



SATURDAY, MAY 19, 1928.

## CONTENTS.

	PAGE
Imperial Agricultural Research . . . . .	781
The Languages of India. By Prof. R. L. Turner . . . . .	783
Scientific Fact and Fancy . . . . .	785
Leonhard Euler. By T. L. H. . . . .	786
Our Bookshelf . . . . .	787
Letters to the Editor :	
Light-Year <i>versus</i> Parsec.—Dr. Heber D. Curtis . . . . .	789
Base Exchange and the Formation of Coal.— Dr. E. McKenzie Taylor . . . . .	789
Temperatures of Stars in Planetary Nebulae.— H. Zanstra . . . . .	790
The Blubber of Whales.—Robert W. Gray . . . . .	791
Photochemical Clustering.—Dr. Bernard Lewis . . . . .	792
Negrito Racial Strain in India.—B. S. Guha . . . . .	793
New Regularities in the Band Spectrum of Helium.—G. H. Dieke, Prof. T. Takamine, and T. Suga . . . . .	793
New Type of Discharge in Neon Tubes.—J. W. Ryde, L. Jacob, and B. S. Gossling . . . . .	794
Disappearance and Reversal of the Kerr Effect. —Prof. C. V. Raman, F.R.S., and S. C. Sirkar . . . . .	794
The <i>Discovery</i> Expedition. By Dr. Stanley Kemp . . . . .	795
The Problem of Artificial Production of Diamonds. By C. H. D. . . . .	799
Obituary :	
Dr. W. B. Blaikie. By R. A. S. . . . .	801
Prof. Wilhelm von Branca . . . . .	801
News and Views . . . . .	802
Our Astronomical Column . . . . .	806
Research Items . . . . .	807
Problems in the Physiology of the Cerebral Hemispheres . . . . .	810
The University of Liverpool . . . . .	811
University and Educational Intelligence . . . . .	812
Calendar of Customs and Festivals . . . . .	813
Societies and Academies . . . . .	814
Official Publications Received . . . . .	815
Diary of Societies and Public Lectures . . . . .	816

*Editorial and Publishing Offices :*

MACMILLAN & CO., LTD.,  
ST. MARTIN'S STREET, LONDON, W.C.2.

Editorial communications should be addressed to the Editor.  
Advertisements and business letters to the Publishers.

Telephone Number: GERRARD 8830.

Telegraphic Address: PHUSIS, WESTRAND, LONDON.

No. 3055, VOL. 121]

## Imperial Agricultural Research.

THE augmentation of the scientific research services of the British Empire is such an immediate necessity that at the conclusion of the preliminary plenary sessions of the Imperial Agricultural Research Conference, held last October, the view was expressed in these columns that the representatives of the home government should have been in a position to state "what further financial provision the government is prepared to make, and what financial support has been promised or is expected from the dominions and non-self-governing dependencies, for the effective carrying out of the schemes submitted to the delegates for their consideration." The hope was also expressed that some definite statement of this character would be made before the break-up of the conference.

It is very unfortunate that no such endorsed statement appears in the recent Report and Summary of Proceedings of the Conference (London: H.M.S.O. 1s. net). The Administrative Commission which considered the proposed chain of research stations, bureaux for the interchange of information, and the recruitment, training, and interchange of workers, contented itself with making a number of recommendations regarding the machinery which should be put into operation to effect the objects in view, and with very vague and non-committal suggestions as to the methods by which funds might be raised. Some of the various sub-committees dealing with specialist subjects, for example, veterinary science, animal nutrition, animal genetics, soils and fertilisers, plant breeding, backed their proposals for the encouragement of research with estimates of their cost, but while the conference agreed with their proposed schemes of work, it was not in a position to recommend the allocation of funds for putting them into effect.

Lord Bledisloe, who occupied the chair throughout the proceedings, rightly said that the conference was noteworthy for its comprehensively representative character—albeit more reality would have been lent to it if the proportion of overseas research workers to administrative agricultural officers had been larger—that it served the useful purpose of bringing together a large number of persons for the interchange of views on the impact of scientific research upon Empire development, that it was able to reach a considerable measure of agreement upon the nature, the place, and the character of the machinery necessary for the development of the research services, and that it afforded research workers the opportunity of seeing something

of the research workers and stations in Great Britain and Northern Ireland, which in itself is a useful precursor to a fuller measure of co-operation. Nevertheless, it is permissible to ask why, apart from the actual fact of its meeting, the direct and tangible results of the conference should have been left in the air until such time as further reference could be made to the home and the overseas governments. There is surely something radically wrong with the machinery for imperial co-operation if the accredited representatives of the constituent parts of the Empire, the local governments of which have been notified of the object of a conference at least twelve months in advance, can be empowered to agree upon policy but cannot be given the necessary authority to commit their governments to any expenditure for carrying a policy into effect.

Admittedly, on the basis of the various recommendations passed by the delegates to the Agricultural Research Conference, the home government could, out of the funds at the disposal of the Empire Marketing Board, establish a chain of research stations, create bureaux for the interchange of information regarding soil science, animal nutrition, animal pathology, animal and plant genetics, and so on, and launch an energetic campaign for the training and recruitment of agricultural research workers. Doubtless it would need additional funds for these purposes, but they should be forthcoming, for the home authorities are quite aware of the value of scientific research applied to agriculture, whether in Great Britain or overseas. As Sir Daniel Hall pertinently remarked in the closing session of the conference, if the ultimate goal is to make the British Empire self-supporting in the fundamental and all-important matter of food, we must effect an extension of the area under crops and cattle by means of research. The results already achieved in this direction by means of research in Canada, the Punjab, South Africa, and the tropical colonies, amply justify an ambitious programme of research.

The ideal before the conference was, however, the organisation of co-operative research throughout the British Empire in which each constituent part of the Empire shall play its part, and unless each of the overseas governments makes a contribution to a common fund for the furtherance of this object, there is a very real danger that the delegates to the next conference, which is to be held in Australia in 1932, will find that they are as far removed from its attainment as they were in the autumn of 1927. If governments share financial responsibility for any undertaking, they will keep a critical eye on the

activities of the departments or persons on whose behalf expenditure has been incurred. If the whole responsibility is borne by the home government, it will be difficult to arouse and impossible to maintain any interest of the overseas governments in the schemes recommended by their respective delegates.

Were the promotion of agricultural research a contentious issue like fiscal policy, the reluctance of governments to delegate authority to their representatives to commit them to a limited expenditure could be understood. If the scientific workers of Great Britain had no contributions to make to the progress of science as applied to agriculture in the dominions and colonies, if our agricultural research and teaching institutions were lacking vitality, or compared unfavourably with those in other parts of the Empire, there might be justification for the extreme caution displayed. Furthermore, if the overseas governments were still unconvinced that they are losing a large percentage of their agricultural produce yearly through plant and animal diseases, and are not realising to fullest extent the known potentialities of the soil, largely due to the inadequacy of their research services, their attitude could be understood. Judging, however, from the utterances of the statesmen of the dominions and India at the Imperial Conference in 1926, and those of the representatives of the non-self-governing dependencies at the Colonial Office Conference in May 1927, the Empire as a whole is completely convinced of the need for more and still more scientific investigation of the problems facing it, most of which are related to the foremost industry of the Empire, agriculture. Apparently they are also convinced of the need for co-operation in research as in other matters affecting the welfare of the peoples whom they represent. They are represented, directly or indirectly, on the Empire Marketing Board. It can only be suggested to them, that as unanimous agreement has been reached on detailed schemes for co-operation, they will use every endeavour to place the necessary funds at the disposal of their representatives on that Board without further delay.

Since the appearance of the Report and Summary of Proceedings, a memorandum has been issued by the secretariat of the conference outlining the action which has been taken on the recommendations made; nothing in it leads us to modify the views expressed above. Regarding the chain of research stations, the memorandum states that the North Queensland Station "is at the moment the subject of correspondence between the Commonwealth Council for Scientific and

Industrial Research and the Empire Marketing Board"; the Empire Marketing Board "are consulting the Government of the Union of South Africa on the proposals that the facilities of the Ouderstepoort Station should be increased to enable it to undertake the functions of a central research station in animal diseases"; the recommendation that an irrigation research station should be set up "has been forwarded to the Committee of Civil Research. That committee has formed a Sub-Committee to deal with the recommendation." The question of research stations in the Colonial Empire has been considered by a Colonial Office committee under Lord Lovat's chairmanship, and this committee recommends that until the Amani Research Institute in East Africa is thoroughly re-established no other links be forged in the chain. The recommendations relating to the creation of more central research bureaux and clearing-houses of information for the Empire have been accepted by the governing bodies of the institutions to which it is recommended they should be attached, but the British Treasury has only just "been approached in regard to the acceptance of the principle of a United Kingdom contribution towards the cost. When the question of the home contribution is determined the countries of the Empire will be asked, as a first step, to nominate representatives on the financial supervisory body."

The same note runs all through this last memorandum. Everything is to wait until the home departments or committees concerned have reconsidered the recommendations with which they are concerned, after which presumably they will have to be referred to the corresponding authorities overseas and to the British Treasury. The delay involved in this procedure is illustrated by the time taken—three years—before the recommendation of the East Africa Parliamentary Commission regarding the re-suscitation of the Amani Institute was put into effect, and in the meantime the Institute was falling further into desuetude. We can only express the hope that more energetic steps will be taken to achieve some positive results before the next meeting of the conference in Australia. At the same time, we should like to suggest that the best means for ensuring that no time will be lost between passing schemes for co-operative research and putting them into effect would be to create immediately a central fund, based upon contributions of each constituent part of the Empire, and large enough to permit of immediate action being taken by an Empire Research Council upon which the Dominions, India, and the Colonies are properly represented.

No. 3055, VOL. 121]

### The Languages of India.

*Linguistic Survey of India.* By Sir George Abraham Grierson. Vol. 1, Part 1: Introductory. Pp. xviii + 517. (Calcutta: Government of India Central Publication Branch; London: High Commissioner for India, 1927.) 11.12 rupees; 19s.

THIS year there have been completed two very notable works in the field of linguistic science: one is the "New English Dictionary," finished after seventy years of labour; the other is the great "Linguistic Survey of India," of which the last volume to be published is now before us. No scholar can work at any problem connected with the history of English without constant appeal to the Dictionary, and no scholar can work at any problem connected with the languages of India without constant appeal to the Survey. Indeed, we can scarcely recall during the last fifteen years an article or book on the history of any of these languages (and shortly it will be seen how numerous and diverse they are) in which reference has not been made to the facts set forth in the Survey, often for the first time.

The only linguistic work which can be compared with the Survey is the "Atlas linguistique de France." But the intention, the scope, and therefore the method of the Atlas are different: in it a certain number of isolated linguistic phenomena (particular words, grammatical forms, and the like) were studied in as many of the local patois of France as possible: it does not pretend in any way to provide a description of any given dialect or even of its most salient features. The author of the Survey, on the other hand, set himself the task of describing, as fully as materials or space allowed, every language and every dialect spoken over vast areas of the Indian Empire by some 300 million people.

The New English Dictionary provides us with an unrivalled history of one language; the "Atlas linguistique" supplies invaluable information concerning the distribution of linguistic phenomena over a whole dialect-area. But the Survey has given us descriptions, not of one language only, not even of the different dialects of one language, nor even of a group of connected languages (as, for example, the Romance in Meyer-Lübke's "Romanisches etymologisches Wörterbuch"), but of four separate and distinct families of languages—the Austro-Asiatic, the Sino-Tibetan, the Dravidian, and the Aryan—excluding two languages as yet unclassified; and these families are represented in India alone (or rather in that part of India with which the Survey deals) by 179 separate languages