

Training of Observers.—Instructional courses of three months' duration for training new observers were arranged during the year at Harewood and at the Mechanics Bay Office. Thirty observers completed their initial training and were allocated to the various branches for duty.

Junior and Senior Examinations for observers were conducted throughout the Service in August, 1948.

As a preparation for the Senior Examination a correspondence course in upper-air meteorology is arranged each year, and brief personal tuition in this subject by a senior officer was arranged for the observers at Kaitia, Whenuapai, Gisborne, Woodbourne, Nelson, Harewood, and Invercargill.

RESEARCH

Provision is made in the establishment of the Meteorological Service for a Research Section comprising two professional officers and two observers to assist with plotting and clerical duties. One of the main tasks of such a section is to carry out systematic research work in the meteorology of New Zealand and the surrounding areas. Only by using the results of basic research will the way be open for any substantial improvement in the quality of the current forecasts or any extension of the period for which forecasts can be accurately prepared. In this work great attention is paid to meteorological research being done overseas with a view to possible application of these results to New Zealand conditions. The section is also responsible for the co-ordination of research work done at branch offices of the New Zealand Meteorological Service, both in New Zealand and in the Pacific. Training of professional staff for forecasting duties is also part of the work of this section, as well as a certain amount of public relations work. Unfortunately, during the year under review only one professional officer was able to devote any considerable part of his time to research, and no observers were available to assist in this work. Again, although under normal staffing conditions the forecaster establishment is such as to permit each forecaster to devote one-quarter of his time to study and research, the current shortage of staff has necessitated most officers being kept fully occupied on routine forecasting duties. In spite of these difficulties, a limited number of research projects has been carried out, the main fields of activity being indicated below.

At Head Office the observations of earth temperature obtained during the recent frost investigations at Earnsclough, Central Otago, have been analysed, and values of the diffusivity of the soil under varying conditions of moisture have been computed. The investigations showed that anomalous transfer of heat was taking place in the soil, and it is thought that the movement of water in the soil may play a major part in such anomalous effects. The results of such studies are now becoming of increasing value to agriculture, and records from some other parts of New Zealand have been subjected to a preliminary analysis. A paper on this subject was presented to the Seventh Pacific Science Congress by the Research Officer.

During the spring of 1948 a programme of low-level temperature soundings was organized in the Hastings fruitgrowing district by the Dominion Physical Laboratory, the soundings being conducted by staff of the Laboratory in co-operation with meteorological research staff. The preliminary results of this programme have provided valuable information, but no definite conclusions can be drawn from the results of only one year's soundings. In connection with this project, meteorological staff have worked in co-operation with the Auckland Industrial Development Laboratory and the Plant Diseases Division of the Department of Scientific and Industrial Research to test the possibility of frost protection methods in this country.