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Science and Administration in East Africa.[1]

THE special geographical difficulties of tropical East Africa due to climate, remoteness, and the scantiness of the native population, have led to an awkward dilemma as to the labour and land policies. In consequence, serious friction arose between the European and Asiatic settlers and the Government, and widespread unrest among the natives. Accordingly, the late Government appointed a Commission consisting of the Hon. W. G. A. Ormsby-Gore (the present Under-Secretary for the Colonies), Major A. G. Church, then a Labour M.P. and secretary of the National Union of Scientific Workers, and Mr. F. C. Linfield, then a Liberal M.P., to collect information and report on the development of the British East African Dependencies, and on the social and economic conditions of the natives. The Commission, after a long tour of inspection, has prepared a valuable report on the countries and their administration. One of its most gratifying features is its recognition of the economic value to such countries of scientific guidance; and this welcome innovation enhances regret at the deplorable contrast described between the former attitudes of the British and German Colonial Governments towards scientific research.

Before the War, German East Africa was described in monumental scientific works which have taken their place amongst the standard contributions to the literature of tropical Africa; and several well-equipped scientific laboratories had been established. Mr. Ormsby-Gore and Major Church visited the Amani Institute, which was founded by the German Government in 1902. Its extensive grounds range from 1300 to 3600 ft. above sea level, with a branch establishment at sea level. The Commissioners report that the German Government spent 120,000*l.* on the station; they consider that it was superior to any corresponding institution in any British Colony, and compare it with Buitenzorg in Java. In its extensive grounds vast plantations of tropical shrubs and trees of economic importance were established; the laboratories investigated plant diseases and breeding, and analysed the soils; and the lectures of the expert staff and the publications explained its results to the colonists.

The War stopped all this useful work. The British Government in 1920 placed the Institute under the Agricultural Department of Tanganyika Territory. Sir David Prain, who reported on it in the same year,

[1] (*a*) Report of the East African Commission. (Cmd. 2387.) Pp. 195. (London: H.M. Stationery Office, 1925.) 3*s.* 6*d.* net.
(*b*) Education in East Africa: a Study of East, Central, and South Africa by the Second African Education Commission under the Auspices of the Phelp-Stokes Fund, in co-operation with the International Education Board. Report prepared by Dr. Thomas Jesse Jones. Pp. xxviii+416+44 plates. (New York: Phelp-Stokes Fund; London: Edinburgh House Press, n.d.) 7*s.* 6*d.* net.

urged that the Director should be independent of any Department and responsible directly to the Governor, and urged its development as a central research institute for the British East African Dependencies. Their Governors were asked by the Colonial Secretary for financial support. Two of the five Dependencies were unable to contribute at the time, and the Institute remained under the Agricultural Department—with the results foreseen by Sir David Prain. Last year the Governor of Tanganyika recommended that the Institute should be closed; the Director resigned, and several thousand acres of adjacent land were announced for sale. The intervention of Mr. Thomas saved the Institute from this fate, and has given it another chance. The Commission strongly urges that a fresh attempt be made to maintain it by securing financial support from the five Dependencies, a substantial grant from the Imperial Government, and a suitable constitution. If these recommendations be carried out and Amani developed on the lines recommended by Sir David Prain, it should do for East Africa what Pusa is doing for India. It should be supplemented by local laboratories. Not only, however, was Kenya Colony unable to contribute to Amani, but its own institutes, the Naviasha Stock Farm, the experimental farm at Kabete, and the station at Mazeras were closed in 1922–23 on financial grounds—a "most unfortunate" step, say the Commissioners.

Amani should serve the main purposes of East Africa for forestry and economic botany. The Mpapwa Research Laboratory, also a German foundation, may similarly serve as the central institute for work on stock and their diseases, and the manufacture of serum; but so little is known in one East African colony of the progress in the next that the Commissioners were assured in Northern Rhodesia that the Mpapwa Institute was derelict, and they state that its results are unknown in Kenya Colony.

The Commission strongly recommends the extension of the geological surveys, and directs attention to the valuable results obtained by Dr. Dixey in Nyasaland and Mr. Wayland in Uganda. Tanganyika and Kenya Colony have neither of them at present a geological survey; in one case owing to action by the local government, and in the other by the Colonial Office. The Commission regrets the decision that the Nyasa Survey is to be suspended unless some profitable mineral be soon discovered. This policy seems particularly deplorable in regard to Nyasaland, which, in spite of its many advantages, remains the poorest of the East African colonies owing to the difficulty of communication with its port. As the Commission points out, a geological survey is not merely of value in discovering ores: its main service is in the preparation of a geological map which will help many departments of work as a guide to the distribution of the various types of soil, of underground water, and of such materials as clays, building stones, cements, limestones, and road metals, and in reference to public health. Local supplies of these heavy low-priced minerals are of high value in a remote country, and are indispensable to many industries. A new country has not the benefit of the experience of centuries of local observation to indicate where these materials can be found. They must be discovered by a scientifically conducted search. The maps of a geological survey in a newly settled country may repay their cost by avoiding waste in industrial and agricultural development. The Commission, it may be remarked, quotes Dr. Dixey, Government Geologist of Nyasaland, that water diviners, faith in whom is widespread in East Africa, and water-finding machines, are completely valueless.

The Commission strongly recommends the development of the Nairobi Museum, which was founded by the Uganda and East Africa Natural History Society. It has been suggested that this Museum should be extended as a memorial to the late Sir Robert Coryndon, and it is to be hoped that this scheme will be adopted.

Mr. Ormsby-Gore and his colleagues recognise that more funds should be provided for scientific work, and they urge the extension of the power and activities of the Colonial Research Committee. It was intended to have at its disposal 20,000*l.* per annum for five years; but its grant was cut down by the Geddes Committee to 2000*l.*, which, as the Commission remarks, is quite inadequate. "There can be no doubt," says the Commission, "that increased provision under this head is one of the chief methods whereby Great Britain can assist her tropical possessions and her own trade. But, above all, it is essential that greater encouragement and better pay should be given to scientific officers in order that a supply of trained men shall be forthcoming from the Universities."

The East African Commission has directed attention to the urgent need for Government co-operation in education. On this subject its proposals are endorsed by the recommendation of the Phelp-Stokes Commission, the chairman of which, Dr. Jesse Jones, is an expert on Negro education in America. This Commission was accompanied by Dr. Shantz, of the United States Bureau of Agriculture, who has prepared an instructive report on his observations. The Phelp-Stokes and Ormsby-Gore Commissions coincide in their chief educational views. They both express high appreciation of the missionaries' educational work, but recommend that it should be subject to Government inspection. The Ormsby-Gore Commission states

that if the missionaries knew what was being taught by some of the native teachers at the "so-called mission schools" they would stand aghast.

Mr. Ormsby-Gore's report includes several educational proposals which will be received with warm approval. In reference to one much-debated problem the Commission approves of elementary teaching in the language of the locality, and that where a second language can be taught it should be English. It also shows its practical insight by the recommendation, "We attach great importance to making natural science, as far as possible, the basis of higher education in African native schools." A knowledge of the three R's is, of course, essential, but they should be used for teaching the elements of natural science as illustrated by the life, agriculture, sanitation, and physical geography of the country in which the pupils live.

Mr. Ormsby-Gore's position as Under-Secretary of State for the Colonies should secure the adoption of his Commission's proposals. They would lead to a great advance in scientific research in East Africa, and help to remedy the various ills he and his colleagues were sent to investigate.

J. W. GREGORY.

The Herring.

(1) *Meddelelser fra Kommissionen for Havundersogelser.* Serie: Fiskeri. Bind VII.: On the Summer- and Autumn-Spawning Herrings of the North Sea. By Dr. A. C. Johansen. Pp. 118. (Kobenhavn: C. A. Reitzel Boghandel, 1924.)

(2) *Ministry of Agriculture and Fisheries. Fishery Investigations.* Series 2, vol. 7, No. 4, 1924. First Report on Young Herring in the Southern North Sea and English Channel. Part I.: Distribution and Growth of Larval and Post-larval Stages, by Dr. William Wallace; with Appendix: The Water Movements of the North Sea in relation to the Geographical Distribution of Post-larval Herring, by J. N. Carruthers. Pp. 84. (London: H.M. Stationery Office, 1924.) 13*s.* net.

(3) *Ministry of Agriculture and Fisheries. Fishery Investigations.* Series 2, vol. 7, No. 3, 1924: The Herring in Relation to its Animate Environment. Part I.: The Food and Feeding Habits of the Herring with Special Reference to the East Coast of England. By A. C. Hardy. Pp. 53. (London: H.M. Stationery Office, 1924.) 8*s.* 6*d.* net.

THE herring is our most important food fish. Workers in different countries are approaching the problems connected with it from different points of view. The accumulation of data tends towards both simplification and complication. It is possible that increased hydrographic knowledge may assist us to foretell, to some extent, the nature of the fishery and that applied science may score a success, but the understanding of the subject is in the realms of pure science. The three papers specified above all help, in varying extent, to increase our knowledge.

(1) Dr. Johansen's work is a contribution to our knowledge of the racial characters of herring, and deals with, chiefly, the summer and autumn spawners of the North Sea. The numbers of vertebræ, keeled scales between the pelvic fins and anus, and rays in the pelvic, dorsal, and anal fins are treated statistically. Use is made of the results obtained by other workers. We have a comprehensive work which enables us to take a broad view of the subject of herring races.

The summer herrings of the east coast of Scotland, the Dogger Bank, the Jutland Bank herrings, and part of the Shetland summer herrings are all referred to one race, the Bank herrings of the North Sea. The main spawning-grounds of the race are near the British coast, from the Shetlands to Norfolk, and in the vicinity of the Dogger Bank. Spawning occurs also on the Little Fisher Bank and the Jutland Bank, including the adjacent waters of the Skager-Rack. It is indicated, however, that the Jutland Bank herrings have not been investigated sufficiently and that there are differences between the Scottish and Dogger Bank herrings.

In the attempt in Chap. x. to connect the racial characters of the Bank herring with temperature and salinity at the spawning-places, and compare the spawning of this race with that of the North Sea Deep-water herring and the Autumn herring of the German Bight, a great deal is assumed. The differences between the Bank herring and those from the deep water and German Bight are small. Comparison is made with herrings caught in the Kattegat, the Channel, northern waters, and the spring spawners of Scottish waters.

Following the general survey of shoals from waters adjacent to those yielding the Bank herring, an examination of the herrings of the Skager-Rack and Kattegat is given. The catches made from these waters show considerable fluctuations which have conveyed the impression that the fishery from about the entrance of the Baltic was one due to migrations. Johansen's work supports this idea and shows that, whilst Kattegat and Norwegian herrings are caught, the most important herring in these waters is the same as is found in the North Sea. This naturally leads to a consideration of Pettersson's work on periodicity in the fishery and, to a less extent, on the effect of currents, temperature, and salinity on migrations. As is pointed out by Johansen, there are two extreme views held with regard to migrations. One is that the herring is always a wanderer and has no fixed spawning-ground, and the