

PRINCIPAL EARTHQUAKES DURING THE YEAR 1977

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1977 was a year of only moderate earthquake activity in New Zealand. As is usual, nearly 1000 earthquakes of Richter magnitude 4 or greater, or reported felt, were located by the Seismological Observatory, but no earthquake was large enough to cause more than minor damage. The largest shock of the year occurred on the evening of 18 January 1977. It had a magnitude of 6.2 and a shallow focus about 25 km east of Cape Campbell. The earthquake was felt strongly on both sides of Cook Strait, and caused some minor damage, particularly to chimneys in Marlborough and Wellington. The felt area extended from Taranaki to Banks Peninsula.

Several other shallow shocks reached a magnitude of 5 or more. Three of these occurred in the central parts of the South Island. A shock on 11 May, of magnitude 5.4, was centred near Porter's Pass, and twin shocks of magnitude about 5.2 occurred eight hours apart on 26 October in the Southern Alps near the headwaters of the Rangitata River. These shocks were all felt extensively in Westland and Canterbury. On 1 June there was an earthquake of magnitude 5.3 near Whakatane, which caused some minor damage there and at Edgecumbe. The earthquake was widely felt in the area round the Bay of Plenty, and was followed by numerous after-shocks.

The largest deep earthquakes during the year had magnitudes of about 5.6. One such shock occurred on 24 April in Cook Strait about 100 km north of Nelson, at a depth of 190 km, and was felt from southern Taranaki to mid-Canterbury. Other deep shocks of comparable magnitude occurred beneath the central part of the North Island on 12 August and 21 November.

The Fiordland seismic region was unusually quiet, with the largest shock of magnitude only 4.7. This earthquake, on 2 April, was centred off the coast near Caswell Sound.

There were several instances of isolated reports of earthquakes well to the north of New Zealand being felt here. A major earthquake near Tonga on 23 June was reported felt in Wellington at a distance of more than 2,200 km. This earthquake had a magnitude of about 7 and caused considerable damage in Tonga. A deep shock of magnitude 5.9, 500 km north of the Bay of Plenty was also felt slightly in the Wellington area on 22 March.

Swarms of small shallow earthquakes occur periodically in volcanic areas. Such an instance was reported this year from

Purangi, in Taranaki, about 40 km north-east of Mt Egmont, where a series of shocks was reported felt between 18 and 23 February. The Observatory located ten shocks, the largest of magnitude 3.5. Although small, shocks such as these can be felt strongly near the epicentre. These shocks were strong enough to cause houses to creak, windows to rattle and mirrors to move on walls.

The only significant activity of the central volcanoes of the North Island was on 2 November, when there was a moderate steam eruption from Mt Ruapehu, with some ash emission. White Island, on the other hand, was more than usually active throughout the year, and has been in a state of ash eruption since 26 December 1976. Lava was produced in mid-March, and major ash eruptions occurred in July, and again on 25 August when the largest eruption of the year took place.

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