the Mapiri beds, were found this season to continue up to the youngest beds, so that this criterion fails to distinguish Mapiri beds. A set of beds in Opoiti Survey District is separated from the Mapiri beds below by a decided erosion interval, and from the Ormond beds above by an angular unconformity. These correspond in their position in the sequence to the Otunua beds of last year's annual report, and probably represent them in part at least. Since no break was detected last season between the Mapiri and Otunua beds, the strata between the Mapiri and Ormond beds are more suitably named the Opoiti beds. The erosion interval below the Ormond beds was found this season in several places with the bedding in upper and lower sets divergent, and is therefore established as an unconformity.

The Wairoa syncline rises gently north, and, if it is unbroken, the beds forming the well-marked dip-slopes of its eastern side, which pass northward out of the subdivision, should curve round and re-enter the district on the west side of the structure. The beds on the two sides differ: the great Whakapunake dip-slope, formed largely of limestone and conspicuous on the east side for ten miles, could not be matched on the west side of the syncline, where, however, it is probably represented by less resistant beds of thick sandstone containing layers of shell rock up to 3 ft. thick. The known rapid lateral variation of shallow-water beds, such as occur so abundantly in the subdivision, and the probable considerable denudation during the known intervals of erosion probably account for these differences. The table shows the probable correlation, which, however, has yet to be checked by the palæonotological evidence. Fossils are scarce in the lower beds, but from the Mapiri mudstone upwards good collections have been made.

Beds.	East of Wairoa Syncline.	West of Wairoa Syncline.	Age.
Waihua ..	..	Alternating sandstone and mudstone, coarse sandstone, coarse pebbly sandstone with layers of shell rock (3,000 ft.+)	Upper Waitotaran. ?
		(Erosion interval.)	
Ormond ..	Mudstone (2,000 ft.); limestone (50 ft.); mudstone (200 ft.); limestone (50 ft.); mudstone (1,000 ft.); limestone (20–200 ft.)	Coarse tuffaceous sandstone; fine sandstone, and mudstone (2,000 ft.); mudstone, argillaceous sandstone, coarse sandstone (3,400 ft.)	Waitotaran.
	(Unconformity.)	*(Erosion interval.)*	
Opoiti ..	Limestone, fine argillaceous sandstone (2,700 ft.); pebbly shell limestone with bored and phosphatized stones (100 ft.)	Mudstone, argillaceous limestone, thick tuffaceous sandstone (900 ft.); arenaceous mudstone, alternating sandstone and mudstone, coarse sandstone, pebbly shell limestone (3,300 ft.)	Taranakian (includes Urenui and Tongaporutu beds of Bull. No. 29).
	(Erosion interval.)	*(Erosion interval.)*	
Mapiri ..	Sandy mudstone with rare bored pebbles (100 ft.); mudstone with beds of tuffaceous sandstone, thick tuffaceous sandstone (4,000–10,000 ft.)	Mudstone and thick tuffaceous sandstone (2,800 ft.).	
		(Erosion interval.)	
Morere ..	Mudstone (900 ft.)..	Mudstone (1,100 ft.).	
Tutamoe ..	Alternating thick sandstone and thin mudstone, fine pebbly conglomerate (4,500 ft.)	Coarse sandstone (7,000 ft.)	Awamoan.
	(Erosion interval.)		
Ihungia ..	Mudstone (1,000 ft.+); no base exposed		Hutchinsonian.

Structure.

In the 1926–27 season the Morere anticline, the Nuhaka syncline, and the Mangapahi anticline were examined. This season more work was done on the west limb of the Mangapahi anticline. West of that the wide Wairoa anticline was mapped. In the north-west of Opoiti Survey District a narrow anticline crosses the Ruakituri River two miles west of the axis of the Wairoa syncline at Te Reinga. This was followed south across the Mangaruhe to the Waikare-Taheke River, which it crosses three and a half miles west of the Wairoa, and on to the south of Taramarama Survey District, where it dies out.

West of this anticline the beds rise westward from 5° to 18° for at least twenty-one miles in a continuous homocline that extends out of the subdivision. So far as known, they do not again turn over, but still dipping east, lie on the older greywacke.

Economic Geology.

Petroleum.—Although many indications of oil and gas occur in the adjacent districts, none was seen in the part examined this season. The anticline that extends north and south across the subdivision west of the Wairoa syncline is covered with Tertiary beds more than 30,000 ft. thick, and any underlying Cretaceous oil-bearing stratum cannot be reached with the drill. The Tertiary beds themselves are unmetamorphosed marine sediments such as produce oil in other fields, but here they contain no trace. Moreover, if oil was migrating from the mountains under hydraulic pressure, as