

distances from Amberley base station, where, alone in New Zealand, such data are automatically recorded. Consequently, with all these aims in view, observations at sixty-two places, mainly on coastal stretches extending from Cape Reinga in the North to Waikawa in the South, were completed. The work was pressed on as urgently as conditions permitted. Results to date show, within these geographical limits, that while the rate of secular variation is rather systematically different, it is, nevertheless, quite different from that recorded at Amberley. Present indications are that the rate of change appropriate to any place is a comparatively simple function of its latitude and longitude. That implies that the secular change at a magnetic survey point will need to take into account secular change at similar points established nearest thereto. In other words, the system found necessary in the United States of America of occupying all survey points at least once every five years is also necessary in New Zealand. The matter of having enough and sufficiently permanent survey points therefore becomes important. Certainty that a point will remain indefinitely suitable for reoccupation is impossible of attainment. However, some convenient scheme of co-operation between this Department and occupiers of land containing magnetic survey points could be evolved in order to cut station loss to a minimum, preferably by the occupier serving sufficient notice of contemplated changes which will destroy the usefulness of the point as a magnetic survey station. Original magnetic survey stations, particularly in the south of the North Island, have been lost mainly through building operations and reticulation within 200 ft. of these points by iron pipes for gas, water, and sewerage schemes. Electric haulage systems using direct current with earth return spoil magnetic survey points within twelve miles of them. In the interval between planning and provision of such amenities, there is almost always sufficient time for establishing a new point properly tied magnetically to the one to be destroyed. With another thirty-two points established or reoccupied in the North Island and eighteen in the South Island it should be possible for the Magnetic Survey Branch to be ever ready to supply the comprehensive information that progress will demand. While final evaluation of field results will require long and tedious computation, preliminary values have at all times been supplied promptly to accredited services requiring them.

#### RECORDINGS AT CHRISTCHURCH.

The full programme of earthquake recording was maintained. No really alarming earthquakes local to New Zealand were recorded, but there was sufficient background of minor local activity to remind citizens that sound building practice is needed in New Zealand. Recording by the cosmic-ray meter was again complete and satisfactory. The electrograph maintained its improved continuous recording of atmospheric electrical potential. During the year more record of potential than usual was measured, and the insulation was further improved by testing more frequently with an applied measured voltage. The climatological station programme was as usual carried out on every day of the year. The number of inquiries about weather conditions fell off as lesser use of motor transport brought reduction in traffic accidents, but the number of inquiries—both astronomical and astrological—concerning ordinary, and usually largely disregarded, phenomena in the skies showed an increase.

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#### METEOROLOGICAL BRANCH.

Consequent on the outbreak of war, the Meteorological Branch of the Department, together with the Apia Observatory, was transferred to the Air Department for the duration of the war.

The report of the Meteorological Branch during the past year is contained in the annual report of the Air Department.

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#### LIAISON OFFICE, LONDON.

During the year the office has continued to render most valuable service in respect to both civil and defence matters and has enabled a very close liaison to be maintained between a large number of research activities in Great Britain and New Zealand. Apart from defence scientific information, particular mention is made of the work of this office in connection with the following projects: Dehydration of foodstuffs—*e.g.*, dried butterfat, dried milk, and dried meat—processing of linen flax, tests of New Zealand pasture seeds, manufacture of linseed-oil, medicinal plants, agar, ergot, packaging of foodstuffs, and transport problems relating to the carriage of perishable foodstuffs. This list is not comprehensive, for in addition the staff has handled an immense number of inquiries on technical subjects and has been instrumental in conveying rapidly to New Zealand particulars of all advances made in a wide range of scientific and technical matters in Great Britain.

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#### RESEARCH SCHOLARSHIPS.

In view of the fact that applications were not up to M.Sc. standard, no National Research Scholarships were awarded during the year.