

The Improvement of Indian Agriculture.*

ONE of the conditions laid down when the Imperial Council of Agricultural Research was set up was that the Council's activities should be periodically reviewed by some disinterested experts. It was fortunate that the very first review of this kind should have been undertaken by such two distinguished experts as Sir John Russell and Dr. N. C. Wright. It is a sign of the recognition of the great importance of the cattle and dairy industries of India that it should have been deemed necessary to deal with them separately. Though primarily only the work of the Imperial Council of Agricultural Research was to be passed in review, the terms of reference cover a very wide field. The improvement of Indian agriculture therefore receives very comprehensive treatment in all its important aspects and the reports really constitute yet another landmark in the history of agricultural improvement in this country.

CROP PRODUCTION.

Sir John Russell has examined not only the various schemes of research initiated and financed by the Research Council but has also looked into the whole of the scientific research work accomplished or in progress in the various Agricultural Colleges, in the Universities and kindred research institutions. He is satisfied that the Research Council has discharged admirably its primary duty of co-ordinating and promoting agricultural research in India, that the methods adopted by them are correct and that a vast amount of work has already been accomplished. Practically every one of the schemes is approved and any suggestions made for modification are generally in the direction of amplifying them by linking them up with important related agencies, both scientific and economic such as the medical, forest, and nutrition research departments and with commercial experts handling produce for the export markets. A fuller use of the British Institutions such as the Imperial Institutes in England dealing with agri-

cultural sciences is suggested and in respect of the control of insect pests in India the recommendation is made that a visiting expert of high standing may be called in for advice. The desirability of employing a first class geneticist is also indicated for putting the work of plant improvement on a less mechanical and more definitely scientific basis. The establishment of a Central Irrigation Research Station is also strongly recommended as the work at present being carried out is scattered, uneven in quality and scale and lacks unified direction. Other suggestions made are for associating the Universities more closely in research work in the sciences basic to agriculture, and for arranging to bring together the results of the work carried out so far on the different crops and other subjects.

Sir John Russell feels strongly, however, that the greater need in India is for "a fuller use of existing knowledge rather than accumulation of more knowledge, for work on the cultivator's fields rather than in the laboratory" and that the Council should apply itself to the task of bringing the results of research into general adoption in Indian agriculture. This matter has been much discussed in the past but an effective method of bringing about such a result within reasonable time is still a desideratum. A fresh orientation of policy towards what is usually known as district work or extensive service is therefore strongly recommended. A visualisation of the improvement of village life in its entirety and for action appropriate thereto is the need stressed strongly, and for this purpose the recommendation is made for materially widening the scope of the Council's work. A developmental side to the Council which will aim to popularise the recommendations of nutrition experts, arrange for the production and distribution of improved seeds on an adequate scale, plan extensions of dairying, fruit and vegetable growing, poultry-keeping and the like, adopt methods of popularising improvements, exploit the results of commercial interest, bring about the settlement of educated men and women on the land and the like, is perhaps the most important recommendation made. The requisite machinery which will enable the Council to carry out these measures is indicated and the need for adequately

* Report on the work of the Imperial Council of Agricultural Research in applying Science to Crop Production in India," by Sir John Russell, D.Sc., F.R.S.

"Report on the Development of the Cattle and Dairy Industries of India," by Norman C. Wright, M.A., D.Sc., Ph.D.

enhancing the financial resources of the Council is emphasised.

CATTLE AND DAIRY INDUSTRIES.

The report of Dr. Wright is a comprehensive survey of the dairy industry and is enriched with a fund of valuable statistical information relating to India as compared with other important countries. Relieved from the necessity of examining any large research or other schemes, due to the paucity of any such in operation, Dr. Wright has been able to devote a great deal of attention to a study of the existing conditions and to the lines along which the dairying industry should develop. In many important respects the problems are looked at from a different angle altogether from what has been usual so far and supported as they are by a wealth of statistical information his recommendations assume great importance. What is needed in Indian dairying is a new outlook and a new technique, an outlook which recognises the special nature of India's problems and a technique which is designed to meet these problems, as distinguished from the methods and standards of Western countries which have so far influenced and moulded developments in this country. Attention should be thus concentrated on indigenous milk products like *ghee*, curds, etc., and not on table butter, cheese and the like; steps should be taken to increase milk supply for consumption in the *villages* as distinguished from cities; improved methods should be adaptations of local methods rather than totally different foreign ones as the former have been evolved to suit local conditions.

Dr. Wright is naturally struck with the heat treatment and the souring of milk into curds, the two methods so universal in this country as admirably suited to the conditions here and would generally discount the value of refrigeration and similar methods, on economic grounds. Improvements in the production and marketing of *ghee*, in the preparation and sale of other typically Indian dairy products are therefore greatly stressed and conformably to the general trend of his opinion, the production of cheese, the manufacturing of condensed

milk, milk powder and so on and large-scale creamery butter are not recommended as matters of importance. The whole scheme of the creamery at Anand for which a provision of Rs. 6 lakhs has been sanctioned is likewise recommended to be kept in abeyance. One has nevertheless to note that India is advancing along Western lines in its industrialisation and the growth of cities and that methods perfected elsewhere to meet such conditions cannot be ignored. It is also doubtful if village life can ever afford the necessary stimulus to milk production as the cities to which alone the present progress in dairying is due. As a means of cheapening milk production the claims of mixed farming are emphasised. One may hope that this may be taken up for demonstration and popularisation. For the improvement of milk yields of Indian cows, Dr. Wright is emphatically against cross-breeding with foreign breeds and recommends the systematic building up of herds of high yielding, indigenous breeds of cows. The buffalo is, however, the premier milk producing stock of India, and more attention in respect of selection and breeding from high yielding stock is suggested. An important suggestion towards increasing the supply of concentrated cattle feeds is that the export of vegetable oils should be encouraged in preference to that of oil-seeds so as to retain the oil-cakes for local consumption.

The need for research in practically every aspect of dairying under the special conditions of India having been emphasised, Dr. Wright proposes for practical action, the opening of an Imperial Dairy Research Institute both for research and for advanced special training. The improvement of the dairy course in Provincial Agricultural Colleges to the standard required for the I.D.D. Examination and the expansion of dairy instruction in Veterinary Colleges are also suggested. The appointment of a Dairy Development Officer in the provinces is recommended as a first step in establishing a regular Dairy Advisory Service. Suggestions are also given for a proper co-ordination between the allied agencies.