DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY

PALAEONTOLOGY SECTION

SEDIMENTARY SEQUENCE IN BORE 9H

UPPER PORT REACH

by

T. M. Steel
Geologist

30th October, 1961

D.M. 1151/61

RB 53/109

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SEDIMENTARY SEQUENCE IN BORE 9H

UPPER PORT REACH

ABSTRACT:

Examination of Bore 9H from the Upper Port Reach revealed a sequence of 16 feet of recent sediments, grading upward from shallow water marine sediments at 16 feet to fresh water swamp sediments at 4 feet, with a one foot thick surface layer of very recent tidal backwater sediments.

INTRODUCTION:

This work was done for the Soils Geology Section, to study the stratigraphic sequence in a representative bore from the Upper Port Reach. Particular emphasis was placed on the logging of washed material only, as well as probable environment of deposition.

STRATIGRAPHIC SUMMARY

Sediments present represent both marine and freshwater deposition. The lower sediments from 16 feet to 9 feet depth are essentially very fossiliferous marine clayey sands with limestone patches, succeeded by about 3 feet of fossiliferous clayey fine sands. Above these are 2 feet of carbonaceous very clayey sands of a brackish water swampy environment, overlain by 3 feet of freshwater swampy sediments, composed of very carbonaceous very fine sands from 4 feet to 1 feet. The top 1 foot consists of very recent silts and clays laid down under the present tidal backwater conditions. The whole sequence is probably of Recent origin, though it may extend back to the late Pleistocene.

RECENT:

The log as follows gives the lithology, except that in all cases, the material of less than 200 mesh has been removed during washing.

LOG OF WASHED SAMPLES

Depth (feet)

0' - 1' Light grey fine to medium angular quartz sand with abundant plant fragments. Environment probably backwater tidal.

1' - 2' Dried Material 200 mesh only washed. 5% material lost in washing. Black and brown carbonaceous material, with a little very fine slightly micaceous angular quartz sand. Plant material is generally tubular fragments (? reeds) and rounded stems, showing nodes where leaves attached, which suggests a fresh water flora. No fauna present.

2' - 3' Dried material 200 mesh washed. About 30% lost in washing. Light grey carbonaceous fine angular quartz sand, with a few larger well rounded quartz grains, with some mica flakes. Plant fragments form about 30% of sample.
Environment probably fresh water - swampy.

3' - 4' Dried material 200 mesh washed. About 30% lost in washing. As above, but becoming sandier and more micaceous.
Environment probably fresh water - swampy.

4' - 5' Dried material 200 mesh washed. About 20% lost in washing. Light grey very fine to fine sand, composed of clear angular to subangular quartz grains - slightly micaceous with plant remains common.
Very rare sponge spicules and an occasional foraminifera, including

Discorbis dimidiatus

Elphidium sp.

Environment probably swampy brackish water.

5' - 6' About 20% of sample removed in washing.
Light grey very fine to fine clear angular to subrounded quartz grains, with some larger well rounded grains - micaceous. Plant remains common. One broken specimen of Discorbis dimidiatus
Environment probably swampy brackish water.

Depth (feet)

6' - 11' About 20% of material removed in washing.

Light grey very fine to fine clear angular to subrounded quartz sand - micaceous and with common plant remains.

Fauna very abundant including

Foraminifera:

"Rotalia" beccarrii

Elphidium advenum

Elphidium crispum

Triloculina oblonga

Triloculina trigonula

Spiroloculina antillarum

Vertebralina striata

Cribrobulimina advena

Pseudoplia planatus

Discorbis dimidiatus

Mollusca

Salinator fragilis

Retilaria (Zeacumantia) diemenensis

Environment probably estuarine, as no open sea fauna present.

11' - 14' About 10% of material lost in washing.

Light grey very fine to coarse angular to well rounded quartz sand with some large fragments of fine sandy limestone.

Foraminifera as above, with Pseudoplia planatus becoming much more abundant.

Bryozoa have became abundant while echinoid spines and Ostracods are common.

Environment probably clear, warm shallow and marine, probably estuarine as no open sea fauna present.

14' - 16' About 10% of material lost in washing.

Light grey fine to coarse angular to well rounded quartz sand with some small fragments of fine sandy limestone becoming less common with depth.

Faunally similar to above, but Foraminifera are less abundant.

Environment probably estuarine as before.

CONCLUSIONS:

The sequence shows a succession of sands and clayey sands, commencing with a shallow salt water depositional environment (estuarine), succeeded by brackish and then fresh water swamps. The final sediments were laid down under the present tidal backwater conditions.

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