

The members of the staff collectively have considerable chemical knowledge covering a wide field, and this is being made available as much as possible for advice and suggestions on industrial matters under consideration by the Departments of Industries and Commerce or Scientific and Industrial Research.

GEOLOGICAL SURVEY.

Since last year's report was presented the Geological Survey has issued an areal bulletin (with maps), covering 1,021 square miles of North Taranaki, a paleontological bulletin, and a comprehensive work on the minerals of New Zealand—the result of several years' preparation.

During the twenty-two years that detailed mapping has been in progress an area of over 25,000 square miles (about a quarter of the Dominion) has been examined, and an inventory of natural resources continues steadily to be made. Though much of what is ascertained may not be immediately required for developmental purposes, stock-taking of this kind can never be conducted too early. To have facts in reserve is the best kind of national preparedness, and in the future will enable the wisest use to be made of the country's economic wealth. Even investigations that yield negative or unfavourable results, though not always popular, probably save greater expenditure in projects doomed to failure, and much waste of labour and capital.

The scope of field-work varies little from year to year, but at different periods the demand for accurate and authoritative information has varied in kind and intensity. Sometimes the examinations have been directed to our gold resources, at other times to our coal reserves, and at still other to our oil possibilities, or, again, to materials of less intrinsic value. The demand now is that more attention should be devoted to the greatest natural resource of all—the soil. Already some soil surveys have been undertaken, and a large amount of the necessary work has been done for those parts of New Zealand geologically examined in detail, seeing that the distribution of the soil types, once these have been established for any district, can be accurately and quickly shown on the published maps.

The unexpected death last November of Mr. P. G. Morgan, Director of the Geological Survey since 1911, must be recorded with regret and as a distinct loss to the Dominion. The late Mr. Morgan was a conscientious officer, whose untiring industry, wide knowledge, and ripe judgment on all matters of geological interest in New Zealand have in the past proved of great value.

METEOROLOGICAL OFFICE.

The most important function of a meteorological service is to furnish precise statistics of average climatic conditions and the variations to be expected therefrom. Such information is required for the most efficient and economic working of innumerable human industries, but most notably for agriculture and engineering. For its proper collection observations covering many years, made in satisfactory and permanent sites by qualified observers with instruments of standard pattern are needed. Owing partly to the mode of growth of the meteorological service, and partly to the difficulties associated with the development of a new country, the necessary conditions have not been fulfilled in New Zealand. No station with a satisfactory long-period record exists. The most urgent duty of the Meteorological Office is to take steps towards the remedying of this defect. Some progress has been made during the past year; the instrumental outfit is being gradually improved; observing-stations are being inspected, observers instructed, and defects of exposure corrected. With the assistance of Government Departments and Municipal Councils, a number of new climatological stations have been established under satisfactory conditions.

The usefulness of the forecast service has been greatly increased by the issue of forecasts on weekends and holidays. The broadcasting of the forecast twice daily by the Radio Broadcasting Company has made it much more readily available to the public. Efforts to increase the accuracy of prediction have been greatly assisted by the increasing number of reports received from vessels in surrounding ocean waters. This could not have been possible without the co-operation of the shipping companies. The assistance given by the Union Steamship Company should be specially mentioned. It is anticipated that it will be possible during the coming year to inaugurate the issue of meteorological reports from a network of stations by wireless, so that mariners and others with a working-knowledge of meteorology will be able to draw charts and make their own deductions therefrom in the light of the official forecast.

During the year advice and assistance in connection with protection against frost were given to orchardists in Otago Central and Hawke's Bay.

In September last the Dominion was visited by the British Empire Airship Mission. The Meteorological Office co-operated with the mission by providing meteorological information useful for the selection of sites suitable for an airship base, and the preparation of plans for the necessary extension of the service when airships are in operation. Forecasts for aviators have been issued on numerous occasions.

The amount of information on meteorological subjects furnished on request to private individuals and Government Departments shows a marked increase. Work has been commenced on a new rain map of New Zealand, and the preparation of various other data regarding rainfall for the use of engineers is planned. It is hoped, also, that it will be possible to co-operate more closely with the Department of Agriculture and special research institutes in various researches in which meteorological conditions are of prime importance.

PETROLOGICAL LABORATORY.

This laboratory has for the past year been engaged upon investigations of the building-stone and gravel resources of New Zealand. While it is generally recognized that there are extensive deposits of building-stone in the Dominion, these resources have not as yet been subjected to careful scientific tests, and in consequence the absence of such knowledge has proved a handicap to their utilization by