

The plateau slopes gently outward from a height of 3,500 ft. at the foot of the Kaimanawa Range to 2,300 ft. on the western boundary of the district, where it merges into the well-dissected Wanganui penplain. Between the eastern highlands and the volcanic peaks the ground slopes north to Lake Taupo (1,200 ft.) and south to Waiouru (2,660 ft.). The Onetapu Desert forms part of this southern slope. It is a wind-swept area covered here and there with moving sand-dunes, its scanty vegetation mostly of a drought-resisting type. Northward sand-dunes are absent, vegetation increases, and patches of bush appear. The western flanks of the volcanoes and the plateau west of them are densely wooded.

The three main volcanic peaks, Ruapehu, Ngauruhoe, and Tongariro lie on a line trending north-north-east toward Rotorua and White Island. Ruapehu, 9,175 ft. high, at the southern end of the volcanic belt of the North Island, is a shapely cone with an oval uneven summit about one mile and a half across. Tongariro, 6,458 ft. high, eleven miles to the north and separated from Ruapehu by a 4,200 ft. saddle, is a truncated cone nine miles long and five miles wide at its base, and about five miles long and two miles wide on top. Ngauruhoe, a scoria cone rising 2,100 ft. above an old crater near the southern end of Tongariro, is 7,515 ft. high.

The extinct volcanoes Pihanga (4,352 ft.), Tihia (3,824 ft.) and Kakaramea (4,269 ft.) form a highland in the northern part of the district; Maungakakote (2,792 ft.) and Maungaku (3,213 ft.) lie farther west.

Some seven miles west-north-west from Ruapehu is Hauhangatahi, a small crescent shaped mesa, two miles and a half long and rather more than a mile wide, surmounted on its eastern edge by a small volcano 4,983 ft. high. The eroded east side of this cone is very steep, but westward it slopes gently down to a high level flat, from which there is an abrupt drop of 1,000 ft. to the plateau below.

Farther north, $3\frac{1}{2}$ miles west from Ngauruhoe, Pukeonake, a small cone 4,018 ft. high stands out from Tongariro.

Raetihi, a small basaltic cone, rises to 2,923 ft. a few miles north of Ohakune.

Taurewa Mountain (3,530 ft.), in the north-west corner of the district, is a fault-bounded block of greywacke sloping north-west, in which direction it is covered with Tertiary strata. The fault on the west edge of the block follows the Whakapapa River for several miles; the one on the south-east side marks the course of a considerable tributary of that stream.

The region is the highest portion of the North Island and several important rivers have their sources in it. The headwaters of the Wanganui are on the west slopes of Tongariro, and a large tributary, the Whakapapa, drains the north-west flanks of Ruapehu. The Manganui-a-te-ao, another large tributary, has several important sources on the west side of the same mountain.

The Wangaehu and its branch the Mangawhero drain the south slopes of Ruapehu. The chief streams radiating from this great peak rise in small glaciers fed from the snowfield in its crater, but the Wangaehu draws part of its waters by way of an underground channel from a small lake in the crater of the volcano.

The Waikato drains the north-east slopes of Ruapehu, the east and northern faces of Tongariro, and most of the Pihanga-Kakaramea group of volcanoes. Roto Aira, a shallow lake between the last-mentioned highlands and Tongariro discharging by way of the Pouto to the Waikato, probably occupies part of the upper basin of that stream which was depressed when the vast masses of Tongariro and Ruapehu caused the crust under and near them to sink. A fault with downthrow of 40 ft. to the west cuts young gravels immediately east of the lake. The Waikato also drains a considerable part of the Kaimanawa Range.

The southern portion of these highlands is in the basin of the Moawhango, a branch of the Rangitikei. The Moawhango and a branch flow south and south-west along the foot of the Kaimanawa highland for many miles. For six miles the Wangaehu follows a parallel course about a mile to the west along a fault downthrowing young gravels to the west. This fault, which has a displacement up to 100 ft., originated in the same way as the Pouto fault farther north.

GENERAL GEOLOGY.

The table below shows the sequence in downward order and the approximate age of the rocks of the district.

	Age.
Alluvium, mud-flows, andesitic scoria, and ash from Ngauruhoe, &c.	Recent.
White rhyolitic pumice from near Lake Taupo	Recent.
Dark andesite flows, scoria, and ash from Ruapehu, Tongariro, and Ngauruhoe	Recent and Pleistocene.
Fluviatile gravels and conglomerates	Recent and Pleistocene.
Basalts from Pihanga and andesites from Kakaramea	Pleistocene.
Grey andesite flows and agglomerates from Ruapehu and Tongariro	Pliocene.
Sandstone and mudstone	Waitotaran.
Sandstone and mudstone	Mokau (Awamoan).
Greywacke, argillite, and sandstone	Mesozoic (?Paleozoic).

The oldest rocks of the district are the grey and green sandstones, dark argillite, and greywacke of the Kaimanawa Range and of Taurewa Mountain. The rocks of the Kaimanawas are tightly folded, strike north-north-east, and dip steeply; in the western portion, which was examined in detail, they are much crushed and rarely somewhat schistose. Greywacke and argillite were found as boulders and small fragments on the north-east slopes of Ruapehu, and as inclusions in lava flows showing so little alteration as to suggest their presence at a shallow depth below the volcanoes.