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MICROPALAEONTOLOGICAL EXAMINATION OF BORE CORES FROM STANFORD MAIN NO.2 COLLIERY, NEAR COONGEWAI, NEW SOUTH WALES

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Micropalaeontological Examination of Bore Cores from Stanford Main No. 2 Colliery, near Coongewai, New South Wales.

by

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Records No. 1955/19.

Bore cores from Stanford Main No. 2 D.D.H. "C" near Coongewai, New South Wales were submitted for micropalaeontological examination by Australian Oil and Gas Corporation Limited. This bore is situated on Lot 13, Eglinton Estate, Parish of Aellalong, County of Northumberland and is being put down by J. and A. Brown in advance of the underground workings of the Colliery. Cores were received from the depth of 30 feet down to 771 feet and it is reported that the bore reached the Greta Coal Measures at 772 feet.

The lithology of the cores consisted of hard, grey to dark grey micaceous sandstone sometimes calcareous and with varying amounts of carbonaceous material, and fine to coarse conglomerates. Because of the hardness of the rock, the preparation for micropalaeontological examination was extremely difficult. The crushings of 31 core samples were examined. Many of these yielded tests of arenaceous foraminifera of Permian age.

A detailed examination of all cores is given below.

30'10" - Light grey, hard, micaceous sandstone. No foraminifera in crushings.

38' - 40'- Hard light grey micaceous sandstone.

45' - 50'- Hard, light grey, micaceous sandstone with traces of carbonaceous material.

54'10" - Hard, dark grey, micaceous fine-grained sandstone and conglomerate.

55' 4" - Hard, grey, micaceous sandstone with patches of ? glauconite.

60' - Hard, grey micaceous fine-grained sandstone.

68'10" - Hard grey, micaceous sandstone. No foraminifera in crushings.

70' - Coarse conglomerate.

75'-80' - Hard, grey, micaceous, fine-grained sandstone with pebbles.

84'10" - Hard, grey, calcareous, carbonaceous, micaceous sandstone and conglomerate.

90' - Hard grey micaceous sandstone with patches of carbonaceous material. No foraminifera in crushings.

94' - Hard grey, micaceous sandstone and dark grey micaceous shale.

100' - Hard, grey micaceous sandstone with pebbles of different sizes.

105' - Hard, grey micaceous sandstone with carbonaceous patches. No foraminifera in crushings.

110'-116'- Hard, grey micaceous sandstone with patches of carbonaceous material.

125' - Conglomerate

130'10"-140'3" - Hard grey, micaceous sandstone with carbonaceous particles.

147' - Hard, grey, micaceous sandstone with carbonaceous particles and slightly bedded, and conglomerate. No foraminifera in crushings of sandstone.

153' - Hard, grey micaceous, carbonaceous sandstone.

157' - Hard, micaceous carbonaceous sandstone with alternating bands of conglomerate, and with indeterminate plant remains replaced by pyrite.

164'-174'- Hard, grey micaceous and carbonaceous sandstone with indeterminate plant remains.

177' - Fine conglomerate.

183'-199'8" - Hard, grey, micaceous carbonaceous sandstone. No foraminifera in crushings of core at 191 feet.

206'-212' - Hard, light grey, micaceous, sandstone with a few carbonaceous particles.

218'-223' - Hard, grey, micaceous sandstone with patches of conglomerate.

227'6"-232'- Hard, grey, micaceous sandstone, roughly bedded and with large patches of carbonaceous material.

237'-242' - Hard, dark grey, micaceous, carbonaceous sandstone. No foraminifera in crushings at 237 feet.

243'- - Similar to 237'-242 but with remains of an indeterminate fossil shell.

250'-266' - Hard, dark grey, micaceous, carbonaceous sandstone, with rough bedding. No foraminifera in crushings at 266 feet.

271'-281' - Hard, grey micaceous, carbonaceous sandstone and coarse conglomerate.

289' - Hard, dark grey, micaceous, carbonaceous sandstone, roughly bedded. No foraminifera in crushings.

294'-307'3"- Hard, dark grey, micaceous, carbonaceous sandstone.

313' - Hard, micaceous sandstone with carbonaceous markings and some pebbles. No foraminifera in crushings.

318' -Hard, dark grey, micaceous carbonaceous sandstone, roughly bedded.

324' -Hard, grey, micaceous sandstone and conglomerate.

333' -Hard, grey, micaceous sandstone with small pebbles.

338' -Hard, dark grey, micaceous sandstone roughly bedded.

343' - Hard, dark grey, micaceous sandstone with foraminifera in crushings.

Foraminifera: Ammodiscus multicinctus

348' - Hard, dark grey micaceous sandstone

353'-364'- Hard, dark grey micaceous sandstone and conglomerate.

370'-385'- Hard, grey, micaceous carbonaceous sandstone with a few pebbles.

390' Hard, dark grey micaceous sandstone and conglomerate.

396'-410'2"- Hard, grey micaceous sandstone. No foraminifera in crushings at 404'3".

415'-426' - Hard, grey micaceous sandstone and fine conglomerate.

431' - Hard, grey, micaceous coarse sandstone.

437'-442'- Hard, dark grey, micaceous sandstone with pebbles. Indeterminate arenaceous foraminifera in crushings at 437 feet.

447' - Conglomerate bands in pebbly sandstone.

450'10"-465' - Hard, dark grey, micaceous, carbonaceous sandstone. No foraminifera in crushings at 465 feet.

470' - Hard, dark grey, micaceous, carbonaceous sandstone with pebbles.

474'6" - Hard, dark grey micaceous, carbonaceous sandstone. No foraminifera in crushings.

480' - Hard, dark grey micaceous, carbonaceous sandstone with arenaceous foraminifera in crushings.

Foraminifera: Ammodiscus multicinctus

485' - Similar to 480 feet, with arenaceous foraminifera in crushings.

Foraminifera: Ammodiscus multicinctus

497' - Hard, dark grey, micaceous, carbonaceous sandstone.

504' - Similar to 497 feet with foraminifera in crushings.

Foraminifera: Ammodiscus multicinctus

511'-522'-Hard, dark grey, micaceous carbonaceous sandstone with pebbles.

527' - Hard, grey, micaceous carbonaceous sandstone with patches of dark grey micaceous shale.

530' - Conglomerate.

532' - Hard, dark grey, sandstone with patches of pebbles.

539' - Hard, grey, sandstone, slightly cavernous.

547' - Hard, grey, micaceous sandstone. No foraminifera in crushings.

552'-560' - Hard, grey, carbonaceous, sandstone, finely bedded.

568' - Hard, dark grey, micaceous sandstone.

573'-578'-Similar to 568 feet with patches of whitish material.

582' -Hard, dark grey, micaceous sandstone, roughly bedded and with pyritic concretions.

587' -Similar to 582 feet with foraminifera in crushings.

Foraminifera: Ammodiscus multicinctus
Hyperamminoides sp.

591' -Hard, dark grey, micaceous sandstone.

597' -Hard, dark grey, micaceous sandstone, coarser than preceding.

604'-623'-Hard, grey, micaceous, carbonaceous sandstone with pebbles. No foraminifera in crushings at 618 feet.

628'5"-639'-Hard, grey, micaceous carbonaceous sandstone, coarser than preceeding.

644' -Hard, grey, micaceous sandstone, finer grained than preceeding and with patches of carbonaceous material. No foraminifera in crushings.

649'-659'-Hard, grey micaceous, carbonaceous sandstone.

664' -Hard, dark grey, fine-grained, micaceous, carbonaceous sandstone with foraminifera.

Foraminifera: Hyperamminoides sp.

669' -Fine conglomerate.

674'-684'-Light grey, micaceous sandstone with pebbles. Shell fragments present at 678 feet.

689' -Hard, grey, micaceous, pebbly sandstone.

693'-704'-Hard, grey, sandstone with pebbles. Fragments of shells at 699 feet, but no foraminifera present in crushings.

709'-714'-Light grey carbonaceous sandstone with fragments of shells at 714 feet.

719'-734'-Hard, grey to dark grey, micaceous and carbonaceous sandstone. No foraminifera in crushings at 719 feet.

739' -Fine conglomerate.

744' -Hard, grey, fine-grained, micaceous and carbonaceous sandstone, with a few foraminifera in crushings.

Foraminifera: Trochammina sp. nov.

749' -Hard, fine grained, carbonaceous sandstone.

754' -Hard, fine grained carbonaceous sandstone with foraminifera in crushings.

Foraminifera: Ammobaculites sp. 1
Hyperamminoides sp.

759' -Hard, fine grained carbonaceous sandstone with numerous tests of arenaceous foraminifera in crushings.

Foraminifera: Ammobaculites woolnoughi
Ammobaculites sp. 2.
Ammobaculites sp.
Digitina recurvata
Trochammina sp.

764' -Similar to 759 feet with arenaceous foraminifera in crushings.

Foraminifera: Ammobaculites woolnoughi
Ammobaculites sp.

769' -Similar to 759 feet, with numerous tests of arenaceous foraminifera in crushings.

Foraminifera: Ammobaculites woolnoughi
Ammobaculites sp. 3
Ammobaculites sp.
Trochammina spp.

771' -Hard, dark grey, carbonaceous, micaceous sandstone with numerous pebbles and arenaceous foraminifera.

Foraminifera: Ammobaculites woolnoughi
Digitina recurvata
Trochammina sp. nov.
Trochammina sp.

Notes on the Samples

There seems little doubt on lithological evidence that the sequence of sandstones and conglomerates from 30 feet down to 771 feet represented the basal portion of the Branxton Stage. Such a lithological sequence in which large fossils are very scarce, is characteristic of the beds immediately overlying the Greta Coal Measures in the Branxton section as shown by Jones (1939, p.175). It is further suggested that the very hard sandstone, from 744 feet down to 771 feet, that is from below a conglomerate band at 739 feet down to the top of the Greta Coal Measures at 772 feet, is the equivalent of the Cessnock Sandstone (Jones, 1939, p.176).

The sediments contain a few fragments of shelly fossils and indeterminate plant remains. However, after considerable searching of the crushings of the sandstones from 30 feet down to 734 feet, tests of a few arenaceous foraminifera were discovered; they were more abundant in the samples from 744 feet down to 771 feet which was one foot above the top of the Greta Coal Measures. No calcareous tests were found, the facies being quite unsuitable for their existence.

Two assemblages of foraminifera can be recognised:

1. An assemblage which contains Ammodiscus multicinctus Crespin and Parr and fragments of Hyperamminoides sp. and which is found in the beds from 343 feet down to 664 feet.

2. An assemblage which contains tests of Ammobaculites woolnoughi Crespin and Parr and Digitina recurvata Crespin and

Parr together with new species of Ammobaculites and Trochammina and which occurs in the beds from 744 feet down to 771 feet (the Greta Coal Measures were penetrated at 772 feet).

As regards the first assemblage Ammodiscus multicinctus and Hyperamminoides are found commonly throughout the deposits of both the Mulbring and Branxton Stages. In the present samples they are scarce and in the Branxton assemblages they are usually associated with calcareous genera such as Frondicularia and Nodosaria. However, as has already been stated, the coarse arenaceous lithology would not permit the existence of such forms.

The second assemblage is probably of considerable importance. It has only been found in the lowest 27 feet of the bore samples received, which are immediately above the Greta Coal and in very hard sandstone. If this 27 feet of sediments be the equivalent of the Cessnock Sandstone, the assemblage of arenaceous foraminifera found in them should be valuable for zonal purposes. It is hoped to obtain samples of the Cessnock Sandstone for micropalaeontological examination to see whether this idea can be supported.

Because of the absence of calcareous tests of foraminifera, it is impossible at present to make any correlation with the Kulnura Bore to the south-east. Furthermore it is impossible to correlate with any of the bores recently examined for microfaunas in the Muswellbrook-Ravensworth areas. In nearly all cases the samples from these bores contained a foraminiferal assemblage of Ammodiscus multicinctus, Hyperamminoides acicula, Frondicularia parri, F. woodwardi, Nodosaria sp. and ostracoda. The lithology and microfaunal content of these bores most closely resembles that found in the Kulnura Bore at considerable depth. The large tests of Ammobaculites woolnoughi and new species of Ammobaculites together with Digitina recurvata found in the last 27 feet of the present bore, that is from 744 feet down to 771 feet, have not been previously met with in any micropalaeontological work carried out in the Hunter River area.

The environment for such areanceous genera is brackish water and it is notable that the Greta Coal Measures occur immediately under the beds containing the above foraminifera. It is hoped that samples of any sandy beds within the coal measures will be collected so that conditions under which the coal measures were deposited may be studied.

Reference

Jones, L.J., 1939 - The Coal Resources of the Southern Portion of the Maitland-Cessnock-Great Coal District. (Northern Coalfield). N.S.Wales, geol. Surv. Min. Res. No.37.