootic diseases are tick-borne, e.g., *East Coast Fever* and *Heartwater*, both of which take heavy toll of stock, especially calves, and imported goats and sheep respectively. Probably the provision of a large number of dips would reduce the incidence of these diseases, but this is not thought to be financially practicable at the present time.

Pleuro-pneumonia of goats and sheep and *Scab* occasion loss, but are effectively controlled by quarantine methods.

Tanganyika Territory.

In the tsetse-infested portions of the Territory cattle are practically non-existent, and sheep and goats exist precariously.

According to the stock census of 1930 there were nearly 5,100,000 cattle in the Territory.

The main limiting factors for cattle in the Territory are (1) Tsetse fly, (2) East Coast Fever, (3) Water-supply.

(1) *Tsetse Fly.*—Reclamation work is being attempted, but is often half-hearted, because natives make such bad and extravagant use of their grazing land, because the only methods employed for reclamation, namely bush-burning and bush-clearing, necessitate organized labour of many natives, and because no direct financial return to Government is yielded. The work is done by the natives themselves for no other payment than their own food and is often done badly. If some direct financial return could be assured, it would be worth while employing paid labour under adequate white supervision. One of the most powerful weapons against tsetse, game destruction, is one that is in many ways hateful, and so is not being employed.

(2) *East Coast Fever.*—This could be reduced to negligible proportions if dipping tanks were erected throughout the country. Funds, however, do not permit of this, and under present conditions no end would be served but overstocking.

(3) *Water-Supply.*—The Department of Geological Survey could give a greater proportion of its time to water conservation if direct financial return resulted from such work. As matters stand at present, an improvement of watering facilities for Masai cattle might mean exacerbation of the problem of overstocking.

If the tsetse fly and east coast fever scourges could be removed and the water-supply adequately improved, the Territory could support cattle on every square mile within the extremes of high mountain land and perpetual swamp. At the present time the tsetse-free

areas are carrying a larger stock population than they can support without recurrent heavy mortality during each year of bad rainfall and without steady loss of soil fertility.

Rinderpest, *Bovine Pleuro-pneumonia* and other stock diseases exact heavy toll, but are to a great extent controlled.

Contagious Abortion, *Foot-and-Mouth Disease*, and *Acute Mastitis* are of practically no importance in the Territory at present.

One of the main obstacles to progress is the ignorance of the native, who will not realize (*a*) that the productivity of the soil is limited, continuing to cultivate intensely or allowing to be grazed every available acre of ground every year; (*b*) that he would be much better off with ten healthy beasts than with twenty starvelings. He will, therefore, not voluntarily reduce his numbers nor endeavour to make provision for any form of winter feeding other than is obtained by moving his herds to grazing grounds which are swampy in the rainy season. Power to restrict stock to be kept by natives already exists under the Native Livestock Ordinance, and Government is now considering the feasibility of compelling natives in the Tabora and Mwanza Provinces to sell a portion of their stock and of utilizing the money so obtained for the reclamation of pasture from tsetse and the regeneration of existing pasture which has become eroded through overstocking.

See under Section II.

Northern Rhodesia.

The territory is free from major diseases of stock in the settled areas, and in the native cattle areas adjoining the railway line no transmittable disease is present.

In Barotseland, contagious *Pleuro-pneumonia*, which obtained entrance from Portuguese West Africa in 1913, is a severe deterrent to the advancement of native agriculture. Prior to 1913, Barotseland provided by far the greater portion of the slaughter-stock consumed in the western part of the Territory, and contributed substantially to the cattle consumed in the industrial areas of the Katanga. The cattle were undoubtedly superior to any other stock in Northern Rhodesia. The herds now bear no comparison with those of twenty years ago, having diminished both in numbers and in stamina.

The elimination of the disease will be a long and costly procedure, and depends primarily upon the co-operation of the Paramount Chief. Careful supervision, new blood, dipping tanks, etc., are all needed to establish a good cattle industry.

Tsetse fly is also a great deterrent to the cattle industry, since no attempt is made to keep cattle in areas where the fly is known definitely to exist.

Anthrax and *Quarter Evil*.—Mortality from these diseases, at one time considerable, has been greatly lowered by prophylactic inoculation. Vaccines are issued free to native stockowners.

Tick-borne diseases are becoming yearly of less importance. Practically the whole of the European-owned cattle are regularly dipped, and natives are being encouraged to adopt this practice by means of the provision of dipping tanks in Native Reserves. Over a million head of cattle have passed through the tanks during the last three years.

Nyasaland.

Tick-borne diseases, in particular *East Coast Fever*, which exists in endemic form in many districts, are responsible annually for much mortality in cattle, and for the failure of young animals to thrive and properly develop.

These diseases are being combated by dipping, facilities for which have been extended considerably in the last two years, during which time the position has noticeably improved.

Further extension of dipping should result in a greatly reduced mortality and improvement in the size of cattle.

Trypanosomiasis is no longer responsible (except in the North Nyasa District), for any great mortality in livestock. Losses are being lessened by control of movement, treatment of infected animals, clearance of livestock from danger zones, stemming the advance of tsetse fly by bush clearing, and by the settlement of natives in the cleared areas.

Worm infestation in calves and *Measles* in pigs are prevalent, and are being combated by instructing native stock owners in the use of preventive measures and improved methods of sanitation.

Neglect by natives in the care of their livestock is responsible for a good deal of mortality. In-breeding is also a factor against improvement in the quality of stock. A policy of castration of superfluous male stock is being followed, and efforts are being made to persuade natives to adopt principles of animal management which will result in lessened mortality and improved stock.

The presence of *Fowl Cholera* deters breeders from importing good quality birds to any great extent.

Somaliland.

There is no endemic disease in the country which might prejudice animal husbandry. Periodic visitations of *Rinderpest* and *Pleuro-pneumonia* occur, due to the spread of infection from the south, but these are not sufficiently serious to prohibit the fostering and encouragement of the cattle-breeding industry, and have up to the present been controlled successfully by quarantine and inoculation. *Mange* has been eliminated speedily by dipping and hand-dressing.

Zanzibar.

The only disease of any importance is *East Coast Fever*, which is capable of control. The introduction of other diseases common to Tropical Africa is being effectively prevented by quarantine, which the insular nature of the Protectorate renders comparatively easy to maintain.

III. EASTERN.

Ceylon.

Rinderpest.—Repeated epizootics originating in Colombo, the port through which cattle were imported from India, led to importation from India being prohibited in 1930. This resulted in the speedy eradication of the disease in Colombo, but infection had spread to the less developed districts and is still present and causing heavy losses. A campaign of vaccination with formalized spleen pulp is in full operation.

Foot-and-Mouth Disease is enzootic. Local cattle have a marked resistance, but heavy loss is caused in dairies stocked with cows of European breeds. Attempts are being made to check its spread by restrictions on the movements of affected cattle.

Tick-borne diseases, such as *Piroplasmosis* and *Anaplasmosis*, are enzootic. Trypan blue is used in the treatment of the former, and novarsenobillen for anaplasmosis. There are dipping tanks at the Colombo Government Dairy.

Worm Parasitic Diseases.—Conditions in the wet zone of the Island are very favourable for the development of nematode parasites, causing considerable losses in calves and growing stock, especially *Mecistocirrius Digitatus* and *Ascaris Vituli*. In the dry zone, cases of liver infection with *Fasciola* and *Schistosoma Bovis* are common.

The prevalence of these parasites seems to be correlated to the crowding of animals on tank beds during periods of drought.

Sarcospordiosis is common and the main cause of contamination of carcasses in slaughter-houses.

Trypanosomiasis T. evansi is present in parts of the Island and is believed to be responsible for deaths of cattle and buffaloes.

Fowl Pox is common. Pigeon pox vaccine is now distributed by the Veterinary Department and appears to be of value. It is proposed to start a small poultry farm in the charge of the Veterinary Department for demonstration purposes.

Hong Kong.

Animals are imported by land and sea for slaughter from various parts of China and French Indo-China.

Sporadic outbreaks of diseases (chiefly *Rinderpest*, *Haemorrhagic Septicaemia*, *Anthrax*, and *Swine Fever*) occur amongst these animals on the way to and immediately after arrival in the Colony.

All animals are usually slaughtered within a week or two of arrival. Upon the occurrence of outbreaks of diseases, affected animals and contacts are slaughtered first, and lairages thoroughly disinfected.

Straits Settlements.

No serious stock diseases, except *Foot-and-Mouth Disease* and *Swine Fever* are prevalent, although in the past *Rinderpest* and, less frequently, *Haemorrhagic Septicaemia* have occasioned anxiety.

Quarantine and segregation play an important part in the treatment of outbreaks.

Lack of pasture is a deterrent factor, the only herbage which thrives on the rare open spaces in the Colony being lalang, which is quite useless for food (although eaten by buffalo) and is in fact harmful to certain animals.

Federated Malay States.

There are no serious epizootic diseases of livestock prevalent, but *Foot-and-Mouth Disease* and *Haemorrhagic Septicaemia* are frequently and spasmodically encountered. *Swine Fever* is more or less enzootic, and *Rinderpest* in the past has extorted heavy toll of buffaloes and cattle. As a rule when septicaemia occurs, the death rate is very high, occasionally 100 per cent. *Blackquarter*, not previously recorded as occurring in the Territory, was recently reported in Perak. Disease caused by internal parasites is severe, numerous species of parasites being found in abundance. Poultry diseases of several types also cause heavy mortality.

Quarantine and segregation play an important part in the treatment of outbreaks. Imported biological products are used when available and when indicated.

As in the case of the Straits Settlements, there is practically no pasture in the Territory, lalang being the only herbage which thrives on the rare open spaces. This plant is useless as a food and definitely harmful to certain animals. The whole country is covered with dense forest and jungle, the conversion of which into grazing ground is impracticable.

Unfederated Malay States.

There is no research institute in these territories for the scientific treatment and investigation of disease in the lower animals.

Johore is at present free from any contagious or infectious disease. There are two quarantine stations, and Government slaughter-houses have been erected under Government provision.

Kedah.—The diseases most commonly met are *Haemorrhagic Septicaemia* and *Foot-and-Mouth Disease*, which may be said to be enzootic. The former has been fairly successfully treated by inoculation of sera and vaccines obtained from the Muktesar Laboratories in India. Mortality caused by foot-and-mouth disease is negligible, and the only precaution employed is to restrict the movement of animals.

Rinderpest last appeared in 1920 and killed off some 10,000 head of cattle and buffaloes. Anti-rinderpest serum, obtained from the source mentioned above, has not proved successful in the treatment of the disease, which is generally dealt with by restricting the movements of animals and the enforcement of rigorous quarantine measures.

Kelantan.—Diseases amongst cattle include *Anthrax*, *Rinderpest*, *Intestinal Worms*, and *Rickets*,—and in sheep, *Fluke*, *Intestinal Worms*, and (occasionally after monsoon) *Footrot*.

Anthrax has been endemic for many years,—prophylactic inoculation with attenuated cultures was started in 1929 and, since that date, 1,337 animals in infected areas have been inoculated. The occurrence of this disease is of course prejudicial to the export of hides as well as cattle.

Records do not confirm the prevalence of rinderpest. A disease which caused thousands of deaths in 1911 was suspected to be rinderpest. Only a few cases have been reported since.

Twelve cases of *Foot-and-Mouth Disease* were reported in 1919, a few cases in the following year, and one case was seen in 1928.

Perlis.—No information supplied as to disease. There is no Veterinary Department.

Trengganu.—There is no Veterinary Department, but no report has ever been received by the medical authorities of any outbreak of *Anthrax*—certainly there have been no cases within recent years.

There is no evidence of the prevalence of other diseases inimical to animal industry.

Brunei.

No disease has yet occurred among livestock in the country The latter, however, only comprises about 800 cattle, 3,700 buffaloes, 400 goats, and 1,700 pigs.

British North Borneo.

The Territory is on the whole singularly free from serious animal diseases.

Several outbreaks of *Foot-and-Mouth Disease* in cattle have occurred in the past, which have been met by strict quarantine and treatment. No outbreaks have arisen in recent years.

Other diseases have included *Tuberculosis* in cattle; *Infectious Abortion* in swine at the Experimental Station, necessitating the destruction of all infected animals and drastic disinfection of all pens; and an avian pest resembling "*Newcastle Disease*" amongst a flock of fowls imported from the Philippine Islands.

Financial reasons at present prohibit the maintenance of a Veterinary Department, and it is considered inadvisable to promulgate elaborate regulations regarding the importation of animals and poultry which could not be enforced.

Strict regulations exist relative to the importation of dogs and cats.

IV. MAURITIUS AND SEYCHELLES.

Mauritius.

The principal diseases are *Surra* and *Tuberculosis*, which are under control. The former has been dealt with by the systematic control

of animals and the application of arsenical treatment; the latter by tuberculin tests for the detection of diseased bovines and application of B.C.G. vaccine as a prophylactic measure.

Seychelles.

Cattle suffer heavily from ticks and lice which are usually combated by means of a mixture of coco-nut oil and camphor rubbed into the skin. No dipping tanks exist.

Animals in many districts are underfed, owing to the export of copra having superseded the manufacture of coco-nut oil and cake. The latter feed, formerly very cheap, has now become scarce. Other fodder plants have been introduced to try and eliminate under-feeding, notably *asystasia gangetica* (*coromandeliana*), which has proved to be both an excellent fodder and also the best cover plant for the protection of soil from erosion.

V. WEST INDIES.

Jamaica.

The principal diseases are:—

(i) *Tick Fever.*—This has been controlled by compulsory dipping of cattle, and supply of cheap dipping materials by Government to owners of registered tanks. The general infusion of zebu blood throughout the herds in the Colony has imparted increased resistance to the disease.

(ii) *Anthrax.*—Now of minor importance. Vaccination has been found effective.

(iii) *Black Leg.*—Formerly caused serious losses amongst calves and yearlings, but is now negligible, being generally controlled by the appropriate biological products.

(iv) *Bang Bacillus* and *Johne's Disease* have been introduced through northern cattle, but at present are almost unknown among local herds. Strict precautions are exercised by the Agricultural Department in granting permits in order to exclude these diseases when northern cattle are imported.

Compulsory dipping has increased production by 25 per cent.

Bahamas.

There is no serious disease. There is no Veterinary Department in the Colony, and when required, advice is sought from Florida.

The most serious danger to stock is the prolonged drought which is experienced by the Colony from time to time. On some estates as many as 50 per cent. of the stock have been lost after a severe drought.

Barbados.

In the absence of a Notifiable Diseases of Animals Act, no reliable information can be furnished in regard to the prevalence of disease.

Abattoir records for 1931 show that *Tuberculosis* was the most prevalent disease, 62 animals out of 2,006 slaughtered having been destroyed on account of this.

Piroplasmosis and *Anaplasmosis* are both known to exist—but outbreaks have been usually confined to the plantations concerned.

Bermuda.

No serious diseases prevail.

Leeward Islands.

Antigua.—Foot-and-Mouth Disease, Johne's Disease, Contagious Abortion, Glanders, and *Rabies* do not exist.

Tuberculosis occasionally occurs amongst working oxen. There were no cases amongst the 276 cows examined and passed fit for sale of milk in 1931.

Tetanus is prevalent and has successfully been treated with serum when injected in time.

A few cases of *Piroplasmosis*.

Ixodic Anaemia.—Prevention was satisfactorily accomplished by spraying with Cooper's Dip.

There are few abdominal diseases.

Ample powers exist under the Contagious or Infectious Diseases Ordinances of 1913 and 1930.

The importation of all foreign animals, when brought from the United Kingdom, is prohibited, unless such animals have been detained and isolated at the East India Dock Quarantine Station for at least 14 days. This is a measure of precaution against the introduction of foot-and-mouth disease.

St. Kitts-Nevis.—Factors deterrent to the rearing of stock are (*a*) shortage of water and food during drought season ; (*b*) intestinal parasites, especially affecting sheep.

Both could be lessened by building reservoirs and by the planting of crops which could be stored in silos to be fed when pasturage was scarce. At present many estates depend on wells and ponds for water.

Dominica.—Disease problems are dealt with by owners to the best of their ability. There is no livestock or veterinary officer in the Island.

Montserrat.—There are no serious diseases.

Virgin Islands.—There are no serious diseases. The health of the local stock is remarkably good.

Windward Islands.

Grenada.—There are no serious diseases affecting the development of animal husbandry, although about three years ago there was an outbreak of *Swine Fever* causing heavy losses in hogs. This was dealt with by prompt measures of quarantine, and there has been no recurrence.

St. Lucia.—The collection of reliable information in regard to disease is hampered by the absence of a veterinary officer on the staff of the Department of Agriculture. Lack of knowledge is a deterrent factor in dealing with disease.

Ticks are common to all local animals.

Texas Redwater Fever has been known to cause death in imported Canadian animals not immunized under tropical conditions.

No dipping tanks have yet been constructed. The methods employed are treatment with sprays and greases (e.g., Cooper's Dip) and change of pasture.

St. Vincent.—The most serious disease which has occurred is *Anthrax*, which has existed in the Island in enzootic form for many years.

Other specific diseases are found only rarely.

Preventive measures :—The Anthrax Ordinance of 1911, which provides for the compulsory vaccination of stock in infected districts. The Cattle Diseases Prevention Ordinance of 1869, under which the importation of animals may be prohibited when necessary.

Trinidad.

The Colony is practically free from all forms of proclaimed diseases. A peculiar rabies-like disease of cattle and equines is at present under investigation both locally and in the United Kingdom.

British Guiana.

The Colony is singularly free from infections and contagious diseases.

A few cases of *Anthrax* occurred during the last three years :—simultaneous vaccine and serum inoculation has been practised with success. Most estates on which anthrax has occurred make a practice of inoculating their mules annually.

Imported cattle contract *Anaplasmosis*, and treatment with sodium cacodylate has been wholly successful. Both *Anaplasmosis* and *Piroplasmosis* have been diagnozed in the hinterland.

The more common poultry diseases are prevalent; vaccine and mixed bacteria have been successfully used.

The chief handicap to progress has been lack of interest. The breeding, rearing, and even sale of animals has been too easy and owners have consequently allowed the animals to manage themselves. The position has now changed so far as cattle is concerned—the supply of an inferior type of beef animal being far in excess of local demand. The situation has been studied by a Cattle Committee appointed by the Governor, and the establishment of a stock farm, when funds are available, is proposed. Experiments are being made with the cultivation and feeding of fodder grasses and plants, with a view to the improvement of the cattle trail from the interior. To improve stock, importation has been made by Government of pure-bred Holstein Friesian bulls and heifers, Canadian-type Berkshire pigs, poultry, and Kentucky jack stallions, but has been limited by

lack of funds. Pure-bred bulls have also been imported by a ranching company which is proposing to establish a breeding centre in the interior.

The Colony generally is suitable for the breeding and rearing of all kinds of stock.

British Honduras.

The Colony has up till now been singularly free from diseases and pests. *Anthrax* is the most serious disease, but fortunately has occurred only in one section of the country, and has been controlled by quarantine and inoculation under the supervision of the Medical Department. (Note: There is no Veterinary Department in the Colony.) No *tick-borne diseases* appear to have occurred for many years. Dipping is receiving the attention of breeders, some of whom have practised it for a considerable time.

VI. WESTERN PACIFIC.

Fiji.

Disease as a deterrent factor in the development of animal industry is not of first importance.

Tuberculosis is enzootic and would be serious if uncontrolled. Little progress has been made towards total eradication. It is held in check only by the destruction of cases as they become clinically manifest.

Stephanuriasis is the worst disease amongst pigs, caused by infection with the kidney worm *stephanurus dentatus*. Unless pigs are housed in the sanitary manner advised by the Veterinary Division their production for food purposes is not a commercial proposition.

Gilbert and Ellice Islands, British Solomon Islands.

No information furnished regarding disease.

Tonga.

No disease is stated to exist.

New Hebrides.

Disease amongst cattle is rare, and up to the present has not called for any special measures other than periodical inspections by a Meat Inspector of animals slaughtered for human consumption.

VII. MEDITERRANEAN.

Cyprus.

The Island is comparatively free from serious disease. *Sheep Pox*, *Goat Pox*, and *Bovine Tuberculosis* have been practically eradicated, and *Contagious Bovine Abortion* is in process of eradication. Increasing attention is being given to *Blackquarter* and *Anthrax*,

which, it is hoped, will result in their intensive control (400,000 animals were treated with anthrax vaccine in 1931). Sheep and goat abortion, pseudo-pox, and bovine stomatitis require fuller investigation. *Parasitic infections*, which cause serious losses, are being dealt with as far as possible by free medication, and the instruction of stock owners in practical preventive measures. One of the chief difficulties in the control of disease and improvement of livestock is the ignorance of stock owners of modern methods of breeding, feeding, and general management.

VIII. PALESTINE AND TRANS-JORDAN.

Palestine.

There is no continuous loss from the major epidemics, and eradication has been shown to be possible under various restrictions.

The chief sources of trouble are diseases caused by external and internal parasites (*Anaplasmosis* and *Piroplasmosis*, "*Warwar*," *Mange*, and *Gastroenteritis*). Control depends upon the destruction of parasites by regular and systematic dipping and drenching of stock. Demonstration of these methods has been given on a small scale to stock owners and villagers.

Trans-Jordan.

Principal diseases are :—*Haemorrhagic Septicaemia*, *Piroplasmosis*, *Sheep Pox*, *Mange*, *Foot-and-Mouth Disease*, *Tick Diseases and Contagious Pleuro-pneumonia*.

These have been usually introduced from neighbouring countries, and the nomadic habits of flock owners, combined with the meagre funds available for the veterinary service, render the treatment of outbreaks extremely difficult.

Improvements to stock by means of imported cattle are being attempted. Local sheep compare favourably with those of neighbouring territories. Grazing could be greatly improved by the introduction of suitable grasses.

IX. FALKLAND ISLANDS.

All classes of stock are free from contagious diseases; there is a total absence of *Footrot*, and parasitic pests of the skin are unknown.

Death-rate in lambs is very high, due to exhaustion of pastures through overstocking and resultant defective nutrition.

SECTION II.

THE POSITION IN REGARD TO MARKETS, ETC., WHERE ANIMALS AND ANIMAL PRODUCE CAN BE DISPOSED OF, AND THE POSSIBILITIES OF ESTABLISHING OR DEVELOPING AN INDUSTRY IN ANIMAL PRODUCTS.

I. WEST AFRICA.

Gold Coast.

At present some 50,000 cattle and 100,000 sheep and goats are imported, the majority by land from French Colonies. All find a ready market. Locally, over 10,000 cattle are known to have been sold to the markets and large numbers of sheep, goats, pigs and poultry. The price of meat is consequently somewhat high and will remain so until more meat is available.

Hides and skins are not very great in number, consequent on the relatively small slaughter figures. The trade is regarded by commercial firms as of secondary importance, and because of this, and because of the collection being made over a wide area, quality is poor owing to poor flaying. The Veterinary Department are endeavouring to stimulate interest in the necessity for proper flaying, etc., and a definite improvement has taken place in recent years. Encouraging reports have been received as to local sheep and small goat skins.

A little dairying exists in the vicinity of the large towns.

It will be many years before the Colony is self-supporting in animal products.

British pigs and poultry now are present in large numbers owing to their development at the Livestock Farm of the Department of Animal Health. Crosses between these breeds and local varieties yield much improved stock and command prices more than double those of the indigenous stock.

A proposal is on foot to establish a central commercial organization to purchase cattle, slaughter at Kumasi, and chill the meat there, in order to improve the distribution of meat throughout the country.

With the exception of hides and skins, there is no immediate prospect of the export of animal products.

Nigeria.

The cattle, sheep and goat population is confined mainly to the Northern Provinces, and the markets of the Southern Provinces furnish a very accessible outlet for all surplus animals. About 100,000 trade cattle are sent annually for slaughter in the South, and about 200,000 are slaughtered annually for consamption in the North. Of this total about one-third emanate from the French territories adjoining the Colony, but as herds increase, more and more of the total requirements in meat will be met from the Northern Provinces. There is an increasing export trade in cattle to the Gold Coast.

The establishment of a factory for slaughter and distribution of meat in chilled or prepared form would be of the very greatest assistance to the development of the animal industry in the Colony by creating an assured market for the sale of all surplus stock at a reasonable price, which would not be influenced by supply and demand and the need of the native for ready money.

The export of hides and skins is of considerable importance to the Colony. In 1930, cattle hides, value £192,814, and goat and sheep skins, value £662,008, were exported. Attention is being given to improving the quality, and a system of inspection is in force in Kano and some of the other Provinces to control flaying and drying. Skin diseases, which have occasioned considerable financial loss, are now being investigated.

Possibilities exist for the development of trade in clarified butter for local use. This would provide an outlet for surplus which cannot be disposed of in markets near at hand. The samples produced have met with a favourable reception as a substitute for imported tinned fats.

Gambia.

There is no organized animal industry and no factories in the Colony where animal products can be disposed of.

Consumption of meat is met from local sources. Hides and skins (untanned) to the value of about £2,000 are exported annually.

There is little possibility of developing an industry in animal products until some effective measures have been taken to control cattle disease (*see* under Section I).

Comparatively good herds are seen in the country, but they are not individually owned. The only use to which sheep, cattle and goats are put is in folding them on the land. Cattle are not employed as draught animals, because they are owned by a few individuals and it will be necessary to develop private ownership before they can be used generally for ploughing; because the staple crop (groundnuts) is entirely grown by means of shifting cultivation, and farmers do not see the necessity for clearing land of roots and stumps when they can raise their crops without so doing; because of decimation by disease; and because a suitable plough for general use has not yet been devised.

Sierra Leone.

No factories for dealing with animal products exist.

The principal cattle market is at Freetown, where about seventy bullocks are slaughtered weekly. The total annual consumption in the Colony is between five and six thousand head.

The number of cattle in the country is probably not more than 100,000 head. Up to 20,000 are imported annually from French Guinea.

It would be necessary for the number of cattle in the country to be multiplied five times before the Colony would have an adequate supply of cattle products for local needs, and until then an export trade cannot be contemplated.

II. EAST AFRICA.

Kenya.

The East African market is relatively small compared with the present production of dairy produce and will probably become decreasingly important.

The Colony is self-supporting in regard to animal products.

Factories.—There are three creameries and a well-equipped bacon factory in the Colony. The latter provides practically all the bacon exported to neighbouring countries, and also has a large output of tinned products, most of which are consumed in Africa.

The Colony is self-supporting with regard to animal products, and considerable surpluses are produced each year which are marketed in Great Britain, Europe and in the neighbouring East African territories.

Butter.—London market has been successfully explored and potential markets include Seychelles, Sudan and Central Africa.

Cheese.—Apart from the East African market and possibly India there is little prospect of the development of an export trade.

Ghee.—Market is liable to be flooded with importations of low grade quality, chiefly from Tanganyika.

Meat.—Local market is quite unable to cope with available supplies. A campaign is in progress to induce natives to eat meat with the object of improving their diet and reducing the surplus stock in the Reserves.

Wool.—The type at present produced finds a special market in Europe.

Hides and Skins.—Are mainly from Native Reserves and find an outlet in Great Britain.

Poultry.—Local market is now fully supplied. Great Britain may be a market in the future for egg producers.

Pig Products.—Producers are now overhauling their breeding stocks and methods of production with a view to considering the economical possibilities of exporting bacon in quantity at a later date.

An experimental consignment of frozen pork was sent to London in January, 1931, the results of which have largely influenced the

outlook for this industry. Further consignments are contemplated, and under normal conditions it is thought that an export trade in pig products can be established.

Uganda.

The internal trade in cattle is of comparatively recent growth and has been dependent upon the eradication and control of disease (*see* under Section I). A slaughter stock route has been successfully organized with the result that between £30,000 and £40,000 has been realized in the areas concerned during the last two years through the sale of domestic stock, whereas in 1927 the value of this trade was negligible.

The principal meat markets are at Kampala and Jinja, but a regular trade in slaughter animals exists at all the small district markets. In these smaller centres, the value of the stock slaughtered annually is put at £200,000 at least. In Kampala as many as 70 or 80 carcasses pass through the slaughter houses daily during festival periods. Attention is being given to the lesser by-products of the slaughter trade.

The fall in the price of meat (from about one shilling to 50 cents per lb.) and the amplification of supplies have been accompanied by an improvement in the milk supply in towns, which is now almost sufficient to meet all needs. Trade is principally in native hands but there are three European dairies operating in connexion with the Kampala milk supply.

Hides and skins depots are situated at Kampala and four other centres; these are primarily buying centres, the hides being sent to Kilindini for grading and despatch overseas.

Considerable propaganda has been undertaken in connexion with the ghee industry, and natives now realize approximately double the price they obtained before receiving instruction from the officers of the Department.

No factories for the disposal of animals or animal produce as yet exist.

In order to develop the animal industry in Uganda to make the domestic stock sufficient for the needs of the inhabitants, attention has been concentrated upon the simplest and most essential measures. These include demonstrations of safe and simple methods of castration and its value, the re-stocking of areas previously decimated by rinderpest and tsetse attacks, the maintenance and improvement of water-supplies, the reclamation of tsetse-infected areas, and the improvement of local stock.

Exports.—*Hides* and *skins* are the most important. Natives are now being instructed in flaying and skinning and the advantages of shade drying have been demonstrated to them. It is hoped by insistence on quality to establish a steady trade of a value of about £200,000 a year.

Attention is also being given to other by-products, e.g., horns and bones (for manure). Endeavours are being made to improve local strains of fowls by means of imported species.

Tanganyika Territory.

Sheep.—There are approximately two million native sheep in the Territory. They are a fat-tailed haired breed and are used principally in tribal ceremonies and for sale to non-natives, being rarely killed for ordinary food by their native owners. The skins are valueless.

A wooled-sheep industry could only be established on the grass-land and the feasibility of this is being investigated on a stock farm near Njombe.

Sheep cannot be maintained profitably within fly-belts and outside these areas, anthrax, scab and (especially) strongylosis are wide-spread.

Goats exist to the number of over three million. They are killed by natives for food in great numbers and their skins are a marketable article of importance. Little need be done in connexion with the goat industry beyond combating anthrax and skin diseases, and instructing natives in correct drying and flaying of skins.

Cattle. *See* under Section I.

There are over five million cattle in the Territory. Ankole cattle, which number only about 200,000, breed slowly, and so do not give rise to an overstocking problem.

So far as European-owned cattle are concerned, they are at present available only in comparatively small numbers and the general policy is to produce a type of milking cow suited to the tropics with the object of meeting a local demand for dairy produce.

The Tanganyika ox is capable of furnishing products appreciated throughout the world—the meat being excellent for extract purposes, and providing a canned product suitable for many markets. There is a steady demand for hides, and by-products are of quite good quality.

The Territory is in a transitional state in regard to markets. Stock are offered for sale in numbers greater than can be absorbed by internal trade, and by the external trade which exists in the form of export of beef products by Meat Rations, Ltd., and of animals on the hoof to neighbouring countries.

Supplies, however, are still too few and irregular to increase the export trade. The ghee trade is small but capable of development.

Northern Rhodesia.

Markets open to the cattle of the Territory are for meat alone. No factories for disposal of animal produce exist; this is mainly due to lack of business enterprise. In the past it was no doubt attributable to the distance between the places where animals were slaughtered, but the recent mining development in the northern

districts has resulted in a number of large slaughter-houses being established within a close radius, and there should be an adequate opportunity for a small factory to handle some of the waste products.

Great waste occurs in the disposal of hides, owing to slipshod flaying and drying and packing. It is proposed to carry out instruction in flaying, drying and preliminary curing within the reserves.

It is questionable whether, for some time, the establishment of industries would render the Territory self-supporting.

At the present time all fertilisers and poultry foods are imported, and much produce which at present is wasted could be used in their manufacture. The manufacture of soap, candles, and similar products would have to be undertaken by ordinary business institutions. A Co-operative Livestock Society has recently been formed for the disposal of cattle. Its functions at the moment are merely to handle live animals and hand them over to contractors for slaughter and disposal, although later it may undertake the latter work. Joint effort between this Society and the North-West Rhodesia Farmers' Co-operative Society, which devotes itself exclusively to the sale of maize, would be beneficial, since the two could no doubt undertake the manufacture and disposal of poultry foods, bonemeals, and fertilisers.

Difficulties in the way of the development of the cattle industry are (i) the question of providing adequate foodstuffs for the whole year, the rainy season lasting from November till March, and steady deterioration in pasturage ensuing during the period March to November; (ii) the necessity for the improvement of herds by elimination of old cows and immature heifers and castration of undesirable males, and for the introduction of fresh blood, to promote which improved animals are being bred at the Mazabuka Research Station; (iii) the difficulties of persuading natives to conserve grazing, to cut veldt grass for hay, and to make ensilage. To grow a crop for the purpose of feeding it to an animal is beyond the comprehension of the average native.

There is little prospect of exporting any animal products for a long time with the possible exception of gelatine. The distance from ports and high cost of freightage will probably prevent export of live animals. No markets are available in Southern Rhodesia, the Union of South Africa, or any other adjoining territory. Markets will have to be found in Europe.

Nyasaland.

There are no factories in the Protectorate at which animals or animal produce can be disposed of. The principal markets are situated in the chief centres of settlement, i.e., at Blantyre, Limbe, and Zomba.

The livestock of the Protectorate is sufficient to supply local requirements in fresh beef, mutton, poultry, eggs, butter, and milk, but only a small part of the requirements in hams, bacon, cheese, and ghee.

The only exportable commodities are hides and skins, and the trade in these is small and the quality of the produce poor.

Factors deterrent to the development of an animal industry are the comparatively small numbers of livestock in the country, the existence of disease and ticks and of many tsetse-infected areas which cannot be stocked, over-stocking in many areas, paucity of grazing during the dry months of the year, neglect in the care of livestock, in-breeding, and disinclination on the part of the natives to exploit fully the value of their stock. (*See* under Section I.)

Somaliland.

The Protectorate is badly situated as regards markets for slaughter animals, since local consumption is very small, the nearest market (Aden) is on the downward grade, and the country is adversely situated geographically, being off the beaten track and the nearest potential markets lying at a distance of five or six days by sea.

No centres or factories exist where animals and their produce could be disposed of.

The country is self-supporting as regards meat and milk.

The present animals could undoubtedly be increased in value as producers of meat and milk, and do in fact produce a surplus for export. The main obstacle to an increase in the animal population lies in the present lack of watering places. The increasing of the head of stock would augment the surplus available for slaughter, but disposal would depend upon the provision of markets and upon the native being persuaded to trade his surplus stock at an economic price. The export of sheep and goats could be increased by some 5,000 head monthly. Encouragement is being given to the skin trade. The trade in ghee and surplus stock for slaughter could be stimulated by increasing the cattle population, and by grading up the indigenous animal for purposes of milk producing.

Financial considerations preclude the establishment of a Government Stock Farm, and it is thought unlikely that a canning factory or freezing plant could be run with success at the present time.

Zanzibar.

The Protectorate is unable to meet its meat requirements, and a very good market therefore exists for cattle, goats, sheep, ghee, butter, etc.

The cattle population is estimated at 30,000, but only two classes are regarded by local owners as of importance, namely, cows for milk production and bullocks for transport purposes. No attention is paid to breeding for meat production, although no less than 3,389 head of cattle, value Rs. 169,479, were imported for slaughter in 1931. Breeding is absolutely indiscriminate; bovines have been

in-bred for generations; castration of undesirable bulls is not practised nor are bulls selected for stud purposes. Attempts made to improve local stock have been unsuccessful because they were never organized and the wrong types of exotic stock were chosen. There is vast room for improvement merely by grading up from the local stock already available, but an organized scheme with a Government Stock Farm as its basis is essential.

It is not anticipated however, that the Protectorate will ever be completely self-supporting in beef production.

The climate generally is suited to stock-raising and there is ample good grazing, even although practically all cultivable land in the Islands is under cultivation. The presence of cattle in the coco-nut shambas would assist the cultivation of this crop.

The animal industry would be a purely local one, i.e., the production of fresh milk and its products and beef for local consumption. The development of such an industry would do a great deal to solve the position of malnutrition in the native population. At present large sums are spent on the importation of preserved milk. There is no reason why, with organized stock-raising, Zanzibar should not produce the bulk of its requirements for beef purposes. This would constitute a valuable side line for the smallholder, now that profits on cloves and copra have dwindled so greatly.

A largely increased head of goats could be carried. There are at the present time some 23,000 in the Protectorate.

The only exportable commodity would be hides and skins, as at present.

III. EASTERN.

Ceylon.

Apart from the cattle market in Colombo, which is handicapped by not being situated on the railway, markets, centres, and factories are practically non-existent. Attempts to establish local cattle fairs in 1929 and 1930 were not successful.

There are a few tanneries, but they are not in a very thriving condition.

The animal industry is in a very undeveloped condition. Livestock do not play any important part in the tea and rubber industries, and in coco-nut planting they are unimportant save as a source of manure. They are, however, very important for the cultivation of the soil in paddy growing. Buddhism is the religion of the great majority of the people; consequently there exists a marked disinclination to utilize any product the preparation of which has entailed the taking of life.

Since the prohibition of the import of cattle from India (*see* under Section I), the Island has been largely self-supporting. Meat is low in price, but poor in quality. Draught cattle for carting and ploughing are bred locally. Cattle are not especially bred for the

butcher, the demand being met from surplus stock unsuitable for carting or ploughing. A small quantity of frozen meat is imported. Bacon, ham, and pork to the value of Rs. 465,671 were imported in 1929. Large quantities of dairy produce also are imported (over Rs. 2,786,000 value in 1929).

Fresh milk is very scarce, and, except in some of the up-country tea-planting districts where good milking cows of European breeds are reared, the price is very high, and large quantities of tinned milk are imported in consequence. Demand is chiefly from the towns. Very little butter and cheese is made. Ghee is made locally, but the supply is insufficient to meet requirements and is supplemented by importation from India.

It should be possible to make Ceylon self-supporting as regards poultry, eggs, and goat meat. The development of a collecting and marketing organization is needed.

There is no prospect in the near future of the development of an export trade. Raw hides and skins are exported at present, but this trade shows no signs of expanding. If excessive branding was checked, a higher price for skins might be obtained.

The value of undressed hides and skins exported in 1929 amounted to Rs. 1,091,770.

There are a few tanneries at which leather is prepared from local hides.

Hong Kong.

There are 25 public markets supplying fresh beef, pork, mutton, etc.

Frozen beef and mutton imported from Australia are retailed by a cold-storage company from its own shops.

Lard factories, under the control of the Chief Veterinary Surgeon, adjoin the two slaughter-houses; here large quantities of lard and sausages, dried meat and cracklings are manufactured for export, chiefly to Manila and the Philippine Islands, to Liverpool and London. The Colony must always depend on imported meats. Its area is not large enough for stock-raising in any quantity; moreover the best land is cultivated for rice, fruit and vegetable growing.

Hides and Skins.—55,231 cattle, 18,326 sheep, and 379,190 pigs were slaughtered in 1931. With the exception of a few hundred hides tanned locally, the remainder were exported to Japan, and the United States of America. This trade and the trade in lard could possibly be diverted to the English market.

Straits Settlements.

No factories exist for the handling of animal products. With the sole exception of hides and skins, the trade in animal and dairy products is entirely import.

In 1930, imports into Malaya included :—

		Value $
Cattle and buffaloes	31,567	2,850,000
Swine	181,133	4,539,000
Sheep and goats	65,138	984,000
Milk (condensed and sterilized)	1,315,858 cases	12,747,000
Butter (tinned)	11,067 cwt.	714,000
Eggs	520,975 hundreds	1,343,000

In 1931, there was a marked decline, the figures being as follows :—

		Value $
Cattle and buffaloes	14,896	1,147,629
Swine	147,791	2,743,887
Sheep and goats	50,285	594,217
Milk (condensed and sterilized)	952,260 cases	9,360,913
Butter (tinned)	9,839 cwt.	534,460
Eggs	403,931 hundreds	748,445
Ghee	1,061 tons	1,065,009

The export of hides in 1930 was 925 tons, value $819,543, and in 1931, 681 tons, value $486,605.

The population of the Colony is roughly 1,114,000 and it is estimated that there are 37,600 buffaloes and cattle, 23,700 sheep and goats, 105,700 pigs, and about 500 horses in the territory. Values per head are put at $80 for buffaloes, $50 for cattle, $15 for sheep and goats, $20 for pigs, and $500 for horses.

The Colony cannot be claimed to be a stock-raising country, although buffaloes are in use generally and pig-breeding is carried on extensively by the Chinese. The Director of Agriculture considers that little scope is offered for the development of an animal industry. The lack of pasture (*see* under Section I) is the main difficulty, and the conversion of jungle or forest to pasture is economically impracticable. It is unlikely that any form of mechanical cultivator will replace the buffalo.

The local breeding of pigs could be encouraged but little can be done towards increasing the internal yield of beef and mutton. The country as a whole is unsuitable for cattle-breeding, although there is a possibility of a small development in buffalo-breeding.

Attempts have been made during the last two decades to produce and market fresh milk, but they have not met with any marked success, the food problem being a definite difficulty. It is, however, reasonable to suppose that this industry might be established with further effort.

The possibilities of rendering the Colony self-supporting in animal products would appear to be restricted to milk production, pig-breeding, and, to a minor extent, buffalo-breeding.

It will never be in a position to export animals or animal products.

Federated Malay States.

The population of the Federation amounts to roughly one and three-quarter million people and there are roughly 90,318 buffaloes and cattle, 87,907 sheep and goats, and 154,941 pigs, of a total approximate value of $10,441,665—average values being estimated at $80 per head buffaloes, $50 cattle, $15 sheep or goats, and $20 pigs.

(For the import and export of animals and animal products, *see* under "Straits Settlements.")

Cattle are distributed in scanty numbers, never in herds of any size. They are of mixed breeds, none being indigenous to Malaya, and, save for those imported for dairy and slaughter purposes, are undersized and degenerate. Cattle-breeding might be increased to a limited extent in certain areas, and outlets for animals so produced would be available locally and in the Straits Settlements.

The country is obviously unsuitable for the propagation of sheep. Pig-breeding is extensively and well carried on by the Chinese who form 41 per cent. of the population. The climate is eminently suited to buffaloes, and improvement could be effected in the breeding methods and breeding extended. There is no indication that this animal can be effectively or economically replaced by any form of mechanical cultivator in the rice fields.

The demand for fresh milk is far in excess of the meagre supply, especially in the environs of the large towns. The methods of production, however, are more often than not crude, low, and unclean.

In addition to preserved milk, all other animal products required for internal use are imported.

The feeding of dairy animals is one of the most difficult problems. Imported animals of European strains, while standing the climate and conditions of the highlands, degenerate at sea-level where practically all the towns are situated.

Abundant markets exist locally for the sale of fresh products when or if the feeding (*see* under Section I) and climate difficulties can be economically surmounted.

The possibilities of the development of the Territory as an exporter of animals or animal products are practically non-existent. Local production at the present stage is out of the question with the exception of milk, and, to some extent, beef.

Unfederated Malay States.

Johore.—A number of private dairies exist, which are watched by the Health and Veterinary Departments. Government slaughter-houses have been erected under Government provision.

It is not feasible for the cattle industry to be made either self-supporting or large enough for export at the present time.

Kedah.—The animal industry is fairly prosperous, although it has not received the attention that it merits. In the last decade cattle and buffaloes have increased by 30 per cent. owing to the

increasing acreage of land put under rice and the resultant demand for ploughing animals. In recent years State lands, now amounting to some 7,000 acres, have been reserved for grazing. This has benefited stock owners, when rice fields are not available for grazing.

The following figures show the animal population in 1921 as compared with that of 1930, when the last census was taken :—

Year.	*Cattle.*	*Buffaloes.*	*Goats.*	*Pigs.*
1921	... 43,525	32,440	26,444	—
1930	... 59,502	51,696	32,894	38,644

The majority of stock owners pay little attention to the mating of animals, with the result that the animals, especially cattle, are undersized and weedy. These defects could be minimized by instruction in animal husbandry, and by selective breeding, e.g., by the registration of approved males and the sterilization of others.

The Territory supplies all its own meat requirements, and is a fairly large exporter of livestock. Exports for 1931 included 1,497 buffaloes, 714 cattle, 2,598 sheep and goats, and 6,454 pigs. Hides to the value of $41,319 were exported in 1931 and to the value of $76,572 in 1930.

Perlis.—There are no local markets of any size. Such trade as there is goes as a rule to Penang.

The estimated numbers of livestock in 1931 were buffaloes, 2,993 ; cattle, 10,873 ; swine, 2,800. The former are kept for agriculture, draught and slaughter. Castration is rarely practised and there is virtually no attempt at selection for breeding. The breed of cattle is generally very small but hardy. The breed of buffaloes is considered good.

The Territory is self-supporting as regards foodstuffs.

The State Council are not in favour of encouraging an export trade, because it is feared that after a bad harvest the farmers might find themselves short of animals for ploughing. Export is frequently prohibited for a short period prior to and during the ploughing season. It is, moreover, doubtful whether the available grazing land could support enough beasts to give a surplus for export worth consideration.

Kelantan.—The Chief Medical Officer is of the opinion that in order to make Kelantan a cattle-raising country, it will be necessary (*a*) to develop the good though undeveloped native instinct for stock-raising, (*b*) to improve the standard by selective breeding, (*c*) to make a disease survey of the State with a view to an organization being formed to combat epidemics when they arise, and (*d*) to extend grazing land and improve fodder. To effect this a veterinary service is necessary, but unfortunately it has not been possible for the State to budget for this. There is at present only one European Veterinary Inspector.

The Territory is self-supporting as regards meat supplies. The surplus of cattle available for export is, however, small, and could be extended very considerably, there being large potential markets in

the Straits Settlements and Federated Malay States, and good communications. At present a large proportion of the cattle imported into those territories comes from Siam. There is also a ready market for hides and skins in Singapore, but a large percentage of the value of this export is lost by faulty flaying and treatment. But in order to capture these markets it is necessary to improve the quality of animals and to have a more efficient control of disease. This would necessitate an organized veterinary service.

The establishment of an export trade in poultry and eggs should be a comparatively easy matter, the industry being well-suited to the State in view of the small-holdings and the amount of waste grain, etc., available for feeding.

Trengganu.—There is a small export trade in animals and skins with Singapore. The State is, however, sparsely populated and consumes little meat. Imports of livestock for food purposes are negligible. Pasturage is poor.

The Territory is self-supporting as regards meat.

It is unlikely that development leading to export could take place owing to financial conditions.

Brunei.

The local trade is insignificant. Buffaloes are generally used for cultivation. Pigs are owned by Chinese and it is really only in these that any trade takes place.

The only market for animal products is Singapore. Hides to the value of $1,418 and tallow valued at $400 were exported in 1931.

It is unlikely that any large industry in animal products will develop.

British North Borneo.

Apart from the local markets there is little or no demand for meat. A certain number of live cattle (1,140 head in 1931) are exported to Sarawak and Singapore, and live swine (1,442 head in 1931) to Singapore and Tarakan, for slaughter.

There is a fair market for leather in Hong Kong and Singapore, but the amount exported has decreased substantially since 1928. The local supply of hides for the manufacture of leather does not meet requirements and hides are imported. If the local demand for meat was greater, the position would of course improve. The exports of leather were in 1930, 2,131 pikuls ; in 1931, 1,166 pikuls.

The Territory is practically self-supporting, except for " luxury" meat.

Better grades of leather could be produced locally by the improvement of existing methods of tanning.

The export of animal products could be increased if the markets for meat could be increased or new markets for meat established in adjacent centres, but the possibilities of this are remote. The export of cattle on the hoof is impeded by the high freight rates and the lack of shipping facilities.

IV. MAURITIUS AND SEYCHELLES.

Mauritius.

There is no outside market for Mauritius animal products. Pen manure meets with a ready sale locally, but the quantity produced is insufficient to meet local agricultural requirements.

Imported cattle are cheaper than those produced locally, and the area under pasture is just sufficient for the number of cattle raised in the Colony. Endeavours are being made to produce a beef type of bovine instead of the existing draught type.

A small quantity of butter is produced but it is doubtful whether this can compete with the imported article. The hides and skins produced are absorbed in the local market.

Seychelles.

Pure bred Friesian cattle originating from South Africa and obtainable on a small scale from Mauritius are being introduced to improve the dairy cattle.

Milk is sold easily, but there is not enough for the manufacture of butter, cheese, and ghee, all of which are imported from India, Kenya, or Europe.

No use is at present made of the large herd of goats at Aldabra for the possible production of ghee for local consumption or of skins for export.

The exportation of cattle produce is impossible, owing to the competition from neighbouring Colonies, East Africa, and Madagascar, where cattle can be produced cheaply and pasture is more plentiful.

V. WEST INDIES.

Jamaica.

The local marketing facilities are adequate for local requirements.

The Colony is self-supporting as regards beef supplies, except for salt beef. Attempts to produce a satisfactory salt beef have been unsuccessful.

Jamaica cattle are unsuitable for the English market as beef. Efforts are being made to export to Trinidad, but difficulties are encountered in regard to freight and the competition of Venezuelan cattle. The trade could be increased if Trinidad gave preference to Jamaica cattle in return for the preference granted for Trinidad gasolene. The output of cattle could be increased if markets were available.

Bahamas.

There is a ready market in Nassau for all out-island stock.

It is unlikely that the Colony will ever become self-supporting in its meat supply. At present there is no chance of an export trade being established. One of the main difficulties is the lack of transport between Nassau and the out-islands.

Barbados.

The breeding and rearing of animals in Barbados is not conducted on a sufficiently large scale to merit the designation of "Animal Industry."

There is one central market in Bridgetown, in which all persons desiring to sell meat within a radius of one mile of the town must slaughter animals. There is no inspection outside this area.

The high value of land in the Island renders the development of an animal industry impossible on economic lines. The extension of breeding is not encouraged because there is no land available for laying down to pasturage so long as sugar cultivation can be carried on economically, and because the low feeding value of fodders grown in association with sugar cultivation necessitates the use of too great a proportion of expensive imported concentrates to obtain a desirable ration; it is therefore cheaper to import beef and mutton than to rear stock for meat locally.

Bermuda.

No beef cattle are raised. A fair market exists for milk and eggs.

The opening by the Department of Agriculture of a farmers' market has facilitated the sale of pork.

The development of egg production is practicable, and the export to the British West Indies of pure bred poultry and Guernsey cattle may be found practicable.

Leeward Islands.

Antigua.—There is only one market in the Island, which is under the control of the City Commissioners.

Stock is kept principally for production of working oxen for use on sugar estates, surplus animals being sold for beef and sent to the market.

Little is done in the way of attempting to improve the local breed of cattle which consists almost entirely of Indian strains.

A small trade in the export of hides is done with America.

St. Kitts-Nevis.—The local market is the only market. There are no centres or factories.

It would be possible to develop an industry in animal products. All bacon, ham, lard, salted beef, butter, cheese, pork for fat, and condensed milk is imported and might be supplied locally.

Hide tanning could be started at once.

See under Section I.

Dominica.—Animals are imported for slaughter.

There is no organized milk supply except in Roseau, Portsmouth, and a few villages.

Dairy produce (other than fresh milk) is almost entirely imported.

The establishment of industries is retarded by: (i) lack of capital, (ii) the few pastures being located in the interior and to windward, (iii) the ignorance of the peasantry, who own and breed the bulk of the animals, and (iv) the reduction in the number of pack, riding, and draught animals owing to the recent increase in the motor traffic and the decrease in the production of staple crops.

Montserrat.—Cattle, sheep, goats and pigs are raised for local consumption. The Montserrat Company has periodically introduced pedigree animals from the Government Stock Farm, Trinidad. Government has recently imported a few Persian sheep for the improvement of breeding.

There is hardly any market for animals outside the Island.

Virgin Islands.—Cattle are chiefly raised by the peasantry for marketing purposes in the neighbouring islands. Only a small proportion are slaughtered locally. Sheep, pigs, and goats, are raised in large numbers. The last named are slaughtered, mostly for consumption locally.

Livestock exported during 1931 included 1,136 cattle, 373 swine, 2,281 goats, 443 sheep, and 74 horses and mules.

Windward Islands.

Grenada.—The Trinidad markets can absorb sheep of certain weights, goats, hogs, poultry, and eggs.

Certain pure-bred stock and poultry have been introduced by private enterprise from the United Kingdom to start building up an industry.

Government has had for a few years some pure-bred Holstein Friesian (Canadian) bulls on service for crossing with native cattle to improve the milking strain and for crossing with Indian strain cattle (Zebu) for both draught and dairy work.

A trade in livestock and poultry is carried on between Grenada and Carriacou, and, with increased and better quality stock, should be capable of considerable expansion.

St. Lucia.—The local market could be increased by better meat. Very good mutton and pork can be produced locally.

All preserved meat, bacon and ham, and animal products are imported, to the value of £10,000 annually.

The possibilities of establishing an animal industry appear to be good, since there is a large market for whole carcasses in Barbados and Trinidad, and also a large market for by-products. The recent provision of ample cold-storage space under Government management should be an important factor in the export trade of by-products, for which a factory is, however, required.

The absence of the means of converting by-products and the methods of marketing livestock definitely limit stock farming to the casual production of indifferent and consequently unsaleable types. Certain areas in the Colony are well suited for grazing and are gradually becoming stocked with improved breeds.

St. Vincent.—The markets are inter-Colonial, chiefly with Barbados and Trinidad. The number of livestock in the Colony in 1931 exceeded 23,000.

There are no factories for the disposal of animals and animal products.

The Colony is self-supporting as regards demands for fresh meat.

The export trade in 1930 comprised 4,643 animals, value £4,847, including 2,180 goats, 1,693 pigs, and 634 sheep.

Trinidad.

In towns and the larger villages suitable abattoirs and markets are available for the disposal of animal products, and steps are being taken by local authorities to provide them in the smaller rural areas.

The amount of land available in the Island for pastoral purposes is negligible, and Trinidad will always be dependent for its meat supply on South America, i.e., on Venezuela, British Guiana, Brazil, and the Argentine.

Tobago, however, is self-supporting for its meat, and steps are being taken to improve the local stock by grading up with imported Sussex cattle.

Milk and milk products.—Both Trinidad and Tobago should in time be self-supporting. A Government model dairy farm is established in Trinidad, where experiments in crossing Friesian cattle with hardy Indian stock are being carried out. There are four large and several small commercial dairies in the Colony. Government stallions are provided for service, and an annual sale is held locally at the Government Stock Farm for the offering of pure-bred and grade animals. There is an increasing demand from neighbouring countries for pure-bred Indian cattle raised in the Colony.

British Guiana.

No cattle market exists at present.

The purchase of cattle is practically in the hands of one individual, who controls 50 per cent. of the butchers' shops directly, and who probably controls all indirectly.

When funds are available, it is proposed to establish stock markets at selected points.

Abattoirs are situated at Georgetown and New Amsterdam. That at Georgetown is to be rebuilt on modern lines, but no provision has been made for plant for dealing with by-products. A privately owned abattoir in Georgetown has cold-storage accommodation and is run in conjunction with a bootmaking factory. The municipal abattoirs deal with fresh meat only ; the private one with pickled meat, tanning, and leather manufacture.

There is urgent need for a by-product plant, as an internal sale for bonemeal and meatmeal could be found, and there should be a surplus for export.

The Colony should be self-supporting as regards meat products. It is not in a position to export to the United Kingdom.

If, however, stock owners co-operated, at least 2,000 head of cattle of a good beef type could be exported to the West Indies, and if export was organized and cattle prepared for this market, the number could be substantially increased.

Pig-breeding and rearing is at a standstill owing to the prices offered by butchers.

British Honduras.

Animal husbandry is at present of minor importance although the consumption of animal products is comparatively large.

The following figures are interesting :—

Imports.

	1925.		*1926.*		*1930.*		*1931.*	
	No.	*Value.*	*No.*	*Value.*	*No.*	*Value.*	*No.*	*Value.*
		$		$		$		$
Cattle ...	1,675	70,687	1,530	56,099	576	24,031	446	14,822
Hogs	72	645	29	283	9	175	3	90
Mules	292	22,740	184	13,361	407	28,944	80	7,900
Horses ...	20	4,904	35	2,250	7	740	2	150

Cattle.—Until recently steers and mules were chiefly raised for haulage (mahogany and chicle). The introduction of mechanical transport caused a set-back and breeding has been somewhat neglected during recent years.

There is however a definite tendency towards becoming more self-supporting in the matter of beef, due to the energy of a few breeders.

Until this movement started, the bulk of animals for beef came from Spanish Honduras. Up till this year there was no import duty, but a duty of $6 per head on foreign cattle was imposed last July.

It is unlikely that the Colony will become an exporter of animal products for some years. It is not a suitable ranching area, because no large areas of natural pasturage exist. The majority of existing pastures have been artificially made by clearing forest and planting out grasses.

There are possibilities in the development of a trade in salted and cured beef, imports being high. One or two attempts have been made to start such an industry, but the provision of cold-storage and chilling facilities are needed to stimulate it.

Dairying.—The distance from Belize to areas suitable for dairy farming bars development, and it is doubtful whether the population would easily acquire a taste for fresh milk. It is however possible that such an industry might be developed to supply towns other than Belize. The development of a profitable canned-milk industry is out of the question. Cold-storage facilities again are needed.

Hogs.—The consumption of products is very large, pork in some form or other being part of the standard ration for labourers. This

animal thrives in every part of the Colony, and it ought to be possible to develop a most profitable industry. Nevertheless, no less than 138,290 lb. of ham and bacon were imported in 1930. This may be accounted for by the irregularity of local supplies, the inferior standard of local supplies, and/or imported articles being cheaper. A few employers are salting their own pork. Transportation difficulties and uncertainty of sale are a bar to development.

The Agricultural Officer considers that a buying agency together with a central curing station, possibly run on co-operative lines, would go a long way towards making the Colony self-supporting in hog products.

Sheep.—The consumption of mutton is confined almost entirely to the European population. Very little attention has been paid to rearing. There are however signs of interest on the part of the native population and possibilities of developing an industry.

Poultry.—Table birds and eggs form an important part of the diet of all classes, yet, although large numbers of birds are reared in all parts of the Colony, the imports of eggs are very large. No attempt is made to improve the standard of poultry, which is poor. Maize is used for food and no effort is made to grow more suitable foods locally. The Agricultural Department is testing the growing of other foodstuffs and hopes to be able to stimulate interest.

Horses and Mules.—Mules are preferred for riding purposes in the bush, but they have recently decreased to such an extent in value that it is hardly worth while breeding them.

No mention is made in the report of any trade in hides and skins, but the imports for 1930 were 6,359 lb., value £586.

The Agricultural Officer states that in order to effect an improvement and to develop an animal industry it is necessary (*a*) to provide better facilities for marketing, storage, and preserving; (*b*) to establish a Government Stock Farm where pure-bred stock can be maintained for improvement of local herds; (*c*) to provide instruction in better feeding, the care of livestock, and the upkeep of pastures, and instruction in modern methods of preparing livestock and animal products for markets; (*d*) to secure the appointment of a Veterinary Officer, since breeders and those desiring to enter the industry cannot be expected to import expensive stock and improve their herds without there being a competent officer available to deal with possible outbreaks of disease, and to give general advice on the feeding, handling, and care of livestock.

VI. WESTERN PACIFIC.

Fiji.

There are three factories for the manufacture of butter serving three areas in which dairying can be considered an established industry. Approximately 25 per cent. of the butter produced

is exported, being in excess of local requirements. A meat-canning factory was in existence in 1930, but has now ceased to operate.

There is no local market where cattle can be disposed of under competitive conditions. The only market existing for the disposal of cattle is to butchers for local consumption. The supply greatly exceeds the demand, and owing to the monopoly held by the local butchers, producers receive a low return for their animals.

The chief barrier to the development of the cattle industry is the absence of suitable markets for the disposal of stock.

The butter factories have rendered the Colony self-supporting in butter. Prices received for export butter are frequently below the cost of production. As a consequence, it is inadvisable to increase manufacture at present.

Endeavours are being made to utilize surplus butter for the manufacture of ghee, of which the imports are considerable.

A co-operative scheme for the improvement of the marketing organization, under a central body on which Government are represented, is now under consideration, and envisages the establishment of a central abattoir for slaughter, supply and canning, with a refrigerating plant, a by-products department, a meat canning factory, a piggery, and possibly a tannery. It is thought that the consumption of beef would be doubled under the operation of such a body.

Canned meat to the value of £37,000 in 1928 and £14,000 in 1930 was imported, and it is thought that this could be supplanted under such a scheme.

Export would, however, be limited to certain Pacific groups of islands.

Gilbert and Ellice Islands.

There is no animal industry in these Territories and no prospect of the development of an animal industry.

British Solomon Islands.

Cattle are bred and kept on coco-nut plantations chiefly for the purpose of keeping down undergrowth. The Island of Guadalcanal would afford possibilities for the breeding of cattle on an extensive scale but, at the present stage of development of the Protectorate, there is no indication that such an industry can be contemplated.

Tonga.

The returns for 1931 show the following stock in Tonga :—cattle 695, pigs 17,779, goats 1,843. The cattle are owned by Europeans, and the market is local. Natives have hitherto been averse from keeping cows, because this entails the fencing of young coco-nut trees, and would necessitate the continued labour of milking and watering stock. The younger generation are, however, becoming gradually alive to the benefits of using fresh milk. Pigs are used by natives for food purposes. No ploughing nor manuring of holdings is done. Meat imports (mainly from New Zealand) were, for 1930,

£21,169, and for 1931, £10,508, the fall being due to a poor copra crop. The native prefers tinned to fresh meat. No local capital exists for the establishment of tinned-meat factories, even if the supply of cattle was abundant. The pasturage is good, but there are no rivers or streams.

The abundance of pigs, fish and fowl, renders the Islands self-supporting in times of necessity.

Pigs are, however, generally of a poor type and would not command a market. Boars are occasionally introduced from New Zealand to improve the strain, but in-breeding is very prevalent. The export of cattle is not possible under present circumstances.

New Hebrides.

There are no markets, centres, or factories in the Group where animal products can be disposed of; nor would the number of cattle available justify their institution.

There are no animal industries proper in the Group; its industries are purely agricultural. With the exception of a small sheep station carrying about 2,000 sheep, and a cattle station of about 1,000 head, cattle raising is not resorted to for commercial purposes.

A small quantity of horns and hides is exported to Australia and New Caledonia.

In view of the geographical situation of the Group, its firmly established agricultural industry, the limited means of communication with external available markets, and the competition of neighbouring countries (Australia, New Zealand, and New Caledonia) it is not considered that any attempt to establish an industry in animal products could succeed.

VII. MEDITERRANEAN.

Cyprus.

The last census (1930) showed over 677,000 animals in the Colony. Excluding poultry, 6,884 animals of a value of £81,000 were exported on the hoof in 1930 against 6,742 in 1926, value £71,490. The animal produce exported, however, decreased in value from £67,786 in 1926 to £39,177 in 1930.

The Colony is self-supporting so far as fresh meat is concerned. Sheep and goat milk and cheese provide most of the local requirements. A certain proportion of wool, hides and skins are utilized in local industries.

The export trade comprises chiefly cheese, hides and skins, wool, and eggs.

Stock-breeding is not practised on any extensive scale. Cyprus is well placed as regards the export of livestock (Palestine, Egypt, Greece, and Malta), and trade benefits through the comparative freedom of the Island from contagious diseases.

Local Marketing.—There are 19 cheese dairies, and three native tanneries, but considerable possibilities exist for the further development of animal-product industries; the imports of bacon, butter, margarine, cheese, and preserved milk (the last to meet the deficiency of dairy cow milk), are considerable.

Dairy farming is being encouraged, but owing to local bias in favour of sheep and goat dairying, and the unsuitability of the climatic and natural conditions to the maintenance of large herds of dairy cows, it is improbable that Cyprus will become self-supporting for a long time in the production of cow's milk and its products.

The encouragement of carpet marketing would absorb a good deal of wool, but apparently Cyprus wool is not considered the best for carpets.

The Director of Agriculture considers that Cyprus should concentrate rather on the development of her export trade in live animals than on the export and production of animal products.

Any increase in the latter may be expected rather to find a sale in nearby markets and it is unlikely that, owing to distance and costs, or the quality of the products, it will be possible to export to the United Kingdom, except in the case of such articles as hides, skins, and wool.

VIII. PALESTINE AND TRANS-JORDAN.

Palestine.

An enumeration made in 1931 showed that roughly 146,000 cattle, 253,000 sheep, 440,000 goats, 14,000 horses, 5,300 mules, 77,000 donkeys, 25,000 camels, 5,200 buffaloes, 1,450 pigs and over a million poultry were in the country. Value about five million pounds.

It is roughly estimated that the annual value of food animals and animal products consumed and utilized is nearly two million pounds, of which over £500,000 is represented by food animals, £826,000 by milk, £610,000 by imported animals and animal products including milk produce.

There are several animal markets throughout the country, the largest being at Lydda and Nazareth. They are well attended and sales are held weekly. Some livestock is sold on farms direct to butchers and dealers, but the major portion is dealt with at markets, which act as collecting and distributing centres.

A modern cold-storage plant has been erected at Tel-Aviv.

The climate is suitable for animals, and the local market is capable of absorbing a considerably increased production.

The chief obstacles to development are the scarcity of pastures, the shortage of water, the high cost of production of supplies of suitable foodstuffs, and the apathy of stockholders, herdsmen and shepherds and their prejudices against new methods of progress.

It has been suggested that practical feeding tests should be undertaken (*a*) with dairying, to reduce the costs of intensive milk production ;- (*b*) with the different local breeds, to determine their capacity for either growth or milk production and the extent to which their rate of production could be increased by improved methods of feeding and management and by selective breeding ; (*c*) to ascertain the feeding value of local foodstuffs, as applicable to the different kinds of stock, coupled with an investigation of the improvement of natural pastures.

The dairy industry is rapidly developing and, in the course of time, the consumption of cow's milk in preference to sheep and goat milk is likely to become general in urban areas.

Several dairies are established, in which milk and cream are prepared for distribution, and butter and cheese are manufactured. Pasteurization plants are installed at Strauss Health Centres in Jerusalem and Tel-Aviv.

Condensed and dried milk are not manufactured, although the preparation of dried milk powder from skim milk is contemplated.

Meat.—The number of animals slaughtered in houses in 1930 was 24,000 cattle, 184,000 sheep, and 69,000 goats. There are 44 slaughter-houses, including two modern and well-equipped houses in Jaffa and Tel-Aviv and another under construction in Jerusalem. The others, although maintained in a sanitary condition, are not fully equipped.

Salting and refrigeration are not in general practice.

Of the total amount of meat consumed, somewhat less than one-half is home-grown, the remainder being imported frozen from Australia, or imported on the hoof from Turkey, Syria, and Trans-Jordan.

There are a few sausage factories—this being a popular article of food.

Wool is of the carpet variety and the annual crop is estimated at 400,000 kilos. It is used locally.

Hides.—There are 16 tanneries which in 1930 dealt with 21,500 hides and 80,500 skins. The output of leather amounted to 255,000 kilos. The output could easily be doubled or even trebled. The hides are chiefly suitable for the sides and uppers of boots. Favourable reports on their commercial value have been received from the United Kingdom.

Other products.—Meat meal is manufactured at a factory in Tel-Aviv, and bones, horns and hoofs are utilized by another factory which collects them from all parts of the country for the preparation of fertilisers and animal food. The present output (bone products) is 100 to 200 tons per annum, but the plant could produce over double.

Use is extensively made of other products such as blood, glue, triperies, and intestines for catgut and sausage casings. The production is absorbed locally.

Trans-Jordan.

No difficulty is experienced in disposing of animals surplus to local requirements in the markets of Palestine and Syria. Both these countries could absorb far more livestock than Trans-Jordan can at present supply.

IX. FALKLAND ISLANDS.

The Stock returns for 1930–1 show that 608,914 sheep (chiefly Romney Marsh type), 9,659 cattle, and 3,485 horses were in the islands.

In 1898 the Colony was carrying 807,000 sheep, but the number has declined owing to overstocking and the limitation of the carrying capacity of the pastures.

The Romney type of sheep, when well-bred and well-fed, produces the best paying fleece of long-wooled breeds, and also a carcass suitable for market.

Cattle are of very mixed origin, and the present standard is low, due partly to in-breeding and partly to the fact that cattle are run mainly with a view to pasturage improvement. Cattle are only raised in sufficient numbers to meet local requirements.

Under the conditions obtaining locally, markets, centres, or factories where animals or animal produce can be disposed of are not required.

Surplus animals and animal produce are disposed of in the Colony. After meeting local demands, there are no surplus animals available for the frozen meat trade.

(17810—2) Wt. 21003—2948 250 2/33 P. St. G. 3

CIRCULAR.

7

Downing Street,

7th February, 1933.

Sir,

Rec. 2

With reference to my Circular despatch of the 24th of December, 1931, *on the subject of Animal Industry in the Colonies, I have the honour to transmit to you, for your information, the accompanying copies of a Summary of the replies which have been received from Colonial Governments.*

2. *It will be seen that the Summary is divided into two sections, of which the first comprises the information received in regard to the disease position, and the second the information received in regard to the position in regard to markets, etc., for the disposal of animals and animal produce, and the possibilities of establishing or developing an industry in animal products.*

3. *It is thought that this Summary may be of interest and possibly of assistance to Colonial Governments and to their Departments of Agriculture and Animal Health.*

I have the honour to be,

Sir,

Your most obedient, humble servant,

P. CUNLIFFE-LISTER.

The Officer Administering

the Government of

IMPERIAL BUREAU OF ANIMAL HEALTH

Veterinary Laboratory,
Ministry of Agriculture
& Fisheries,
New Haw, Weybridge,
Surrey, England.

7th April, 1936.

Circular letter to Official Correspondents

No.1 of 1936.

Dear Sir,

We have been asked if there is any evidence of the incidence of Selenium poisoning in the territories of the British Empire.

This condition has been discovered in the north-central states of the United States of America, where it attacks horses, cattle, swine and chickens.

Before the cause was known, it was called "alkali disease": it causes overgrown and deformed hoofs, arthritis and loss of hair, and affected animals kneel and lie down a great deal.

Abstracts of papers have appeared in the Veterinary Bulletin (Vol.5. pp.381 & 854, and Vol.6. pp.81 & 84), and others are on their way through the press.

Could you let me know if there is any suspicion of the incidence of this condition in the Falkland Islands?

Yours faithfully,

W A Pool

THE COLONIAL SECRETARY,

STANLEY,

FALKLAND ISLANDS

WAP/EL

62/32.

19th May, 36.

Sir,

Rec'd

With reference to your letter of the 7th of April, 1936, I am directed to inform you that there is no suspicion of the incidence of Selenium poisioning in the Falkland Islands.

I am,

Sir,

Your obedient servant,

Acting Colonial Secretary.

W. A. Pool, Esq.,
Imperial Bureau of Animal Health,
Veterinary Laboratory,
Ministry of Agriculture & Fisheries,
New Haw, Weybridge,
Surrey,
ENGLAND.