

In transmitting radio signals, the call sign of the Observatory is ZLY.

Non-automatic Time Signals—

- (1) To ships and watchmakers in Wellington, and to Government Departments by telephone, on application to the Observatory.
- (2) The Observatory automatic time signals sent to the General Post Office at 9 a.m. daily are distributed by telegraphic hand signals to some 2,300 telegraph and telephone offices distributed all over New Zealand.
- (3) Similar hand signals are also sent to all railway offices in New Zealand at 9 a.m. daily—by telegraph to 221 offices and by telephone to 257 stations.

The following time signals were sent out from the Observatory during the year 1931 :—

	Signals.
Radio time signals through Station ZLW	463
Time signals by telegraph	508
" lights at Wellington	364
" lights at Auckland	102
" time-bail at Lyttelton	109
" telephone	19

Total number of signals sent out in 1931 1,565

The signals sent to Auckland and Lyttelton include nine repeat signals, owing to first signals failing to reach their destination. Time signals are supplied twice daily to Station 2YA, but these are not always broadcast.

The following table indicates the degree of accuracy of the radio time signals transmitted from the Observatory by Station ZLW during the year 1931 :—

Number of times correction did not exceed 0.25 sec.	378
" between 0.26 and 0.50 sec.	64
" between 0.51 and 1.00 sec.	19
" exceeded 1.00 sec.	2

Total number of time signals sent out 463

Government Buildings Clock.

The Government Buildings clock has been kept under fairly close control. A record is obtained at the Observatory by direct circuit from the clock, and the adjusting weights on the pendulum are altered from time to time. The greatest errors of this clock during the year 1931 were 72 seconds fast on October 12th and 57 seconds slow on March 16th.

General Post Office Clock, Wellington.

The Post Office clock is checked by W/T at 3 p.m. daily, except on Saturdays, Sundays, and Government holidays. The greatest errors recorded during 1931 were 7.5 seconds fast on January 20th and 14 seconds slow on March 11th. This clock is not under the control of the Observatory.

Sun-spots.

Numerous observations of the sun are made by members of the Solar Section of the New Zealand Astronomical Society, and the records obtained are available for use at the Observatory. These observations are sent to Zurich, where they are used for international work in determining the Wolf-Wolfer relative sunspot numbers.

Occultations.

In response to a request from Professor E. W. Brown, F.R.S., for more observations of occultations, the following New Zealand observatories have expressed their willingness to make the necessary observations: Christchurch, Dunedin, Hawera, Nelson, New Plymouth, Wanganui, Wellington.

The time signals sent through ZLW and 2YA are useful to these observatories.

The occultations of stars were observed at Wellington on March 3rd; April 28th; May 5th and 28th; June 23rd; September 17th; November 19th. At New Plymouth occultations were observed on March 2nd, 27th, and 30th; June 23rd; August 21st; September 17th, 18th, 19th, and 20th; and one at Stratford on August 21st. These observations have been reported to Dr. L. J. Comrie, Superintendent, H.M. Nautical Almanac Office, London. In a compilation and discussion of 663 occultations observed in 1930 Professors E. W. Brown and Dirk Brouwer used the New Zealand Observations. (*Astronomical Journal*, Vol. 41, No. 22.)

Photographs of Moon and Surrounding Stars.

In addition to the ordinary occultation observations, a photographic method is in use at the Wellington Observatory by means of which the moon and surrounding stars are photographed on the same plate, and the time of exposure on the moon is recorded on the chronograph. Plates taken in this manner in former years with the 9 in. telescope have not yet been measured, as there is no staff available for this duty. This research was begun at the Lick Observatory, and the method is available for—

- (1) Fundamental determination of the position of the moon, and was undertaken originally in response to an invitation from Professor E. W. Brown to provide material for testing his tables of the motion of the moon.
- (2) This method may also be used as an independent one in the determination of longitude.
- (3) In the determination of latitude.

In (2) and (3) the errors are different from those in the determination of longitude by wireless telegraphy and in the determination of latitude by zenith telescope observations.