Campbell Island.—The manual recorder at this station has continued to give satisfactory service. A spare Briggs and Stratton alternator was overhauled and forwarded to the Island.

Research Station

Through the courtesy of the Army Department, buildings on a military area were made available for the establishment of a research station. A manual ionosphere recorder has been installed and operated. It is proposed to establish a recording fluxmeter at the experimental station for the purpose of correlating rapid changes of the earth's magnetic field with ionospheric and other associated phenomena.

RECORDINGS

Routine observational and recording programmes have been kept up to date at all stations. These include the absolute magnetic observations (weekly), determination of tidal heights, sea temperatures and densities (hourly), and the magnetograph calibration tests made at Apia (thrice weekly). Time signals have been obtained daily for rating of clocks. Measurements of magnetic hourly values obtained at Apia and Amberley, as well as ionospheric data from Rarotonga, Lincoln, and Campbell Island, are well forward. All measurements have been regularly circulated to other observatories and interested organizations. K-indices of geomagnetic activity and International Character figures have been forwarded monthly to the Carnegie Institution of Washington and the United States Coast and Geodetic Survey, while quarterly descriptions of magnetic storms recorded at Apia have been published regularly in the *Journal of Terrestrial Magnetism and Atmospheric Electricity*. Commencing January, 1949, the Amberley magnetic storm data has also been forwarded for publication.

During the year many earthquakes were felt locally with intensities ranging between one and four on the modified Mercalli Scale. Details of strong earthquakes were telegraphed to the United States Coast and Geodetic Survey. Now that the Wood-Anderson short-period seismograph has been installed, many more shocks within 5 degrees of Apia are being recorded. These were not being picked up by the Wiecherts, which are more suitable for teleseismic work.

Cosmic-ray Research.—The cosmic-ray meter of the Carnegie Institution of Washington has been operated continuously at Christchurch and data obtained therefrom forwarded regularly to Washington.

Six dozen Ilford nuclear research plates were obtained during the latter part of 1948 with the object of commencing a high-altitude cosmic-ray programme in New Zealand. The plates were distributed as follows: Mount Herbert at 2,997 ft.; Mount Rolleston at 7,250 ft.; Mount Ruapehu at 9,100 ft.; and Minarets at 9,700 ft. Some plates also were exposed between 25,000 ft. and 40,000 ft. in a Mosquito aircraft. All plates have been recovered and are being processed. Preliminary investigations indicate that a wealth of data on various disintegration processes caused by cosmic rays has been obtained, and this will be of value for comparison with the results of research workers in the Northern Hemisphere. Much time has been spent in developing the best recording technique with a microscope, and some success was achieved in photographing tracks from the plates for visual estimations. A Blackett intensity cosmic-ray recorder for the purpose of checking N–S and E–W effects is on order, and should arrive during 1949.

GENERAL

During the year the Director has made two visits to Samoa and one to Rarotonga for supervision purposes. The new scheme of staffing and operating the Apia Sub-Observatory is now well established and proceeding satisfactorily.