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RADIOCARBON DATING FROM A POST-GLACIAL BEACH IN WESTERN WELLINGTON

C. A. FLEMING

Lower Hutt

An ancient cliff cut by the sea after the rise of sea level from its low stand in the Last Glaciation was recognised and described by Te Punga (1962) in the Otaki-Waikanae district and traced northward to Linton and southward to Paekakariki. For most of this distance, younger dunesands, peat, or alluvium prevent study of beach deposits at the foot of the post-glacial cliff; but near Centennial Inn, Paekakariki, beach deposits are exposed by modern wave attack on the southern extremity of the coastal plain of west Wellington. Sections through these deposits have been described by Adkin (1951, Pl. 21, fig. 5, general view of area; figs. 3, 3a, 6 to 8, details of outcrops).

In October 1961 renewed erosion shifted the boulder beach and temporarily exposed deposits stratigraphically lower than those described by Adkin, at a point 200 yards south of Centennial Inn (N160, grid reference 486571), close to Adkin's Section 5 (Pl. 21, fig. 8, Text fig. 3a). The following section was recorded by D. J. McIntyre, G. Norris, C. R. Lennie, and the writer, after clearing away modern beach deposits.

	Feet
8. Taupo Pumice Dunesand (with midden shells)	6
7. Fanglomerate and silt from "Quarry Stream" (Pollen samples, N160/593)	1.5
6. Well bedded beach sand and gravel	6
5. Fine well rounded beach gravel	2
4. Beach sand with pebble layers	3
3. Lens of wood debris, twigs, seeds, etc. (¹⁴ C Sample, N160/592)	0.5
2. Pebbly sand	0.5
(Obscured by gravel)	c. 6
1. Greywacke rock platform (exposed at normal low tides)	

Normal high tides seem to reach to the base of bed 4, and gravel periodically accumulates to about 4 ft above this level, but the amount of gravel is subject to rapid variation with changing conditions.

Bed 3 consists of the kind of plant debris that is still found on Wellington beaches, including the following seeds identified by Mr C. R. Lennie: *Podocarpus spicatus*, *P. ferrugineus*, *Astelia* sp., *Carex* 3 spp., *Coriaria* sp., *Rubus* sp., *Haloragis erecta*, *Eleocharis dentatus*. The plant debris is assumed to be roughly contemporary with the sediments enclosing it, but its age when deposited is not known.

The radiocarbon sample from bed 3 (N160/592) yielded a result of 5140 ± 90 years (NZ 519). The deposit was laid down after the greywacke coast had been benched by the rising post-glacial sea, which doubtless continued to eat into the cliff several chains inland, behind an apron of beach sediments that accumulated at its foot to a height of about 9 ft above present high tide mark (bed 6). Near Centennial Inn, north of the section described, bed 6 contains rounded pumice pebbles not identified as to source (A. Ewart, pers. comm.). The date of the maximum stand of

the sea (which may be correlated with the "thermal maximum" level elsewhere) is thus later than 5140 years B.P., but in an area known to have suffered Holocene tectonic deformation the height and date may not be significant for correlation. The locality lies between the synclinal depression represented by Kapiti Strait and the anticlinal highlands south-east of Paekakariki. Shore platforms and reefs at Porirua 6 miles to the south-west are reported to have been uplifted 3 ft by the Wellington Earthquake of 1855 (Adkin, 1921) so that recent movements near Centennial Inn were more probably of elevation than of depression. Emergence of the post-glacial beach was followed by the spread of a thin veneer of alluvium (bed 7) from "Quarry Stream", containing sparse, poorly preserved pollen (*Cyathea* and other ferns, rimu, *Podocarpus*, *Metrosideros*, and *Macropiper*, identified by D. J. McIntyre). The area escaped burial by the Foxton Dunesand so conspicuous further north (Cowie, 1963), but was covered by Taupo Pumice Dunesand (Fleming, 1961) presumably soon after the Taupo Pumice was erupted about A.D. 130 (Healy, 1964). The final events recorded are accumulation of shells in a Maori midden and its burial in disturbed pumice dunesand.

The date was determined by the Institute of Nuclear Sciences. The identifications by Messrs D. J. McIntyre and C. R. Lennie are gratefully acknowledged.

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ON THE AGE OF THE WHANGAKEA VOLCANICS OF NORTHLAND

F. E. BOWEN

Papatoetoe

The age of the Whangakea Volcanics has hitherto rested on the presence of *?Meleagrinnella* sp. and *Inoceramus* fragments in beds of this formation exposed at Pandora, near the mouth of Whangakea Stream, Spirits Bay. The *Inoceramus* fragments have prism thicknesses resembling those of the Cretaceous rather than the Jurassic but, because *Meleagrinnella* is known only from the Temaikan in New Zealand, Hay (1959, 1960) assigned a