

The intensive developments now taking place in connection with land-utilization, requiring the closer application of scientific methods to all aspects of the problem, have caused much greater attention to be directed to climate and its variations. This applies to both large-scale climatic effects and to the very local variations referred to as micro-climatology. It takes many years, however, to obtain anything approaching a complete account of a climate. A much longer period is required to indicate climatic cycles, trends, or the range of conditions which may be expected. The value of past records of climate is therefore being much more keenly appreciated. Unfortunately, at very few of the main centres have meteorological observations been maintained continuously at the same site and under the same conditions. The variations from place to place, over even a comparatively small area, of such elements as temperature and rainfall are of about the same magnitude as the variations from year to year. It is, consequently, to a large extent impossible to compare current conditions with those obtaining, say, forty or fifty years ago. It would be of very great value to the country if local authorities would realize the importance of maintaining climatological observations continuously at the same site and under constant and standard conditions.

The Director's report refers to the number and distribution of stations observing rainfall and the more complete climatological data.

At the Conference of the Australian and New Zealand Association for the Advancement of Science in Canberra, in January, 1939, the Director of the Meteorological Office was one of the Department's representatives. On the physical side the most important feature of the meeting was the great development shown to have taken place in Australia in exploring the atmosphere at very high levels by means of radio waves and correlating the results obtained with activity on the sun, variations in the earth's magnetism, and weather processes.

Attention is again directed to the publications of the Meteorological Office, in which useful statistics will be found.

GEOLOGICAL SURVEY.

Regional surveys have been continued in the Amuri and Glenorchy subdivisions, 180 square miles in each of these areas having been mapped in the last field season. Aerial photographs of the latter subdivision, which is of a rugged and mountainous nature, were used to assist in the mapping.

Field-work in the Greymouth coalfield in connection with the survey of coal resources was continued in the Rewanui area. Adverse weather conditions greatly hampered the surveys and in the circumstances very satisfactory progress has been made.

Geophysical surveys were carried out in the Big River and Bendigo areas and at the proposed site of the Cobb River dam. At the Big River area, which is about fifteen miles south of Reefton, information was obtained regarding the Waiuta anticline and associated structures, and the thickness of the gravel cover of the area was estimated. In the course of a geophysical reconnaissance survey of the Bendigo area an attempt was made to define the continuation of the Cromwell lode and another quartz reef, and certain tentative conclusions were drawn.

The Director made a special visit to Rotorua with a view to estimating the probable resources of thermal water and the possibility of the supply being depleted through the use of increased quantities. From the information available concerning the geological structure of the area and the rate of flow of some of the larger springs, it was concluded that considerably more water than is at present being used could be taken without appreciably depleting the underground supply.

A considerable amount of material from Taranaki, Gisborne, Hawke's Bay, East Wellington, and the West Coast was examined by the micropalaeontologist for the oil companies at present carrying out boring operations.

Two geological bulletins dealing with the Naseby and Kaitangata subdivisions, respectively, were completed and set in type. Officers of the Survey are at present engaged in writing bulletins dealing with the Te Kuiti and Wakaia subdivisions.

OBSERVATORIES.

From the 1st June, 1938, the new six-dot form of time signal was brought into operation by the Dominion Observatory through Station 2 YA of the National Broadcasting Service. This form of signal, which is a considerable improvement over the system formerly used, is similar to that adopted by the British Broadcasting Corporation, and is designed to cause a minimum of interference with broadcasting programmes.

The report of the Acting-Director presents a comprehensive review of seismic activity in New Zealand during the year, and opportunity is again taken to thank officers of other Government Departments and voluntary observers for operating subsidiary seismograph stations and supplying data regarding felt earthquakes.

An additional Wood-Anderson seismograph has been put into operation at the Dominion Observatory, and the efficiency of the chain of recording-stations will be increased by installing one of these instruments also at Tuai during the coming year. Seismological research at the Observatory included the completion of a preliminary analyses of the Observatory tilt records for the period 1930-34, some preliminary work on the measurement of the vibration of railway-trains in motion and of buildings in strong winds, and studies on local earthquakes. A considerable number of bulletins by officers of the Observatory and collaborating seismologists were published.