

2.2. Mesozoic sediments of the Hokonui Facies

2.2.1. *Taringatua*. In the northern part of the Taringatua district on the north limb of the Southland Syncline is a steeply dipping sequence, approximately 30,000 ft thick, of Hokonui Facies sediments ranging from about Lower to Uppermost Triassic in age (COOMBS, 1950). The area is free from any vents or intrusions of Triassic or later age, and deformation is confined primarily to the simple folding of the syncline, adjustment to which has been accomplished by slip on widely-spaced bedding planes. The amount of post-Triassic overburden that may have been removed is unknown, but it is unlikely to have been more than 10,000 to 15,000 ft, and it may have been much less.

COOMBS (1954) showed that glass in ash beds in the upper part of the section has been completely replaced by heulandite* or less commonly by analcime. Both zeolites coexist with quartz and fine-grained phyllosilicates. The great majority

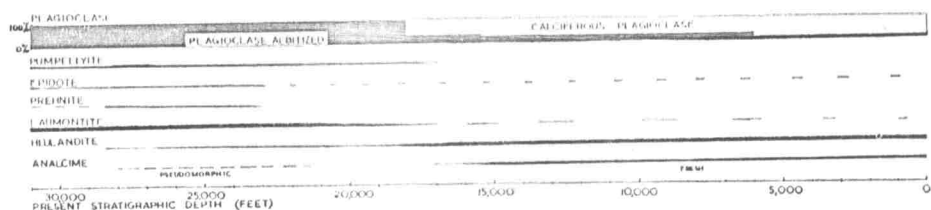


Fig. 2. Mineralogical features in relation to stratigraphic depth below the highest beds at present exposed, Taringatua, Southland, New Zealand (after COOMBS, 1954).

of rocks here contain fresh detrital lime-bearing plagioclase as a major constituent, but from successively lower horizons it is found to be missing from more and more specimens. In its place are pseudomorphs of dusty albite with sericite inclusions, although some "islands" rich in relict andesine persist almost to the base of the section. Simultaneously with the albitization of plagioclase, analcime and heulandite disappear. Analcime has not been observed in rocks from lower than about 17,000 ft below the top of the section, its place being taken mainly by albite, but also in some cases by pseudomorphs of adularia or laumontite. Heulandite persists to greater depths, but it appears to give way to laumontite plus quartz and the lower part of the section contains numerous beds of altered ash, some of them very thick, in which laumontite is the dominant constituent. First pumpellyite, then prehnite appear as accessory minerals. In some cases at least, notably in quartz-albite-adularia-pumpellyite metasomatites, the pumpellyite has clearly formed at the expense of laumontite, magnesium and iron being provided by celadonite and chloritic minerals. Tiny granules of epidote that appear to have grown in place are seen in thin sections from most stratigraphic levels, but they are always quite subordinate in quantity. Stilbite is occasionally found in joints of late formation. It is to be emphasized that with this exception the zeolites occur as essential constituents of the rocks and not as the fillings of veins or joints, although laumontite does occur as a replacement of fossils.

Chemical analyses, including spectrographic data on trace elements, are

* Including clinoptilolite.