

GOVERNMENT ASTRONOMER AND SEISMOLOGIST.

Astronomical Observations.—Observations of the meridian transits of the stars and of the sun have been made for the purpose of controlling the time service. During the year the sun was observed 171 times, and 236 observations were made of stars.

Astronomical Equipment.—A new transit micrometer for use with the Observatory No. 1 transit instrument was obtained from Messrs. Cooke, Troughton, and Simms, London, and fitted to the instrument. Improvements were also made in No. 2 transit instrument by fitting two setting-circles on the tube: this provides for the rapid reversal of the transit instrument and improves the accuracy of the observations. A machine for measuring photographs taken by the photographic telescopes has been lent to this Observatory by the Melbourne Observatory.

Time Service.—The time service has been maintained and regular signals have been sent out. When the wireless time service was started, part of the signals was sent from the Observatory and part by the operator at the wireless station. With the alteration of the astronomical day the opportunity was taken to send the whole of the time signals from the Observatory, including the transmission of the Morse signals. The total number of time signals sent from the Observatory was 1,588: of these, 386 were sent by wireless telegraph, 919 were sent by special circuit to the Telegraph Office, 255 by the signal lights at the Observatory, and 28 by telephone. In addition, time signals were also given from the Observatory by switching off lights on the Harbour Board building at Auckland and by dropping the time-ball at Lyttelton twice every week.

Reception of Wireless Time Signals.—The wireless receiving-set at the Observatory consists of two stages of high-frequency amplification, one detector valve, and two stages of low-frequency amplification. With this set the following mean-time signals were received at the Observatory: From Honolulu, 271 signals; from Malabar, Java, 168; from Kavite, 72; from Bordeaux, 2. Scientific time signals were also received as follows: Bordeaux, 41; Saigon, 102; Honolulu, 213; Nauen, 11.

Sunspots.—Observations of sunspots are made on every available occasion, and the reports are published in the *Monthly Notices of the New Zealand Astronomical Society*. The number of observations made during the calendar year 1924 was 217, when sunspots were recorded on 146 days. Forty-nine separate groups of sunspots were observed.

Transit of Mercury.—A transit of the planet Mercury over the sun's disk took place on the 7th May, 1924, Greenwich mean time, and observations were made at the Observatory. The beginning of the transit was not observed, as the sun was not visible until 11h. 5m. From then until sunset at 16h. 49m. 33s. the sun was visible through passing clouds. At meridian transit the sky was clear and observations were then made. A report of the observations is published in the *Monthly Notices of the Royal Astronomical Society*, Vol. 84, p. 775, 1924.

Opposition of Mars.—The planet Mars was nearer the earth in August, 1924, than it had been for many years before or than it will be for many years to come, and every opportunity was used to keep the planet under careful observation during this period, both with the telescopes available in Wellington and with those at Wanganui.

Commencement of the Astronomical Day.—The astronomical day has for many centuries begun at noon, and has been counted from 0 to 24 hours, while the civil mode of reckoning time is to begin at midnight. Some years ago proposals were made to alter the astronomical day and make it begin at midnight; the proposals were approved by a majority of astronomers, and in a letter from the Admiralty, dated 19th February, 1919, addressed to the Secretary, Royal Astronomical Society, London, the announcement was made that the change in the astronomical day would take place commencing on the 1st January, 1925. Accordingly it was necessary, on the 1st January, 1925, to put the Observatory mean-time clocks forward twelve hours, as all the time signals in New Zealand are sent out in accordance with Greenwich mean time.

International Astronomical Union.—By courtesy of the Central Astronomical Bureau arrangements have been made for the Observatory to receive telegraphic advice of all important astronomical discoveries. The telegrams are forwarded by the Bureau at Copenhagen to this Observatory through the Melbourne Observatory. The following discoveries were announced in this way: A comet of the eighth magnitude discovered by Finsler on the 19th September; a planet of 10.5 magnitude discovered by Baade on the 23rd October; a nebular object of magnitude 16.0 discovered by Wolf on 23rd December; a comet of magnitude 11.0 discovered by Schain on the 23rd March; a comet of magnitude 8.0 discovered by Reid on the 24th March. Prompt steps were taken to notify New Zealand astronomers of these discoveries, with the result that satisfactory observations were made and reported to this Observatory of the three comets. The planet discovered by Baade and the nebular object discovered by Wolf were not observed in New Zealand.

Astronomical Research.—The following astronomical equipment is available for astronomical research in the observatories belonging to the Astronomical Section of the Wellington Philosophical Society and to the Wellington City Corporation. The Astronomical Section's observatory contains a 5 in. equatorial telescope made by Sir H. Grubb. The telescope has attached to it a 4 in. Dallmeyer lens of 33 in. focus, to which is fitted a 4 in. objective prism. The camera takes quarter-plates. The City Corporation's telescope is a 9 in. photo-visual equatorial, and is well equipped with eye-pieces, eye-piece micrometer, camera attached to main telescope, a 5 in. guiding telescope, a 2½ in. finding telescope, and an Evershead two-prism solar spectroscope.

Seismology.—The Milne and Milne-Shaw seismographs have been in continuous operation. The number of earthquakes recorded on the Milne machine was eighty-six, and on the Milne-Shaw machine,