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Description of rock samples from the Friendly Beaches and Middle Arm

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The following are descriptions of rock specimens collected by geologist M. J. Clarke.

68-177: Friendly Beaches

The hand specimen is a medium to fine-grained rock, greyish in colour but with a brownish tint due to iron oxides. The rock is fossiliferous and in addition to shelly fragments contains round to sub-angular glassy grains of quartz, semi-opaque altered feldspars, small black irregular carbonaceous fragments and rounded pale green grains of glauconite in a very fine grained dark matrix.

In thin section the rock is a dense non-porous sandstone with a high proportion of matrix for its type. Although there is some rounding of the larger grains, it is poorly sorted and contains a high proportion of grains below 0.1 mm.

Quartz is the most prominent mineral and makes up about 60% of the total grain content of the rock. Some quartz grains show undulose extinction and most have become extensively cracked in the preparation of the section. Feldspar, showing simple and lamellar twinning, is common, making up about 25% of total grains. The larger feldspar grains, showing simple or no twinning, are partly altered to carbonate. Glauconite is more common than appears in hand specimen and comprises about 10% of total grains. It is mainly in small rounded masses with aggregate polarisation. Lithic fragments, carbonaceous material and carbonates make up the rest of the rock.

The rock consists of unsorted and immature sedimentary material accumulating in shallow water close to a source.

The rock is a glauconitic feldspathic sandstone.

68-178: Middle Arm

The hand specimen consists of angular fragments up to about 10 mm long, mainly of carbonate, but occasionally of chert, in a fine-grained grey matrix of carbonate containing irregular patches and veinlets of quartz. Concretionary structures 1–3 mm across are common.

In thin section the angular fragments appear as very fine grained, semi-opaque ragged masses of granular calcite surrounded by aureoles of redeposited, transparent, crystalline calcite. The interstices between the aureoles are filled with crystalline quartz or calcite, or mixtures of the two. The rock was possibly originally a cherty carbonate deposit which was brecciated and cemented by percolating solutions containing dissolved silica and carbonate. Interchange of these two substances has occurred and the interstices between the fragments have been filled with crystalline calcite and quartz. The original angular fragments have been peripherally eroded and the material redeposited in regular encircling layers. The smallest fragments have almost completely disappeared to be replaced by concretionary structures.

The rock is a re-cemented limestone breccia.

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