

## RECORDINGS

The geomagnetic, ionospheric, seismic, cosmic radiation, and meteorological recording programmes have been maintained at all sub-branches. Current geomagnetic data were supplied monthly, as in the past, to the Meteorological Institute, De Bilt, Holland, and the Association of Terrestrial Magnetism, International Union of Geodesy and Geophysics, while ionospheric data have been forwarded monthly to the Radio Research Board, Sydney, and the Central Radio Propagation Laboratory in Washington. Data have also been made available regularly to other organizations on an exchange-of-data basis. Publishing of data relevant to magnetic disturbances in the *Journal of Geophysical Research* has been continued. Arrears of Apia and Christchurch data await publishing. Details of magnetic activity from Apia and Amberley, and ionospheric characteristics recorded at Lincoln, have also been published monthly in the *Cosmic Relations Bulletin* issued by the Radio Research Office, Wellington.

Calibration of the Wiechert seismographs at Apia has been undertaken monthly, while the Wood-Anderson seismometer has been standardized every quarter. Seismological bulletins have been issued quarterly, while fortnightly air letters of preliminary earthquake readings have been despatched to New Zealand observatories as well as to selected ones in America and Australia. The practice of advising the United States Coast and Geodetic Survey of details of strongly recorded shocks has been continued. Instrumental magnitude determinations have been used on strong shocks from the N.-S. direction recorded on the Wood-Anderson.

Ionospheric film measurement at Christchurch was made easier by the development of a film viewer to replace the method of film reading in the darkened projection room.

Data from the Compton Bennett cosmic-ray meter has been forwarded quarterly to the Carnegie Institution of Washington. The 1948 data was analysed to redetermine the barometer coefficient of the ionization chamber.

Nuclear research plates, covered respectively with copper, tin, iron, aluminium, lead, and carbon, were exposed on Mount Herbert for the purpose of investigating the reaction products of cosmic rays with the different absorbing materials. Two packages of plates were also exposed on aircraft up to 30,000 ft. at Ohakea through the co-operation of the R.N.Z.A.F. Two dozen were also taken by air to and from Apia. All have been processed. Developing techniques were improved during the year. A binocular microscope was received towards the end of the year, and a commencement has been made on the detailed examination of plates which have been accumulated since this work was started.

Climatological observations have been maintained at Christchurch, and relevant information forwarded to the Director of Meteorological Services, Wellington.

## RESEARCH

Investigations into the relationship between geomagnetic and ionospheric changes associated with solar phenomena are being undertaken, utilizing recordings from Apia, Amberley, and Lincoln. Promising results have been obtained concerning the relationships between solar flares, associated geomagnetic effects, and ionospheric effects on the one hand and the following magnetic storm with radio communication disturbance on the other. The co-operation of the Post and Telegraph Department and the New Zealand Broadcasting Service in supplying immediate information on fade-outs, and of the Director of the Carter Observatory in making available daily relevant solar data, has been obtained