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## The New Viceroy and Science.

WE have pleasure in offering our warmest felicitations and welcome to Lord Linlithgow whose appointment to the Viceroyalty of India is received with general satisfaction. His Lordship had exceptional opportunities intimately to study the political and economic conditions of this great country, and we hope that during his period of administration there will be peaceful and rapid progress in the achievement of the great ideals for which the nation is hungering. The problems which must immediately engage the attention of the new Viceroy must necessarily refer to the constitutional relationship of India with Great Britain, and probably the ceremonial arrangements connected with the Coronation of H. M. King Edward VIII in New Delhi. The successful inauguration of the New Reforms Act, arduous and difficult in itself, and the organisation of a historic pageantry, would under any circumstances entitle the Viceroy's administration to great praise; but the political, financial and economic developments, that have occurred in India since the introduction of Reforms in 1919, have so profoundly modified the outlook of the people, and have brought into existence conditions of life, that a solution of the more outstanding problems seems equally urgent. At the farewell dinner given by the Combined Empire Societies on the eve of his departure to India, Lord Linlithgow recalled his labours as Chairman of the Agricultural Commission and referred to unemployment, which together are fraught with possibilities far transcending in importance the issue of political evolution of this vast sub-continent. Few Viceroys have been called upon to assume the responsibilities of their exalted office in circumstances more critical than those which confront Lord Linlithgow, and the problems which await solution are not, however, beyond his statesmanship.

The welfare and prosperity of the people depend on the extent to which the country is scientifically organised, and our firm conviction is that unless the major industry of the people persistently applies scientific method and scientific knowledge to its problems, it cannot escape from the difficulties with which it is surrounded. In the field of science, therefore, no Legislature can reasonably recommend measures of economy which will sacrifice the efficiency of research



organisation. The Royal Commission on Agriculture have pointed out that "in spite of marked progress which has been made in many directions during the last quarter of a century, it is hardly an exaggeration to say agricultural research in this country is still in its infancy. The claims of research have received a half-hearted recognition and the importance of its efficient organisation and conduct is still little understood." On the recommendation of the Commission the Imperial Council of Agricultural Research was established, and in the beginning of last year, the Industrial Intelligence and Research Bureau was founded. By a judicious system of grants-in-aid and a careful selection of problems, the Imperial Council of Agricultural Research has promoted fundamental enquiries in agriculture in the universities and other research centres. The Industrial Intelligence and Research Bureau, which is attached to the Indian Stores Department, has, through its Advisory Council, formulated a series of problems in the fields of Chemistry and Engineering, for investigation at the Government Test House, Alipore. While we recognise the magnitude and the importance of work initiated by these bodies, we feel that the task of extending and consolidating national research activities could go steadily forward only under the auspices of a National Advisory Council of Scientific Research. There are now in Great Britain under the direction of the Department of Scientific and Industrial Research, 24 research associations in which the Department and industries co-operate, seven research institutions controlled and supported solely by the Department, which have been formed for the study of special industrial problems and 40 research stations dealing with agriculture or industry, some privately and some publicly controlled, whose function is to promote industrial developments. Many of these stations are connected with the universities of the country and receive subventions from Government. These are significant illustrations of what is going on over the whole of Europe including Russia, where scientific research is being intensively organised. It seems to us that simultaneously with the inauguration of constitutional reforms, an announcement should be made in regard to the establishment of the National Advisory Council of Scientific Research for the purpose of co-ordinating all the research organisations in order to

promote a steady advancement of the industrial prosperity.

The principal task of such an institution will be to emphasise that no industry can afford in these times to neglect any opportunity for increasing its efficiency and, of all the means to this end, the pursuit of research and the applications of the results obtained are often the most far-reaching and fruitful. If the case for research on the production of Indian commodities is as strong as ever, the need for research into their utilisation is stronger still. In nearly every industry to-day, movements are on foot to apply old materials to new uses, and to discover uses for new material. Cotton, wool, rubber, food products and alloys of metals are instances in point. Whether the object in view be to create a wide demand for a commodity and thus reap the advantages of modern methods of production or to discover the most suitable material for a particular purpose, it is equally important that the chemical and physical properties of the materials concerned should be fully understood. For investigations of this kind, the facilities in the laboratories of the universities and in those of the Indian Institute of Science, if extended and supported by increased grants from the funds of the National Advisory Council of Scientific Research will be found ample for industrial research of the highest quality.

As part of the general policy of concentrating attack upon problems of immediate importance both to science and industry, Government should revise its scheme of award of subventions to research work conducted either under private or government auspices. The wider control which the Legislatures will soon acquire under the reformed constitution over the administration of public finance, will also provide increasing opportunities for the promotion of scientific research, without which Indian industries can never compete with the better organised European countries. The Government of India and the Indian Congress have individually launched a campaign for the welfare of villages and the betterment of village life, and large sums of money are proposed to be spent on the establishment of happier conditions in the village organisations. Almost every aspect of rural problem has a scientific bearing, and it must be obvious to any reflecting mind that a scientific enquiry into conditions of village



life should precede measures for their amelioration. Agricultural practice is only one aspect of rural science, which includes a veterinary side, animal and plant genetics, village economy and cottage industry, sanitation and water supply and building and road construction materials. The resources of governments and of other agents should not be fritted away by embarking upon empirical schemes of modernising villages, but should be devoted to the study of carefully planned investigations of the biological and economical features of the problems, on the results of which proposals of betterment should be based. Schemes for the improvement of villages will be permanent only if the rural population can appreciate their benefits, and if the individual members are sufficiently educated to support and improve the reforms. The rural commodities furnish the necessary materials for large-scale industries, and their continuous supply of the right kind involves a closer study of all raw goods by the producers themselves with such co-operation of the outside scientific expert as may be available. The village community must develop a scientific turn of mind before its welfare and prosperity could become the assured source of additional public revenue.

In reviewing the possibilities of developing rural science or expanding the industrial investigations, what emerges most clearly is the importance of provision for an effective programme of laboratory work in the Scientific Surveys, Universities, the Indian Institute of Science and Government Research Stations. In the laboratory the research worker is free from those obligations inevitable when experimental work on a large scale has to be planned, while intensive laboratory work affords the best way of understanding the root problems which may lead to improvements of relatively minor nature in the existing processes or to suggestions for alteration in production or in methods of utilising raw materials. One of the tasks of the reformed administration ought to be to foster close relations between laboratory work and industries, for on the extent of such co-operation depends the

entire fabric of human civilisation. The most effective criterion of the value of laboratory research is the extent and direction in which the results are put into practice, but the application of the results is difficult to ensure unless industry is prepared to take a vital interest in the research work. The contact can become real and yield far-reaching benefits only when the new Legislatures recognise its superlative importance as a means of creating wealth, and provide in their annual budgets adequate grants for all private and public research institutions. The inauguration of constitutional reforms and their successful working may bring political contentment or may foster a new movement for further instalment of reforms, and the wisdom and public spirit with which they are brought into being, must also recognise that a decorated political vesture can only add to national dignity, but scientific organisation enriches and supports the life-blood of the country. The poverty and backwardness of India can be removed only by investing more money in the promotion of scientific research and if, in the midst of his political concerns and duties, His Excellency Lord Linlithgow could bestow some attention on the imperative need of consolidating the work of the Royal Commission over which he so worthily and ably presided, his contribution to the lasting happiness and prosperity of India would be such as few Viceroys have conceived or achieved. To watch and guide the working of the New Reforms Act is part of the routine programme of the Viceroy's duties, but to devise a scientific organisation of this great country "as a means of assisting the advance of the rural community towards a richer and fuller life, and of awakening the desire in that community for better things and arming each individual member of it against the temptations that beset him, without impairing either his self-respect or his spirit of manly independence," calls for the active and generous exercise of those higher qualities of statesmanship with which Nature and political training have abundantly endowed Lord Linlithgow.

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