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Trace Fossils from the Turbidite Facies of the Waitemata Group,  
Whangaparaoa Peninsula, Auckland

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*Abstract*

TRACE fossils common in siltstone beds of the turbidite facies of the Waitemata Group exposed on Whangaparaoa Peninsula are described. This ichnofauna is very similar to that typical of the flysch facies in many other countries. It affords evidence of extensive reworking of sediment by a rich and diverse infauna dominated by soft-bodied, sediment-eating organisms.

INTRODUCTION

A rich and varied assemblage of trace fossils, or ichnofossils—the *Lebensspuren* and *trace d'activité* of the German and French literature respectively—is present in siltstone beds of the Waitemata Group that outcrop widely about and to the north of the Auckland isthmus. The trace fossils are particularly conspicuous at many localities about Whangaparaoa Peninsula (Fig. 1) and the descriptions are based mainly on material collected from this area. Here the Waitemata Group is of Otaian age and consists largely of alternating sandstones and siltstones identified as a turbidite facies comparable with that of the Takapuna Section of the Waitemata Group recently described by Ballance (1964). Thick volcanoclastic grits of the type known locally as Parnell Grit (cf. Brothers, 1959) are interbedded with the turbidites along much of the northern coast of the peninsula east of Tarihunga. Two kinds of sequence can be recognised: (i) that in which thick and often composite bedded sandstones (turbidites) alternate with thin siltstones, and (ii) that consisting of thinly bedded alternating sandstones and siltstones—the sandstones of this latter type of sequence having been deposited from the weaker “tails” of turbidity currents or being turbidite sand reworked by bottom traction currents (Gregory, 1966). In general the trace fossils are only abundant in siltstones of the latter type of sequence.

At Whangaparaoa Peninsula (as in Waitemata beds elsewhere) trace fossils are commonly preserved as casts (e.g., Pl. 4, Fig. 1) and moulds (e.g., Pl. 2, Fig. 1), but “flattened” impressions (e.g., Pl. 5, Fig. 1) are not uncommon. The trace fossils tend to be accentuated by selective weathering and/or erosion for they have seldom been observed in unweathered rocks. Diagenetic processes are also important, for they improve the preservation of trace fossils (cf. Seilacher, 1964). The trace fossils described were best seen on weathered surfaces where subhorizontal,

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