

The degree of accuracy of outgoing time signals is shown by a summary of the errors of the radio signals sent out through station ZLW at 11 a.m. daily. In 1941 the errors of these signals exceeded 0.25 second on only 10 days out of the 365, and did not on any occasion exceed 0.50 seconds. These figures indicate a slightly higher degree of accuracy than in the previous year. There were no failures in these signals during 1941.

Public Clocks.—The Government Buildings and General Post Office clocks were checked daily. The maximum errors observed during 1941 were as follows: Government Buildings clock, 83 seconds fast (due to an error in resetting after the clock stopped on 18th April) and 35 seconds slow; General Post Office clock, 6 seconds fast and 10 seconds slow.

The synchronous electric clock, which was checked twice daily, showed good performance early in the year, but was more erratic towards the end of the year. The longest run without interruption was from 1st January to 18th March (seventy-six days), during which period the readings showed a maximum variation of only 15 seconds. On the other hand, from 18th October to 31st December (sixty-four days) the maximum variation observed was 42 seconds.

Free Pendulum.—Experiments which were commenced last year with a new drive for the precision pendulum terminated in its development into a free pendulum, with the synchronome pendulum (No. 13) as a slave-clock, operated on the same principle as the Shortt free pendulum. The mechanical work connected with this project was carried out entirely at the Observatory, and has resulted in a timepiece of much greater reliability than any of the other clocks. After final adjustment on 5th August, the free pendulum ran satisfactorily for the remainder of the year without any attention whatever.

Chronometers.—Two chronometers were purchased during the year, one locally for use in seismograph timing, and another of higher standard for use in the time service.

SEISMOLOGY.

Seismic Activity in New Zealand in 1941.—During 1941 the total number of earthquakes reported felt was 107, the smallest number in any year since 1928. Of the 107 shocks in 1941, 61 were felt in some part of the North Island, and 55 in some part of the South Island. Nine were felt in both Islands. The maximum intensity reported felt was R.-F. 8. Although the number of felt shocks was small, seismograph records indicated that minor activity was much the same as in previous years.

Earthquakes were comparatively frequent in the far north-eastern part of the North Island and in the central districts; and there was more activity than usual in Canterbury. On the other hand, most of Hawke's Bay was comparatively free from earthquakes. Occasional shocks originated in the far south-west.

The only two outstanding seismic events occurred early in the year. These were (1) a shock of R.-F. 8 originating near Taneatua, in the Bay of Plenty, on 9th January; and (2) one of R.-F. 6-7 near Lake Coleridge, in Canterbury, on 7th February. The Taneatua shock was of very shallow origin, and in spite of the high intensity in the epicentral region the maximum radius of the felt area did not exceed seventy miles. The Lake Coleridge shock was of normal depth and its felt area was also small (maximum radius about one hundred miles). Aftershocks of the Lake Coleridge disturbance continued at intervals throughout the remainder of the year. Both these earthquakes were approximately 5 on the instrumental magnitude scale.

Other important shocks during the year are listed in a table below. Two notable features of the 1941 results were—

- (1) A prevailing tendency for activity to be concentrated towards the north-western side of the general seismic region:
- (2) The occurrence of shocks slightly deeper than normal in the submarine region between Taranaki and Nelson and beneath the northern part of the South Island. This has been confirmed by a recent revision of the earthquake records of previous years.

A monthly summary of earthquakes reported felt in 1941 is given in the following table:—

Month, 1941.	Number of Earthquakes reported felt.				Maximum Intensity (R.-F.).	Locality of Maximum.
	North Island.	South Island.	Both Islands.	Whole of New Zealand.		
January	6	2	0	8	8	Near Taneatua.
February	5	8	0	13	6-7	Lake Coleridge.
March	3	6	0	9	4	Farewell Spit.
April	7	6	1	12	6	Northern part of South Island.
May	9	4	0	13	6+	Southern Hawke's Bay.
June	6	5	0	11	5-6	Otira.
July	8	7	5	10	5	Northern part of South Island.
August	4	5	1	8	6	Lake Wakatipu region.
September	1	3	0	4	6	Lake Waikaremoana region.
October	2	2	0	4	3	Gisborne region, southern part of South Island.
November	2	2	1	3	5	Wanganui, Manawatu.
December	8	5	1	12	5	Waipawa, Takaka region.
Totals	61	55	9	107	..	

As in the past, non-instrumental reports have been furnished by officials at post-offices and light-houses, and by several private observers.