

### Scientific and Industrial Research.

**P**PROMOTION and co-ordination of scientific research by the State on any widespread scale is still novelty enough to invest the recently published Report of the Committee of the Privy Council for Scientific and Industrial Research for 1926-27, accompanied by the Report of the Advisory Council for the same period, with a special degree of interest. To the reports are attached a summary of work conducted by the various research organisations functioning under the auspices of the Department, and appendices containing tabulated information of a statistical and bibliographical nature, together with references to the development of organised research in other parts of the Empire.

In addition to the work of the research associations, the activities of the National Physical Laboratory, the Geological Survey, the Fuel Research Station, the Building Research Station, and the Forest Products Laboratory are described, and much information is given concerning the progress of work on food storage and transport, water pollution, and chemotherapy. It is satisfactory that important investigations at the Low Temperature Research Station, which have been delayed for lack of funds, can now be proceeded with in view of the receipt of a substantial grant from the Empire Marketing Board. There is, however, still urgent need for a coastal station devoted to the study of the preservation of fish and the utilisation of fish by-products. The magnitude of some of the issues at stake can be adjudged by reference to work in progress demonstrating the successful conversion of coal into liquid fuels; it still remains to be seen whether the new industry will be firmly established before existing sources of petrol begin to fail. The Advisory Council makes some pertinent remarks on the conditions under which the Geological Survey and the Museum of Practical Geology are housed. It is earnestly to be hoped that the scheme for a new building, once authorised by Parliament but still suppressed on the grounds of economy, will soon be put into effect.

A glance at the summary of work in hand during the year demonstrates the great diversity of the interests involved. The study of chemical reactions at high pressures is being carried on both at the Chemical Research Laboratory, Teddington, and at the Imperial College of Science and Technology; the Aerodynamics Department has dealt with a very full programme, including tests of airship models and the elimination of wing-flutter, in the investigation of which mathematical analysis has afforded a large measure of success. Considerable progress has been made in fuel research, despite hindrance due to the stoppage in the coal industry. The keeping qualities of apples are believed to be concerned with the protoplasm content and the extent of the sugar reserves, and the possibility of a precise prediction of the duration of life of the fruit under any set of conditions by means of chemical examination at harvesting is predicted. Radio observations made during the solar eclipse are mentioned; 'wireless' enthusiasts will also be interested to note that differences in wave attenuation are attributed largely to the absorbing effect of trees, greatest attenuation being observed in the most densely wooded parts of the country, and that the large number of receiving aerials in the London area appears to have a considerable energy-absorbing effect. The number of specific problems submitted to the British Museum Laboratory tends to increase; the work specially referred to in the report includes the mounting, cleaning, and preservation of delicate materials, the identification of early porcelain, and the unrolling of brittle manuscripts on leather.

The report would have been incomplete without some reference to the work of the National Research Council of Canada, the Australian Commonwealth Council for Scientific and Industrial Research, and the New Zealand Department of Scientific and Industrial Research, to the activities of the South African Departments of Mines and Industries, Agriculture, and Forests, and to those of various Indian Departments.

### Origin and Development of Portion of the Australian Flora.

**I**N the second part of his presidential address before the Australasian Association for the Advancement of Science at Hobart, delivered on Jan. 16, Mr. R. H. Cambage discussed the "Origin and Development of Portion of the Australian Flora." The position was summarised as follows:

There appear to be more genera common to Africa and the eastern half of Australia only, than to Africa and the western half of Australia only, so that evidence of a direct land connexion between these two countries is meagre.

It is thought that many genera which are common to Africa and Australia have reached these countries from the same source in the north, and have then developed in response to environment.

From available evidence it would seem that, at least since Cretaceous time, the northern hemisphere has had a greater land mass than the southern, and, as a result, there has been more room for plant development in the north than in the south. Probably the Pleistocene and even earlier glacial periods have been instrumental in permitting many genera to pulsate across the tropics from temperate northern regions, and in the process, and after arrival in the south, there have been much radiation, development, and evolution. Although there probably has been more migration to Australia from the north, there is

evidence in some cases of secondary radiation from the south, especially in the genus *Eucalyptus*.

It seems undoubted that some genera common to Australia and New Zealand have reached both countries from the north, some species coming down the east coast of Australia, while others have gone by way of New Caledonia and adjoining islands to New Zealand.

Except for a land connexion between north-eastern Australia and islands to the north, perhaps so late as Pliocene time, Australia has long been isolated from the rest of the world.

There appears to be more evidence in favour of a former land connexion between Antarctica and South America, and perhaps New Zealand and Australia, than between Africa and Antarctica.

Studies of the many changes which have taken place in the history of the world's flora, of its adaptability to environment, its response to change of climate and soil, its ability to overcome many adverse conditions, all combine to impress one with the conviction that the marvellous act of creation not only embodied the initial giving of life, but also provided inherent power and initiative for the necessary development and evolution required for the persistence of that life, in harmony with its varying surroundings and dominating influences.