

## FURTHER COMMENTS — WAIHI TERRACE AND HAMILTON ASH AGES

DAVID KEAR and B. C. WATERHOUSE  
N.Z. Geological Survey, Lower Hutt and Auckland

### INTRODUCTION AND ACKNOWLEDGEMENTS

The authors of the previous paper (Selby *et al.* 1971) kindly allowed us to see their manuscript, prior to publication. They have made a significant contribution to Bay of Plenty late Quaternary stratigraphy in recognising established ash beds in the coastal terrace sequence at Waihi Beach (Kear & Waterhouse, 1961). This brief note acknowledges their work, and uses their data to produce an alternative age interpretation, that implies broad dates for the formation of each of the coastal terraces and for the Hamilton Ash.

### TERRACE CORRELATIONS

Their implication that our sea level height determinations cannot be accurate in detail is perfectly valid. However, we consider that the accuracy was adequate for the purpose of our paper, which was (p. 434) to study long-range terrace correlations with South Kaipara and other coastal areas, rather than to determine sea levels accurately. It is interesting to note that the validity of the broad correlation with South Kaipara does not appear to be materially changed if Selby *et al.*'s recommended method on sea level calculations is used instead of ours (Table 1):

*Table 1.* Correlation of the terrace sequences between Waihi and South Kaipara  
Indicated Sea Level (ft) based on terraces

| Formation        | Waihi (Kear &<br>Waterhouse, 1961) | Waihi (Selby <i>et al.</i> ,<br>1971, method) | South Kaipara<br>(Brothers, 1954) |
|------------------|------------------------------------|---|-----------------------------------|
| Waihi Beach      | 6-10                               | 6-10  | 6-12                              |
| Ocean View       | 15-20                              | 17  | 15-25                             |
| Athenree         | c.60-70<br>(or lower)              | 48-49   | 45-75                             |
| Unnamed Tauranga | c.110-115                          | ?110-115                                      | 110-130                           |

#### *Dating of Terraces and of Hamilton Ash*

Selby *et al.* (1971, fig. 3) related ash beds and terrace surfaces at Waihi Beach to a sea level curve (after Mörner, 1971). The alternative solution of Fig. 1 is preferred to their fig. 3, however, because:

1. the Ocean View and the Athenree terrace surfaces (and their implied correlatives in Table 1), have closely similar degrees of preservation, suggesting the closely similar ages indicated in Fig. 1;
2. periods of terrace formation coincide with periods when sea level was above that of the present, with the sub-ash terrace surface at or slightly above sea level; and
3. Selby *et al.*'s (1971) 2-3m surface at Bowentown can be accommodated at an appropriate level.

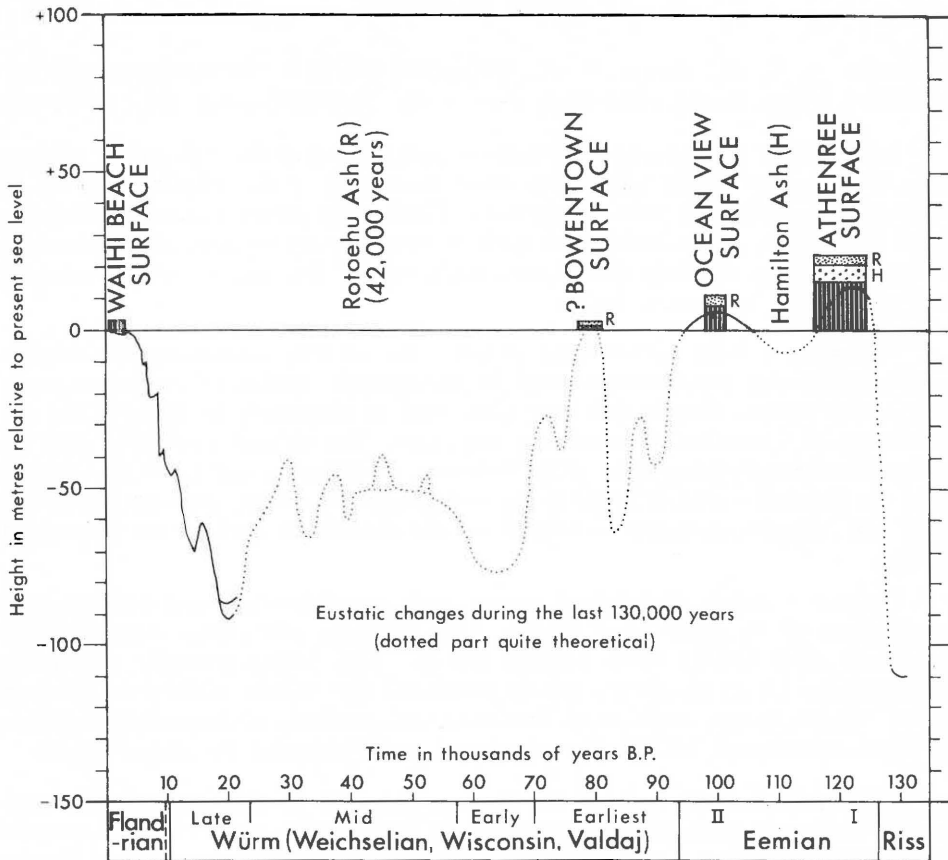


Figure 1. Selby *et al.*'s (1971) figure 3, adjusted so that the Athenree, Ocean View, Bowentown, and Waihi Beach surfaces coincide with the high sea levels of Mörner (1971). The age of the Rotoehu Ash (R) is indicated at 42,000 years B.P.: that of the Hamilton Ash (H) is inferred at about 110,000 years.

If Fig. 1 were correct, the following broad datings would be implied:

|   | Years B.P. |
|---|------------|
| Waihi Beach Surface (dated by correlation from Schofield, 1960) | 3,900      |
| Rotoehu Ash (Selby <i>et al.</i> , 1971)                        | 42,000     |
| Bowentown Surface (Selby <i>et al.</i> , 1971)                  | 80,000     |
| Ocean View Surface  | 100,000    |
| Hamilton Ash (strictly between 100,000 and 120,000)             | 110,000    |
| Athenree Surface  | 120,000    |

#### REFERENCES

- Kear, D.; Waterhouse, B. C.; 1961: Quaternary surfaces and sediments at Waihi Beach. *N.Z. J. Geol. Geophys.* 4(4): 434-45.
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