

The fine siltstone at the base yielded an Awamoan to Altonian microflora (pers. comm. D. J. McIntyre, N.Z. Geological Survey). Similar bands of sandstone and conglomerate dip east at about  $50^\circ$  on the foreshore (619304, 620306) between the Aurora Sailing Club slip and the wharf at Nelson.

Grey marine sandstone with a mid-Altonian to Clifdenian microfauna crops out in Tosswill Road (S20/651) about 100 feet stratigraphically above a thick band of conglomerate with granite pebbles that is exposed near the south end of Tosswill Road. This sandstone is the youngest marine Tertiary bed in the Nelson city area.

#### *Taranaki and Wanganui Series (T-W)*

Taranaki and Wanganui conglomerates and freshwater mudstones crop out on both limbs of the syncline. Outcrops are numerous but poorly exposed and slumped. The lower part is represented by conglomerates containing a large percentage of granite boulders. On the east limb of the syncline they are exposed at Bishopdale railway cutting, at Examiner Street (623288), and near Enner Glynn. On the west limb of the syncline, where they overlie Pareora and Southland beds, they are exposed on the west side of the Port Hills and near The Ridge-way.

Thick banded conglomerates and sandstone exposed along Maori Road (629299) dip east at  $50^\circ$ . Similar conglomerates and sandstones are poorly exposed in many road cuttings near Mount Street (628288), St. Vincent Street (618280), and in the Port Hills.

The actual synclinal axis shows in the quarry opposite the Globe Hotel (627298). The east limb dips  $60^\circ$  west and the west limb  $50^\circ$  east, the width of the exposed part being about 50ft. The conglomerate includes greywacke, sandstone, rare granite, pebble conglomerate, and greywacke boulders containing fossil worm-casts. Most of the pebbles cannot be matched with any pre-Tertiary rocks now exposed in the Nelson district, and it is inferred that they were derived from the west. Carbonaceous material is common in the blue mudstone. Palynologic samples (S20/623, 624, 625, 626) indicate a Waitakian to Waitotaran age, Waitotaran being most probable. Steeply dipping conglomerates on the Blenheim Road at the north boundary of the mapped area (648309) are similar to those opposite Globe Hotel and contain the same greywacke boulders with fossil worm-casts.

#### SOUTH-EAST AREA

The Tertiary rocks of the south-east area are poorly exposed. Included in the area for convenience are the Tertiary rocks of the infaulted strip between Brook Street Volcanic Group and Maitai Group. The rocks range from Arnold to Pareora in age and include Arnold coal measures and marine sandstone; Arnold to Landon conglomerates and mudstones, and Landon to Pareora shelly limestone. They differ in lithology from rocks of the same age in the north-western area.

#### *Arnold Coal Measures and Marine Beds (Acm)*

The beds lie within the fault zone of the Waimea Fault between Brook Street Volcanic Group and Maitai Group and resemble the basal Tertiary beds of Westland and north-west Nelson (Suggate, 1950). They are thought to be the oldest Tertiary rocks in the Nelson City area and to rest directly on Paleozoic rocks. Discontinuous outcrops are described individually from north to south.

Poorly exposed coal measures crop out in a small tributary of Packer Creek (693289). The beds are deeply weathered and yielded no spores or pollen. A mile south-west on Maitai Valley Road (677278) a small weathered outcrop