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*"To the solid ground
Of Nature trusts the mind which builds for aye."*—WORDSWORTH.

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The Impact of the State on Scientific Research.

IN consequence of a recommendation of the Select Committee of the House of Commons on Estimates, the Prime Minister, in October 1926, constituted a Sub-Committee of the Committee of Civil Research "to consider the co-ordination of research work carried on by or under Government, to report whether any further measures be taken to prevent overlapping, to increase economy and efficiency, and to promote the application of the results obtained." Mr. Ormsby-Gore was appointed chairman of the Sub-Committee, Major Walter Elliot was the other parliamentarian, the other members being permanent officials of the various departments concerned in the inquiry. The inquiry was spread over a year, the Sub-Committee reported on Dec. 14 1927, and the results of its deliberations were made public on June 14 last.¹

With such terms of reference, it might reasonably have been expected that the Sub-Committee would consider it its duty to present a critical survey of the present organisation of the State-maintained or -assisted research services of Great Britain, to present broad details of the expenditure involved, to express its own views on the relative merits of the varying types of organisation which came under its purview, and to have given some indication of the directions in which the results of research might be applied with advantage to the community, and the new researches that were necessary. In these respects the report of the Sub-Committee is disappointing. It is critical of the attitude of indifference to research of former generations, but

¹ Committee of Civil Research. Report of the Research Co-ordination Sub-Committee. (London: H.M. Stationery Office, 1928.) 2s. 6d. net.

it is difficult to detect in its complacent generalisations on the present organisation of research whether it considers any changes desirable or that it is satisfied that the existing machinery works to the best advantage.

The report is evasive and apologetic in turn. It gives the impression that expenditure on research has to be defended against possible attacks by the ignorant, rather than justified to those who understand the real purpose of research and whose aim it is, in the interests of scientific research generally, to exact the greatest degree of efficiency from the instruments by which it is conducted.

Scant attention is given to the industrial research associations. No opinion is expressed regarding their future, although the Sub-Committee could not have been ignorant of the difficulties with which most of them have had to contend since their inauguration, and the fact that the Million Fund, out of which they have hitherto derived about half their yearly income, will be exhausted in a very short time. What is to happen to them if, for a variety of reasons, the industries they are intended to serve fail to make them self-supporting within the time limit stipulated by the Department of Scientific and Industrial Research? Has the policy laid down for those associations been sufficiently well defined? Is the present organisation of industrial research on a sound basis? Is the machinery for its co-ordination adequate? Is it considered the experiment has been sufficiently successful to justify the State providing ample guarantees for its continuance? It has been left to Lord Balfour to answer this last question. He informed a deputation representing nineteen of the associations which he received on June 29, that the Government is satisfied that the research associations have proved of real utility to the industries they represent. Accordingly, in order to help them to expand the scope of their work and to stabilise the position of the scientific workers attached to the associations, it has been decided to extend the period over which financial assistance is to be given.

Many other queries also come to mind. Which system of research for the fighting services is the better, that adopted by the Board of the Admiralty and the Air Ministry, or that in force at the War Department? Does the committee consider that it is desirable that the responsibility for the arrangement of any research undertaken at the Research Department, Woolwich, should be vested even nominally in a "Chief Superintendent directly under a Director in the Department of

the Master-General of the Ordnance," particularly when the office of chief superintendent is held alternately by naval and military officers? This alternate succession must constitute a disturbing factor unless this and the other subordinate administrative posts in the Department held by officers of the fighting services are sinecures.

As regards meteorological research, the Sub-Committee refers to the impact of the work of the Meteorological Office on that of a number of different departments, to the recommendation made after the War to transfer it to the Committee of the Privy Council for Scientific and Industrial Research, and to its attachment to the Air Ministry in 1919. But no opinion is expressed regarding the desirability of this arrangement, which the Sub-Committee must have been aware has been the subject of a good deal of informed criticism. There is no reference to the present unsatisfactory state of the Geological Museum, although this matter was the subject of strong comment in the last report of the Advisory Council for Scientific and Industrial Research. We fail to find any reference to the need for research in the social sciences as distinct from medical research, or for anthropological and geographical research in connexion with Colonial administration. There is a further omission to express any opinion regarding the present state of veterinary research in spite of the fact that this is a matter which has for some time past engaged the earnest attention of the chairman of the Sub-Committee.

On only one subject of importance has the Sub-Committee expressed definite views. These occur in the last three paragraphs of the report and deal with the publication of scientific knowledge. The Sub-Committee rightly considers that the present variety of means adopted by different Government departments for the publication of results of scientific value is not an advantage. Each department has been a guide to itself in the matter, and sufficient account has not been taken either of the need for co-ordination and uniformity of presentation of results obtained by men of science in the Government service, or of the importance of regarding their contributions to knowledge as contributions to the common stock, inseparable from those of scientific workers outside the Government service. "It is," says the Sub-Committee, "incumbent on the Government to avoid adding to the mass of publications that must be searched by scientific workers if there already exist adequate means for the purpose in the scientific world." It considers that the most effective publicity for results is

obtained by means of the *Proceedings* and *Transactions* of the various learned societies and technical journals, hitherto "undertaken at the charge of individual workers banded together for the purpose." It therefore envisages the possibility of more extended use being made by Government departments of these agencies and of direct State contributions towards the cost of such publications. Evidently it considers that the increase, made in 1925, of the Treasury grant to the Royal Society in aid of publications, has been thoroughly justified, and it is permissible to assume that an application for a further increase would be received favourably.

This is the only bright spot in an otherwise dull summary of the methods by which the State fosters research, either in Government laboratories staffed by professional Civil Servants or in State-maintained or -assisted research institutions. It is conceded that such a summary will serve a useful purpose; it might, for example, stimulate more parliamentarians to take an active interest in a matter of vital importance to the nation by enabling them to appreciate the influence of scientific research on our social and economic life, but it was scarcely necessary to have called together so eminent a body to compile what appears to be a digest of various departmental memoranda, the only excursion into matters of policy being that noted above.

The composition of the Sub-Committee possibly accounts to a certain extent for the nature of its report. It is surprising, however, that its members did not realise that the following passage, taken from paragraph 236 of the report, dealing with the Research Council of the Ministry of Agriculture and Fisheries, needs only the substitution of "Departments" for "Institutes" to explain their own failure to deal fully with their terms of reference:

"A body consisting mainly of the heads of Institutes engaged for the most part on research in different fields is not, however, well adapted for the consideration of research policy. Directors of Institutes not immediately concerned can hardly be expected to offer opinions on subjects outside their own sphere or to criticise the work of Institutes for which their colleagues on the Council are immediately responsible."

Possibly if this Research Council consisted *solely* of directors of institutes its effectiveness might increase, and possibly if the directors of the various research departments had been entrusted with the task of preparing a preliminary report for the guidance and consideration of the two Ministers who served on the Research Co-ordination Sub-Committee, the final report might have been a more satisfactory document.

The Way the World might go.

The Way the World is Going: Guesses and Forecasts of the Years Ahead. 26 Articles and a Lecture by H. G. Wells. Pp. xi + 301. (London: Ernest Benn, Ltd., 1928.) 7s. 6d. net.

The Open Conspiracy: Blue Prints for a World Revolution. By H. G. Wells. Pp. 156. (London: Victor Gollancz, Ltd., 1928.) 5s. net.

MEN of science owe a debt of gratitude to Mr. H. G. Wells. He was born with a passion to make things better, and there is implicit in all his writings the view that the advancement of science and the application of scientific knowledge is the indispensable method whereby this end may be achieved. This passion has lost none of its intensity as the years have passed. No trace of cynicism has crept in. He remains as eager, as impatient, and as youthful as ever. He has not accumulated a series of tricks which he performs for the public amusement or "pour épater les bourgeois." He argues, debates, and pleads like the young man just becoming aware of all the absurdities, complexities, and possibilities of life.

Not to have grown old, weary, formalised, or pontifical is an achievement. Exuberance and vitality, a passion for the better ordering of society, a belief in science, are with Mr. Wells as they have always been. Add to that a sixth sense of understanding how ideas and experiences react upon different types of men and women brought up in different social strata, of sensing and expressing social relationships with their economic background: remember that to religious and æsthetic experience Mr. Wells is almost wholly insensitive, and we have some explanation of his positive achievements. His main achievement lies in his novels. In them is displayed an understanding of social as distinguished from individual relationships and experiences, which cannot be paralleled. The existence of Mr. Wells's novels relating to the War will make it possible in the future to understand how men and women were affected by that crisis in human affairs better than we can grasp how any crisis in the past affected those who lived through it.

This achievement, however, is incidental to Mr. Wells's main purpose. He wrote because he had lessons to teach. Every now and then he has tried to convey his lessons in some other form. Thus he has given us utopias, histories, newspaper articles. No matter what form he selects, his vitality carries us along. Nevertheless, as he departs from the form of the novel, we become