

Services, particularly on the research side. The director of the institute should supervise the training of these scholars, and direct their efforts towards the solution of problems of economic importance to the colonies.

In the report of the Lovat Committee suggestions are made for the permanent staff, which includes a director and three senior officers, together with temporary and visiting staff. We are in general agreement with the recommendations made in those sections, 48 to 54 of this report. It has, however, occurred to us that in addition to the nucleus of permanent staff and the junior scholars undergoing training, both the affairs of the institute and of veterinary research in general, would benefit if some provision could be made for the inclusion of a few more senior research workers. We refer here to men of the type that often receives Senior Beit Memorial Fellowships or special grant from scientific bodies. It is probable that one such fellowship of the value of £700 per annum will be provided by private subscription in Kenya, and there are reasons for hoping that each fellowship, financed privately, will be the means of obtaining a similar grant from one of the bodies interested in tropical research. The proposal is that these whole-time research fellows should devote their studies to the solution of a particular problem or to a group of related problems, working partly at the central institute and partly in the field, or in colonial laboratories where material for investigation is available.

Referring back now to our earlier consideration of the improvements that might be effected in the ordinary graduate course, it is quite evident that improvements in graduate training will be reflected in the capacity of graduates to benefit by intensive post-graduate courses, but at the present moment, one is more likely to achieve rapid results by the post-graduate method. The profession is invited to support whole-heartedly the recommendations of the Lovat Committee, and above all to remember that when the educational reforms suggested have been effected, it will still be necessary to press for the early adoption of the recommendations dealing with improvement in the prospects and conditions of service of the profession in the colonies. If the promises of that report with regard to improvement of the status of the service are not realized, it will be found that in spite of improved educational facilities and of such inducements as scholarships, there will still be a shortage of suitable candidates of the right calibre.

*Paper No. 39.*

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### VETERINARY EDUCATION IN MADAGASCAR.

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On his visit to South Africa in 1924, Major Geoffrey, Chief of the Veterinary Service of Madagascar, had much admired the way the South African Veterinary Department had been organized, and he resolved to emulate, in a small way, all he had seen.

This was the starting point of the foundation of a school of native auxiliaries, laboratories and zotechnical farms—all of which, while remaining centres of re-production of selected animals, would be used equally for the practical teaching of the native cultivators.

### I. SCHOOL OF NATIVE AUXILIARIES.

This establishment, which is not yet completed, started work in 1926. Studies last two years, and are of a technical and practical nature.

During the first year, pupils are given a general training in physical, chemical and natural sciences, as well as biological ones.

In the second year, pathology, general parasitology, and contagious diseases are professed.

Practical work in the first year has for its object the teaching, through manipulation, of the elements of the courses taught in the second year. Pupils are initiated in the practice of current operations in surgery or therapeutics and in those of autopsy.

A competition establishes the conditions of admission to the school. Examination at the end of the year shows the results of the teaching given. Monthly compositions and interrogations are also held in the subjects being taught. Those pupils who have not been successful are allowed to try again only after another year's teaching.

### II. LABORATORIES.

In 1924, there was commenced the Befanamy Laboratory at the ostrich farm (Tulear). This very modest establishment was set up to supply the requirements of a district with a dry climate and a few hundred kilometres distant from capitals. There was added to it a meteorological office. The equipment of the laboratory permits a summary analysis of the various types of soils, sedimentary and of different geological epochs, which are met with in the whole Province and possess varying elements of fertility.

The southern leased-out cattle are very important, but the edaphical conditions of both cattle and plants turn this country into a special haunt. These were the reasons for the establishment of a biological laboratory in this country.

*Central Laboratory at Tananarivo.*—This has only been in existence a few years, ever since the school of auxiliary veterinarians was started. It is still in embryo in material and organization, but efforts are being made to gather together collections for study, especially data pertaining to parasitology. From the beginning of this year, more perfected instruments have been sent from France, and many recent volumes have been added to the library.

Since 1924, Major Geoffroy, Chief of the Veterinary Service, has been in touch with the South African Veterinary Department, and the Union's library of veterinary works, being well equipped, enables us to keep in touch with the scientific studies followed up in that country anent veterinary matters. In this case, too, the organization is but in embryo, but likely to give good results in the near future.

### III. ZOOTECHNICAL FARMS.

More primitive than the laboratories already in existence, and started in certain districts, are the farms. The one at Befanamy (Tulear), which was the first one started, deals with the raising of ostriches, sheep, Angora goats and pigs. The one at Ambovombe (Fort-Dauphin), started about ten years ago by Chief Veterinarian Durieux, undertakes the breeding of the sheep improved on the peneplaine of the Androy.

The same may be said of the one at Betroka (Plateau Bara) to which a small laboratory has been added.

At Antsirabe (Vakinankaratra), volcanic region in relieves of 4,500 to 6,000 feet, Veterinary Officer Ducaud has started and organized 3 farms: One near the town Antsirabe, and on the old properties of the Department of Agriculture; one at Vavavato range, and a third at Faratshio. Attention is given to the improved breeding of sheep, goats and pigs, as well as of cattle, with stock recently imported from France.

Three other farms are in course of establishment: One at Mahafaly country (Dry Region)—Tulear Province; another at the Iboaka (Betsileo), and the third at the Mandridrano (Itasy Province—volcanic region). But all three are not as yet very advanced and it is not possible to foretell what they will yield in time.

#### IV. STUDS.

Two studs of bovine, equine and porcine species have been operative for a good few years; one at Tananarivo, and the other at Fianarantsoa. During the covering season, secondary depots of reproductors (stallions, bulls and boars) are placed in the various localities of the central region.

#### CONCLUSION.

It is not possible to compare what exists in Madagascar with what is being done in South Africa. Our Department is still in its infancy, and we are but beginning. We have everything to do, to organize, to learn, although we have for a long while been kept back through very limited means and an insufficient technical staff.

It is not too much to hope that in the near future the staff will be larger, and that the educated natives will be more numerous. Then we shall be able to start new schools, laboratories and zoo-technical farms, according to the needs of the Colony. But this is still to come.

The fine example of energy and attention in the work done by the Department of Agriculture of the Union of South Africa, which has been most successful in all undertakings, is to us the best guarantee and most convincing sign of ultimate success.

#### ANIMAL INDUSTRY IN MADAGASCAR.

##### *List of Establishments for Animal Industry.*

*Diego-Suarez*—2 establishments:

No. 1.—The S.C.A.M.A. (Société des conserves alimentaires de la Montagne d'Ambre)—(Tinned Provisions of the Amber Mountain Company). Head office at Marseille: 9 Rue Colbert—Director, Mr. Buisnière. Provisions for the Army—Cooked pork and beef products.

No. 2.—Antongobato—the S.R.P.A. (Société Rochefortaise des produits alimentaires)—(Rochefort Company of Tinned Provisions). Head office in Paris: 19 Rue des Mathurins—Director, Mr. Chenereau—Same products as above.

*Majunga*.—The establishment of Boanamary C.G.F. (Compagnie générale frigorifique)—(Cold Storage Company). Head office in Paris: 60 Rue Caumartin. Frozen and Preserved Beef.

No. 2. S.P.M. (Société des peausseries de Madagascar)—(Society Skins Society of Madagascar). Head office at Majunga—Director, Mr. Guignabert. Crocodile skins.

*Tamatave*.—Establishment of Rochefortaise Society. Pork in cold storage, and tinned pork.

*Tananarivo*.—Establishment of Soanierana—S.I.C.E. (Société industrielle et commerciale de l'Emyrne)—(Emyrne Industrial and Commercial Society). Head office at Marseille: 6, Rue Colbert—Director, Mr. Toy-Riom. Provisions for the Army—Tinned Beef and Pork. Prepared pig products.

Secondary works.—Establishment Bernardi at Tsarahonena (Tananarivo and establishment Merlo at Tananarivo). These two small establishments manufacture prepared products and pork provisions.

*Antsirabe*—"La Bretagne" Works.—Head office: Rouchy to Antsirabe. Pork provisions and prepared products in pig and poultry feeds. Jams.

Secondary works.—Merven to Antsirabe.—Salt-meat provisions. Lard and products prepared in pig's meat.

*Ambohimahasoa*. Laborde works.—Tinned beef and pork, poultry, and prepared products in pig's meat.

*Salt-meat Provisions and Lard Works*.—In all the districts of the high plateaux (Emyrne and Betsiloe) a good many works for salt—meats and the rendering of lard—most of them owned by natives and Chinese—abound around centres like Tananarivo, Antsirabe, and Fianarantsoa.

*Tulear*.—A fishery has just been started for working squalus' skins and by-products.

*Works for Preparing Hides of Oxen*.—The large commercial companies (Lyonnaise, Marsillaise, etc.), and some private firms (Paoletti, Ottino) own, everywhere, works for preparing hides of oxen for export—either salted or arsenicated. Ottino's works at Tamjombato (Tananarivo) treats the hides for industrial purposes, and manufactures Morocco articles, belts, shoes, etc.

Inspection.—In the larger works, a veterinary officer inspects, daily the slaughtered beasts and supervises the production of preserved meats.

The veterinary officers, and chiefs of a "circonscription," undertake the inspection of the works for salted meats, lard, and hides. They are under oath and can report to the authorities in cases of fraud. They issue the sanitary certificates for goods that are exported.

*Vohemar*.—In view of its being within a district that is immune from tuberculosis, the port of Vohemar (North) ships live oxen bound for Mauritius. A veterinary officer is attached to this port to inspect the cattle to be exported and issue sanitary certificates.

#### STATISTICS FOR THE YEAR 1928.

##### 1. Slaughter of Establishments' conserves:—

Oxen: 71,213.	Live-weight (Middle term) ... ..	~ .. ..	kgrs.
	Dressed ... ..	...	144
Pigs: 25,983.	Live-weight (Middle term) ... ..	...	97
	Dressed ... ..	...	69

Dressed per cent.: Oxen, 49; Pigs, 71.

2. Slaughter for public consumption by Europeans and Natives of Madagascar:—

Oxen	609,500.
Pigs	98,869.
Sheep	8,948.
Goats	2,157.

LIST OF QUESTIONS SUGGESTED FOR DISCUSSION  
AT THE PAN-AFRICAN VETERINARY CONFERENCE.

I. LEGISLATION.

A. The possibility of attenuating the stringent South African laws referring to the introduction of cattle imported from Madagascar, such as the total destruction of the carcasses because of a slight touch of tuberculosis imposition of previous subcutaneous tuberculinization, together with a statement of temperature-takings.

B. Nature of the regulations to be complied with by exporters from Madagascar of preserved provisions such as beef, pork and poultry meats in tins or jars; salted and smoked pork. Possibilities of importation, through South African ports, of wool, mohair, ostrich feathers, etc., for sale by auction.

C. Community of regulations anent the branding of cattle and the leather trade.

II. CATTLE DISEASES.

A. Dangers, eventual or otherwise, of the introduction of South African diseases (horse-sickness, nagana, etc.) through mules or donkeys bought in South Africa for importation into Madagascar.

B. Eventual dangers of the introduction into Madagascar of horse-sickness, nagana, surra, rinderpest, peripneumonia, Maltese fever, through the importation of animals of various species, more especially donkeys and she-goats coming from Abyssinia, the Red Sea, and East African Colonies.

C. Conditions anent preventive practical vaccination of imported oxen and their offsprings against the different varieties of virus of piroplasmosis and anaplasmosis.

D. Discussion on the best preventive or curative treatment to be followed against the parasitic infestations of the bovine, ovine and porcine species.

III. RESEARCH.

Discussion on the likely methods of vaccination against ruminants' heartwater and blue-tongue, and the ulcerative lymphangitis of the horse.

IV. VETERINARY PROBLEMS CONCERNING THE NATIVES OF AFRICA.

A. The possibilities of employment of the natives as veterinarians, assistant-veterinarians, auxiliaries, vaccination operators, cattle hygienists, etc. Degree of theoretical and practical instruction to be given to them.

B. Practical means of education of the cattle-breeding natives for the purpose of rapidly improving cattle and for fighting epizootics. Means of persuasion and, if necessary, of coercion.