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Science in Non-Self-Governing Dependencies.

GOVERNORS and other official representatives of the non-self-governing dependencies of the Crown, ^{many} ~~representatives~~ gathered together at the Colonial Office Conference devoted no little attention to a consideration of the function of scientific research in the development of the territories for which they are responsible, and the means by which this research is to be promoted. The outcome of their deliberations is the report on Colonial Scientific and Research Services which they approved and adopted on May 27, and is now available to the public in the published proceedings of the conference—the first of its kind.

From the point of view of research, no more favourable time could have been chosen for this first conference. It has followed closely upon the visit of the Parliamentary Commission to East Africa in the latter part of 1924, the personal visit of the Under-Secretary of State for the Colonies to West Africa in 1926, the tour of Mr. Roy Wilson and Mr. Harry Snell to British Guiana this year, and the reports which were presented to Parliament at their conclusion, in all of which the dependence of economic development upon the creation of new knowledge and the application of existing scientific and technical knowledge was emphasised. Furthermore, it is only a few months since the Premiers and other representatives of the self-governing Dominions met, and were led to consider similar problems and approved a report of a sub-committee which they appointed on Empire research.

The changed attitude of the Dominion premiers towards scientific research as manifested in that report was the subject of comment in these columns at the time. At the Imperial Conference in 1923 they sought for a solution of their economic problems in political expedients; three years later they decided to give science a trial. Upon this result the present political heads of the Colonial Office can be congratulated, for they have assiduously preached the gospel of science for the past two years.

Under influence of the same stimulus, the representatives of the non-self-governing dependencies have reacted in the same way as the Dominion representatives. One of their first acts in conference was to appoint a committee under the chairmanship of Lord Lovat "to frame and submit a scheme, based on contributions to a common pool, for the creation of a Colonial Scientific and Research Service available for the requirements of the whole

Colonial Empire, for the support of institutions required for that purpose, and for the increase of research and study facilities in connexion with the specialist services of the Colonies generally."

In the general statement of the problem the Committee has drawn largely upon the information contained in the report of the Committee on Agricultural Research and Administration in the Non-Self-Governing Dependencies, of which Lord Lovat was also chairman. Its recommendations are almost identical with those put forward in that report, and follow the general principles enunciated in the report of the East Africa Parliamentary Commission for the effective prosecution and co-ordination of research. The modesty of its proposals, however, will be gauged from the fact that the scheme proposed for the reorganisation of the colonial agricultural services involves an annual expenditure of £175,000 in all, a considerable proportion of which is at present a charge on colonial revenues. This is a very small sum when regarded from the point of view of the needs of colonies covering a total area of roughly 2,000,000 square miles, the populations of which—mainly agricultural—number 50,000,000, controlled by thirty distinct administrations. It is illuminating to relate the cost of such a service to the exports from the colonies to the United Kingdom. These exports, mainly agricultural, have quadrupled in the last twenty years and amounted to £81,000,000 in 1925. In that year "they were greater than those from the whole of India, or from any single one of the self-governing Dominions." If the total agricultural exports of the colonials are taken into account, including rubber, the cost of the proposed service works out to $\frac{1}{5}$ of a penny in the pound. The Committee states that so far "the aid of science has been but half-heartedly invoked," but it is difficult to see how this state of affairs is to be remedied with such meagre financial provision.

The committee is well aware of the needs of research. It appreciates the fact that "there is severe and growing competition between the sources of raw materials and food-stuffs for the supply of the world's markets"; that "the ravages of diseases, particularly among the luxuriant conditions of tropical life, are ever increasing"; and that "science, and science alone, can enable us to increase production by improved methods, and, at the same time, combat successfully the diseases which these new methods bring in their train." It notes that the "United States, the area of which is one-third larger, and the population a little more than double that of our

Colonial Empire, spends more than £4,000,000 annually on agricultural research"; and that Egypt spends nearly twice as much annually on agricultural entomology as the whole of the British colonial governments, most of which are faced with far graver problems than Egypt. Unfortunately, the committee gives no indication of the expenditure of France, Belgium, or Holland on agricultural research in their respective colonies; but we know that the Dutch maintain Buitenzorg splendidly while the Amani Institute is still lying derelict, untenanted, unstaffed; we know that the French are devoting much attention to the investigation of nagana (tsetse-fly disease in cattle), and are attempting to breed immune types, while we continue to starve the veterinary research stations in East Africa, and to expect the research staffs to devote a considerable proportion of their time to the preparation of sera for inoculating cattle against the various diseases which decimate the natives' herds.

In view of the condition of affairs regarding research and research institutions and the scientific services generally, as disclosed in the various reports to which we have referred above, in fact, to the complacent indifference to science which characterises our colonial administration, and the statement of Lord Lovat's Committee that "there is no organisation whatsoever in the colonies which views the problems of science as a whole," we can but admire the forbearance of the committee in stating that it is anxious not to give the impression that it is trying to be dictatorial to the colonial governments. It is well, however, that it has obtained general consent to the establishment of a central fund maintained by contributions from the various colonies. This should ensure continuity of research, and safeguard the individual scientific officer against the excessive zeal of colonial governments to reduce their scientific staffs in times of financial stringency. The evident purpose of the committee's recommendations is to make the research services of the colonies attractive to the best type of worker, and this is certainly a great step forward.

The committee felt itself unequal to the task, in the short time available, of formulating proposals for the creation of a unified research service, postulating as it does modifications in the organisations (existing and proposed), the creation of links between various sciences not only in the colonies but also through research organisations at home and in the Dominions. That task is left for another committee, which will have the advantage of making

its proposals after the Colonial Medical Research Committee, the Empire Forestry Conference, and other bodies have examined the problems confronting them.

The Lovat Committee, however, is quite definite as regards the organisation of a colonial agricultural research service. It recommends that a central council should be constituted with a chairman (who should be a layman), a director (who should be a recognised man of science), and a deputy-director (who should have had administrative experience in the tropics). The formal channel of communication between the council and the Secretary of State should be through the chairman. The members of the Council should be the directors of the Royal Botanic Gardens at Kew, of the Imperial Bureau of Entomology, and of the Imperial Bureau of Mycology, a chemist, and representatives of veterinary science, of the Imperial Institute, of the Colonial Office, and of the Empire Marketing Board. Liaison with the Medical Research Committee and any other research committee should be maintained either by co-opting a member of that committee as occasion required, or by creating an *ad hoc* committee of members of the bodies concerned to deal with borderline questions.

The proposed constitution of the council is open to criticism. No reasons are given for the choice of chairman. What precisely is meant by a layman? Is he to be a man whose impartiality and sound judgment are to be guaranteed by his complete ignorance of science? Exception might be taken also to the selection of the scientific representatives. Presumably botany, mycology, entomology, and chemistry are regarded by the committee as the four sciences of most importance to agriculture. Two of them are mainly concerned with the pathological aspects of agricultural research, admittedly of importance, but certainly not so important as research in genetics aiming at the production of new varieties of plant and animal types resistant to disease. At least one geneticist should be added to the council. The claims of physicists to representation on the council are also strong. A physicist would be able to advise on most problems in connexion with the relationship of soil and climate to plant life as well as those concerned with the transport and storage of agricultural produce. If there is a fear that the council would be too unwieldy, the substitution of an agriculturist—say the director of Rothamsted Experimental Station—for the four scientific members proposed by the committee, would preserve its balance and not diminish its effectiveness

as a council. Perhaps it is not too late, also, to suggest that an ex-member of the Indian agricultural services should be given a seat on the council. Many of the difficulties which beset agriculturists in the colonies are identical with those which have already been successfully surmounted in India by the application of research, and it would be well for the council to have the advice of some one thoroughly familiar with the methods already successfully adopted there. A further point might also be considered. The principle of automatic retirement of members of advisory councils after a short term of years has already been applied to membership of the Medical Research Council and the Advisory Council for Scientific and Industrial Research. If the Colonial Agricultural Research Council is constituted as proposed, this principle could not be applied.

The observations of the committee on the need for attracting the best talent to the colonial agricultural services will commend themselves to scientific workers as a whole. It must provide a career. "It must be well paid, and the financial prospects held out must be better than those which obtain at present." An officer entering the unified service must be liable to transfer, but he must be safeguarded against any loss on transfer. It is recommended that retiring benefits for the members of this service should be provided by a provident fund scheme. Transfers of research officers to the administrative side of agriculture would not then present any difficulties in this regard. Before the recommendations of the conference can be translated into facts, however, the committee which has just been appointed by the Secretary of State for the Colonies has to go fully into the question of finance and submit its proposals to the colonial governments. This procedure involves vexatious delay and might have been obviated.

The tentative proposals of the committee on the unification of the various colonial research services need not be considered at this juncture. It will be time enough to deal with the matter when it is made the subject of a report by the further committee which is to be set up. The progress made in connexion with the agricultural research services will be studied with interest, and once the recommendation of the conference is made operative, that the poorer colonies will be entitled to command the services of first-class men from the central pool—equally with those colonies with greater financial resources—provided their problems are of sufficient importance, no excuse will remain for their starving these essential services.