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Micropalaeontological examination of samples from bore no. 8253, R. J. Dunk, "Warroo", Bourke, northern New South Wales.

by

J. Crespin

MICROPALAEONTOLOGICAL EXAMINATION OF SAMPLES FROM BORE NO.8253, R.J. DUNK, "WARROO", BOURKE, NORTHERN NEW SOUTH WALES.

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Detailed Description of Samples

50 feet. Friable sandstone, with angular quartz grains and gypsum.

100 feet. Friable sandstone with abundant gypsum.

150 feet. Friable ferruginous sandstone with numerous ironstone particles.

200 feet. Chiefly fragments of white cherty rock, with a few quartz grains. Thin sections of the cherty rock showed tests of radiolaria, cf. Cenosphaera.

250 feet. Friable, brown, limonitic sandstone with a little glauconite and arenaceous foraminifera.

Ammobaculites sp.
Haplophragmoides cf. chapmani
Trochammina xxxxxkx sp.
Trochamminia sp.
cf. Patellina ionesi

300 feet. Greyish shale with some angular quartz grains, glauconite grains, glauconitic replacement of radiolaria (Dictyomitra), and fragments of mollusca.

350 feet. Friable, grey shale with arenaceous foraminifera.

Ammobaculoides sp.nov.
Haplophragmoides cf. chapmani
cf. Spiroplectammina

450 feet. Friable dark grey shale. No fossils.

500 feet. Moderately hard, grey shale with a few calcareous foraminifera and molluscan shell fragments.

Robulus cf. underbookaensis
Robulus sp.

550 feet. Friable grey fine-grained sandstone with fine angular quartz grains, pyrite radiolaria numerous small calcareous foraminifera and ostracods.

cf. Lituola
Lenticulina sp.nov.
Marginulina sp.
Robulus warreenensis
Planulina cretacea (common)
Vaginulina spp.

600 feet. Pyritic sandstone and nodules of pyrite.

650 feet. Friable sandstone with pyrite, arenaceous and calcareous foraminifera, ostracoda and pyritic replacement of microfossils.

Marginulina sp.
Pseudoglandulina sp.nov. regularis
Robulus warreenensis
cf. Spiroplectammina
Trochammina xxxxxxx sp.
Trochamminia sp.

700 feet. Abundant pyrite and pyritic replacement of shell fragments and particles of wood.

750 feet. Similar to 700 feet.

800 feet. Friable coarse sandstone with angular quartz grains, wood particles, some replaced with pyrite, numerous arenaceous foraminifera and a few fish remains.

Haplophragmoides chapmani
Haplophragmoides sp.nov.
Spiroplectammina sp.
Trochammina xxxxxix sp.
Trochammina sp.
Trochammina raggatti
Verneuilina cf. schlzea

850 feet. Friable, medium grained sandstone.

870 feet. Friable, fine grained sandstone with siderite.

880 feet. Friable fine grained sandstone with abundant siderite.

892 feet. Fragments of calcareous rock, quartz grains and siderite.

900 feet. Friable sandstone.

950 feet. Friable sandstone.

1000 feet. Fragments of calcite, quartz grains and pyrite.

Notes on the Samples.

The samples from Bore No. 8253 on R.J. Dunk's property, "Warroo", N.W. of Bourke, represent the most satisfactorily collected material of any of the many bores submitted for micropalaeontological examination from the Great Artesian Basin, in New South Wales. The samples were taken at approximately every 50 feet, from 50 feet below the surface down to the depth of 1,000 feet. The examination of the samples for micro-faunas also shows a sequence of foraminiferal assemblages which have not hitherto been satisfactorily proved.

The samples from 50 feet down to 150 feet are regarded as Pleistocene to Recent in age and those from 200 feet down to 800 feet as Lower Cretaceous. The sandstones from 850 feet down to 1,000 feet are unfossiliferous and a definite age cannot be assigned to them. They may be basal Lower Cretaceous or Upper Jurassic.

The occurrence of a cherty rock containing a few radiolaria and overlying beds containing Lower Cretaceous foraminifera, is of considerable interest. A similar sequence of beds is found in the field at Mt. Bassett, 7 miles north of Roma, Queensland, where the beds underlying the chert contain Lower Cretaceous megafossils as well as microfossils.

Foraminifera are common in some of the samples from Bore No. 8253, and, as is usual in the Lower Cretaceous deposits in the Great Artesian Basin, arenaceous genera predominate. The arenaceous species are not many but specimens are common.

At the depth of 250 feet, fragments of a new species of Ammobaculites, which occurs at Roma and elsewhere in the Basin, are common.

At the depth of 350 feet, a new species of Ammobaculoides is predominant. This form is common in the Lower Cretaceous deposits around Roma.

A marked change in the foraminiferal assemblage takes place at 500 feet and persists down to 550 feet, when arenaceous genera are replaced by numerous tests of calcareous genera. Forms such as Robulus warregoensis (Crespin), R. munderbookaensis (Crespin)

Marginulina sp., Vaginulina sp. and Planularia cretacea Crespin are present. The last species is very common at 550 feet.

At 600 feet and 650 feet pyrite is common and at 650 feet foraminifera are again present. At this depth, arenaceous and calcareous tests occur in almost equal proportion.

At 800 feet the assemblage is again dominated by arenaceous tests, no calcareous forms being noted. Such species as Haplophragmoides chapmani Crespin, Trochammina raggatti Crespin and T. sp. are prominent. Associated with these forms are fish remains and fragments of wood which are often replaced by pyrite.

The palaeoecology of these arenaceous and calcareous genera affords some evidence as to conditions under which the beds were deposited. The occurrence of only arenaceous genera such as Haplophragmoides and Trochammina at the depth of 800 feet indicate a small amount of salinity in the water. Brackish water under almost lagoonal conditions existed and the character of the lithology suggests near-shore deposition. At 650 feet, the admixture of arenaceous and calcareous genera indicate the invasion of more saline waters into the area from the open sea. The water became sufficiently saline during the deposition of the beds from 550 feet up to 500 feet to permit the existence of a complete assemblage of calcareous genera such as Robulus, Marginulina, Vaginulina and Planulina. The marine waters then gradually retreated and between 350 feet and 250 feet, brackish water conditions again prevailed as evidenced by the assemblage of entirely arenaceous foraminifera.

Several bores have been examined in the Bourke area to the south, south-east, east and west of Bore No. 8253 at "Warroo" and foraminifera were found in most of them. To the west, no foraminifera were found in Bore No. 3897 on W.N. and C.N. Taylor's property "Urella Downs", but a few forms were noted in Bore No. 3259 on Gilby's property at the depth of 1,600 feet. Unfortunately samples were not received until the depth of 1,125 feet in Bore No. 3897 and at 1,450 feet in Bore No. 3259.

To the south-east and east of Bore No. 8253, foraminifera were recorded from many bore samples. In a bore on Murray's property "Goolgumble" to the south-east foraminifera were found from the depth of 77 feet down to 360 feet, the last sample received for examination coming from 375 feet. To the east, in Bore No. 3842 on Holme's property "Killaville" they were found from the depth of 100 feet down to 1,300 feet; in Bore No. 3797 on the same property, from 285 feet down to 750 feet. In Bore No. 3897 on C.N. Taylor's property at Ford Bridge, foraminifera were present from 100 feet down to 425 feet; they may have occurred at greater depths but no samples were received between the depth of 425 feet and 1,067 feet. In Bore No. 3785 feet on Johnston's property "Caloona", Lila Springs, they were found from 305 feet down to 1,181 feet and in Bore No. 3864 feet on McGirr's property, "Lauradale" from 350 feet down to 1,274 feet.

(I. Crespin)