

APIA OBSERVATORY, SAMOA.

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The same programme of work in geophysical subjects was followed during the year 1934-35 as in the past, the principal subjects of study being terrestrial magnetism, seismology, meteorology, and atmospheric electricity.

TERRESTRIAL MAGNETISM.

The work in terrestrial magnetism comprises absolute measurements and continuous records of the elements of the earth's field. The former were made with a Tesdorpf magnetometer and a Schulze earth inductor, while the latter were made with Eschenhagen variometers and a Godhavn balance. The results are tabulated in the form of hourly values of horizontal intensity, declination, and vertical force. The variometer for horizontal force was accidentally disturbed in July during an experiment which was carried out to test the coefficient of temperature. Till then its scale value at the base line was 1.47γ per millimeter, but subsequently it was adjusted to be 1.08γ.

The Godhavn balance was set up *de novo* in June, 1934. The north pole of its needle was set towards magnetic south-east and the resulting scale value was 1.05γ per minute of arc. Its records are satisfactory, except that the trace of the spot of light from the movable mirror is very faint.

The mean values of the magnetic elements during 1934 are as follows :—

Declination	10° 42.2' east, from autographic records.
Horizontal force	35049γ, from autographic records.
Inclination (or dip)	30° 22.4', from 27 absolute readings.

SEISMOLOGY.

The instruments used for seismological work at Apia are the 1,000 kilogram astatic pendulum and the 80 kilogram vertical seismograph designed by Wiechert. The number of earthquakes recorded during the year ending on March 31st, 1935, was 176. About 15 of them were slight local shocks which could be felt by ordinary residents, while the majority of the remainder were insignificant tremors. The earthquakes recorded on July 18th, 1934, were probably the disturbances which took place in Panama and the Santa Cruz Islands.

The vertical seismograph is very insensitive, and latterly it has not been used.

METEOROLOGY.

Meteorological work includes surface observations twice a day and some measurements of the upper winds from time to time using pilot balloons. Since January 1st, 1935, the times of the daily observations have been 9 a.m. and 3 p.m. Zone time (165 degrees west). The method used with pilot balloons has been normally the method known as the single theodolite. During the year ending on March 31st, 1935, the number of pilot balloon ascents was 63 and the greatest height reached was 37,500 ft. Measurements of the duration of bright sunshine with the Fuess recorder were resumed in September, 1934, on the arrival of a new glass ball from Germany.

Rainfall reports are being received from a new station at Lotofanga, on the south coast of Upolu, which we owe to the good offices of the Roman Catholic Mission. The number of local rainfall stations in Samoa is now about 19.

The synoptic weather reports of the South Pacific were discussed in a meeting which took place on July 2nd, 1934, on board H.M.S. "Dunedin," at Apia. It was finally decided to use the code of Copenhagen, 1929, in the form known as "weather shipping," and a regional system was recommended in which the central stations are Suva, Apia, and Papeete. These changes came into effect on January 1st, 1935.

The Officer Commanding H.M.S. "Laburnum" kindly inspected the meteorological stations at Atafu and Fakaofo during a cruise to the Tokelau Islands in June, 1934, and took a barograph back to Atafu which had been sent to Samoa for repair.

METEOROLOGICAL SUMMARY, 1934.

Month.	Pressure.	Temperature.	Rainfall.	Humidity (9 a.m.).	Sunshine.*	Wind.
	In.	°F.	In.	Per Cent.	Hours.	Miles per Hour.
January	29.794	79.4	15.25	80	144.1	5.1
February	29.827	79.4	11.54	81	..	3.6
March	29.776	78.6	20.03	84	..	4.0
April	29.824	78.7	7.42	79	..	3.8
May.. ..	29.851	79.0	6.09	81	..	4.9
June	29.865	78.7	1.64	78	..	7.5
July	29.859	78.3	7.74	81	..	6.9
August	29.892	78.1	1.10	73	..	9.4
September	29.872	78.7	10.41	77	225.4	7.0
October	29.873	78.9	4.90	75	243.6	6.9
November	29.806	79.4	14.05	79	188.8	7.7
December	29.742	79.4	20.05	81	171.5	6.6
Total	..	..	120.22	..	..	..
Mean	29.832	78.88	..	79	..	6.1

* No readings from February to August. Glass ball lost.