percentage of miliolids and *Cassidulina subglossa,* as well as reasonably abundant *Cribrorotalia, Elphidium, Amphistegina,* and *Eponides,* all of which indicate shallow waters of the *Elphidium* Biofacies. This latter evidence, together with macrofaunal and sedimentary evidence, is taken to indicate the most probable depositional environment, i.e., 6–60m. The Waipukua Member has a dominantly shallow-water microfauna (*Elphidium* Biofacies, 6–60m) with, as dominant Foraminifera, *Cibicides temperata, Dyocibicides, Cassidulina subglossa, Cibicides mediocris, Amphistegina,* and *Miogypsina.* The basal portion of the Pakaurangi Member has a similar microfauna to the Waipukua Member, but higher in the Pakaurangi Member shallow-water forms become of minor importance and deeper-water forms such as *Gyroidinoides, Hoeglundina,* and *Bolivina* increase in importance. A point to note is that *Robulus* decreases in abundance in the Pakaurangi Member, suggesting that the species present are shallow-water forms. Foriminiferal evidence suggests that the water gradually deepened during the deposition of the Pakaurangi Member, starting in the *Elphidium* Biofacies (6–60m) and rapidly deepening to the Mid- or Lower *Haeuslerella* Biofacies (200–270m). This concept is supported by molluscan and other macrofaunal evidence. The Funnel Member also contains a shallow-water microfauna (*Elphidium* Biofacies, 6–60m) dominated by *Amphistegina, Cibicides, Elphidium* and *Dyocibicides.*

The Pakaurangi Formation, therefore, consists dominantly of a shallow-water *Elphidium* Biofacies, with an increased depth of deposition to Lower *Haeuslerella* Biofacies in the Pakaurangi Member.

Polyzoa

The great majority of living polyzoa inhabit normal-salinity marine environments in waters shallower than 200–400m. Various forms are adapted for environments varying from current-swept rocky or shelly substrates to quiet water. Polyzoans off the Rhone delta (Lagaaij and Goutier, 1965) have a wide temperature tolerance (i.e., from 10°C to 30°C) and are most abundant on relatively quiet bottoms, on silty and sandy marls. The number of polyzoans per unit area increases with a decrease in the rate of deposition, and they are most abundant in areas of slow deposition in the mid-neritic zone (40–100m).

Stach (1936) suggested grouping polyzoans according to their shape and structure, and hence generalised their required environmental conditions. The following types, after Stach with modifications suggested by Lagaaij and Goutier (1965), are found in the Pakaurangi Formation: (1) Membraniporiform (A): Zoarium usually but not necessarily unilamellar, encrusting a solid substrate. "This type is adapted for life in the littoral and sublittoral zones, . . . many forms extend into deeper waters, but are there numerically unimportant" (Stach, 1936). Most occur in areas with a low rate of deposition (Lagaaij and Goutier, 1965).

(2) Celleporiform: Zoecia heaped irregularly in a multilamellar mass of variable shape, usually encrusting on or around a flexible substrate. They are frequently associated with sessile marine plants and hence are especially abundant in the shallow inner neritic zone, where no active transport and resedimentation takes place. They are adapted for life in littoral and sublittoral zones and are numerically unimportant in deeper zones (Lagaaij and Goutier, 1965).

(3) Vinculariiform: Zoarium erect, rigid, firmly attached to a solid substrate by a calcareous base, and with dichotomous subcylindrical branches. They are an important faunal element, with their greatest abundance in deeper water, especially on calcareous sands below 50m. Stach (1936) has suggested that they are "adapted for life in deep or sheltered waters where wave action is absent and currents scarcely active. This group typifies growth in quiet waters".

(4) Reteporiform: Zoarium erect, rigid, strongly calcified, fenestrate or reticulate, and firmly attached by a calcareous base. Stach (1936) has stated: "This