APIA OBSERVATORY.

The work carried out at Apia Observatory embraces a study of the earth's magnetism, earthquakes, meteorology, and atmospheric electricity. Each of these four main branches requires subsidiary activities, including the determination of time, tide-observation, and storm-forecasting.

During 1922 continuous records were obtained of temperature, barometric pressure, rainfall, humidity, and sunshine. The monthly maximum and minimum of temperature and of barometric pressure, and the monthly rainfall, are given in the following table :—

1922.	Temperature.		Pressure.		Rainfall (Inches).
	Maximum.	Minimum.	Maximum.	Minimum.	
January	33·7	23·9	60·5	50·5	27·16
February	33·2	21·2	60·2	53·9	8·38
March	32·3	23·6	62·9	54·4	11·68
April	32·9	23·7	62·0	54·4	5·44
May	31·4	22·8	61·8	56·2	13·71
June	32·0	21·6	62·9	56·1	4·81
July	31·1	19·1	62·2	56·3	1·58
August	32·2	22·2	63·4	56·8	5·24
September	31·1	21·9	63·2	57·3	9·81
October	31·4	22·2	63·3	55·4	10·11
November	32·5	22·8	61·1	53·4	14·57
December	31·5	23·0	62·9	49·4	23·92

The rainfall work has been extended in co-operation with the Crown Estates Department, so that rainfall records are now taken at thirteen stations on Upolu. These records are of use not only to the Crown Estates management in a study of products suitable for their plantations, but also to the Department of Public Works in determining the quantity of water available for hydro-electric development. The stations with the greatest and least rainfall are Aleisa and Vaitele. For the past three months their rainfall is as follows: Aleisa—January, 29·17 in.; February, 16·41 in.; March, 117·82 in. Vaitele—January, 17·28 in.; February, 17·02 in.; March, 49·02 in.

On account of the heat and humidity of the tropics the meteorological instruments corrode rapidly. It has been necessary to make large replacement orders for 1923, including a new anemometer, thermograph, hygrograph, sunshine-recorder, and thermometers. These instruments will place the meteorology work on a better basis.

An important branch of the weather work consists in the preparation of daily reports which are broadcasted by the wireless station. In addition to this broadcasting by the Apia Radio by the courtesy of the Hon. the Postmaster-General of New Zealand, all storm-warning messages sent from the Apia Observatory to the Awanui Radio-station will be broadcasted by the latter for the benefit of shipping outward bound from the Dominion to the Pacific.

During the hurricane season, November to April inclusive, statements are sent out at noon and 10 p.m. of the barometric pressure, wet-and-dry-bulb thermometer, wind direction and force, and cloudiness. During a cyclone messages are sent out as circumstances dictate. In the cyclone of March, 1923, wireless statements were broadcasted in regard to the position of the storm-centre and direction of its path. The Apia Observatory has been made the station for the receiving, analysing, and publishing of the weather data from Suva (Fiji), and Nukualofa (Tonga), Norfolk Island, Vila (New Hebrides), Tutuila (American Samoa), Papeete (Society Islands), and Noumea (New Caledonia).

If a vessel's stay in the harbour permits, barometer comparisons are made with the Observatory standard, and certificates given to the ship's officers. Chronometers are rated. Both these services are done free of charge.

In connection with both seismic and magnetic work it is necessary to have time observations correct to 0·3 second. Observations are made bi-weekly on the sun, and the correction on the standard clock determined. The clock is used in rating ships' chronometers, in answering telephone requests for correct time, and in giving the signal for firing the noon gun.

The atmospheric electric work is carried out under the direction of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. The results are of importance in a study of the earth's magnetism and in obtaining a knowledge of static disturbances in wireless telegraph. A laboratory was built in April, 1922, for this work, and since then records of potential gradient have been obtained. In order to get away from the effects of land and of uneven surfaces, a special laboratory has been built by the Public Works Department in the shallow water inside the reef. The observations should be of unique importance in giving the electrical conditions of the atmosphere as they exist over the great ocean areas.

The Observatory has its great importance and use in giving information in regard to the vast areas of the South Pacific Ocean. The Observatory, started in 1904 by the University of Gottingen, and continued with increasing ardour until the war cut off its financial support, has been guided through a critical period of transfer of ownership by the New Zealand Scientific Honorary Board of Advice to the Department of External Affairs. Attention is drawn to the seventh resolution of the World's Scientific Conference held in May, 1922, at Rome, namely: "7. That the steps already taken