

COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS.

RECORDS.

1963/48

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MICROFOSSILS FROM THE LOWER CRETACEOUS BEDS PENETRATED
BY WATER BORES REGISTERED NUMBERS 15363 AND 15363
CRESSY STATION. GREAT ARTESIAN BASIN. QUEENSLAND.

by

A.R. Lloyd.

The information contained in this report has been obtained by the Department of National Development, as part of the policy of the Commonwealth Government, to assist in the exploration and development of mineral resources. It may not be published in any form or used in a company prospectus without the permission in writing of the Director, Bureau of Mineral Resources, Geology and Geophysics.

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Microfossils from the Lower Cretaceous beds penetrated by
Water Bores, Registered Numbers 15363 and 15364,
Cressy Station, Great Artesian Basin, Queensland.

by

A.R. Lloyd

SUMMARY

Percussion drill residue samples from water bores Registered Numbers 15363 and 15364 (E 143° 48' S 21° 49' and E 143° 51', S 21° 57' respectively), Cressy Station, Queensland (Manuka 4-mile Sheet), were examined for microfossils.

In bore 15363, molluscan fragments are abundant to rare from the surface to 610 feet; megaspores are rare to common; ostracods are very rare; and Foraminifera are rare except at 600 feet where they are relatively abundant. In bore 15364, molluscan fragments are rare to common from 116 to 220 feet and foraminifera and ostracods are rare at 120 and 150 feet. These indicate that Lower Cretaceous marine beds were entered at the surface by bore 15363 and at 116 feet by bore 15364. The fossils are mostly broken or strongly compressed.

INTRODUCTION

Percussion drill residue samples from water bores Registered Numbers 15363 and 15364, Cressy Station, Queensland, were submitted by R.R. Vine and L.V. Bastian for micropalaeontological examination. The samples were collected every ten feet from each bore. From bore 15363, the samples were examined at twenty feet intervals from the surface to final depth of 610 feet and from bore 15364, each sample was examined from the surface to final depth of 220 feet.

OBSERVATIONS

a. Bore 15363

Molluscan fragments, including prisms of the Pelecypod Inoceramus are present in all samples from 10 feet to 600 feet.

The ostracode, ?Progonocythere sp. was found at 120, 420 and 600 feet.

The megaspore Pyrobolospira reticulata Cookson and Dettmann, 1958, was found at 120, 180, 270, 390, 420, 510, 570 and 600 feet; P. hexapartita (Dijkstra) was found at 390, 420, 510 and 570 feet; and some apparently undescribed megaspores were found at 270, and 600 feet.

The occurrences of Foraminifera are:

- 420 feet Lenticulina sp. ?L. warregoensis Crespín, 1944.
? Haplophragmoides sp.
- 480 feet Haplophragmoides sp. ?H. dickinsoni Crespín, 1962.
- 540 feet Margimulinopsis sp.
- 600 feet Lenticulina sp. aff. L. warregoensis Crespín, 1944.
? Epistomina sp.
Textularia sp.
Verneuulinoides kansasensis Crespín, 1962,
(not Loeblich and Tappan, 1950)
Haplophragmoides dickinsoni Crespín, 1962.
H. sp. cf. H. concavus (Chapman), 1892.
Ammobaculites sp.

b. Bore 15364

No fossils were found in the samples from the surface to 110 feet. Prisms of the Pelecypod Inoceramus were found from 116 to 220 feet. The foraminifera Lenticulina australiensis Crespin, 1953, and an ostracode ?Progonocythere sp., were present at 120 feet and the foraminifera Haplophragmoides sp. aff. H. arenatus Crespin (MS), at 150 feet.

DISCUSSION

The megaspores Pyrobolospora reticulata and P. hexapartita were recorded from Lower Cretaceous strata penetrated by wells in South Australia, Victoria and New South Wales (Cookson and Dettmann, 1958).

Crespin (1944, 1953, 1962) recorded the following occurrences of Foraminifera: Haplaphragmoides dickinsoni, H. arenatus and H. cf. concavus from the Lower Cretaceous Lower Wilgunya Formation of Queensland; Lenticulina warregoensis and L. australiensis from the Lower Cretaceous of South Australia and New South Wales; Verneuiliinoides sp. (=V. kansasensis of Crespin) from the Lower Cretaceous upper Wilgunya Formation of Queensland and the Lower Cretaceous of New South Wales.

Terpstra (in Terpstra and Evans, 1962), recorded specimens comparable with Lenticulina australiensis from Core 1, 450-460 feet, Mornington Island No. 1 Well, Carpentaria Basin, Queensland, which was considered to come from the lower part of the Winton Formation. Mollusca, including prisms of the Pelecypod Inoceramus are abundant in outcrops of the Mackunda Beds in this area (Vine, Bastian and Casey, 1963).

The specimen referred to Haplophragmoides aff. arenatus from bore 15364 is similar to those referred to H. cf. concavus from bore 15363 but the preservation does not permit close comparisons. Lenticulina australiensis from bore 15364 is close to L. aff. warregoensis from bore

15363, the only apparent difference being that the former has flush sutures and the latter has raised sutures. These specimens of Lenticulina are also close to L. gunderbookensis Crespin, 1944. From a study of the type specimens of the three species in question, it is considered that the holotype of L. australiensis (see Crespin, 1953, p.33, pl.6, fig. 4) and the holotype of L. gunderbookensis (see Crespin, 1944, p.21, pl.1, figs. 9a,b.) actually belong to the same species. Further, the holotype of L. warregoensis (see Crespin, 1944, p.21, pl.1, figs. 8a,b), the hypotype of this species (see Crespin, 1953, p.32, pl.6, fig.3) and the hypotype of L. gunderbookensis (see Crespin, 1953, p.32, pl.3, figs. 2a,b) belong to the one species. There are also close resemblances between the holotypes of L. australiensis and L. warregoensis, but the number of specimens is inadequate to decide whether there are two species represented or whether they come within the variations of the one species. Some of the type specimens are damaged, making differences more apparent than real.

The specimens referred to Verneuilioides sp. belong to the same species as the specimens referred to V. kansasensis by Crespin (1962), but appear to differ from the original figures of this species (see Loeblich and Tappan, 1950, pl.2, figs. 2a,b), which was described from the Lower Cretaceous Kiowa Shale of Kansas, U.S.A., in the chamber shapes, sutures, degree of taper and aperture. These differences could be accounted for by intraspecific variation, but this could only be demonstrated by comparing the Australian specimens with the American types, as the original description and type figures (Loeblich and Tappan, 1950) are not good enough to use for comparative purposes.

CONCLUSIONS

Bore 15364 entered Lower Cretaceous marine beds at 116 feet and remained in this to total depth of 220 feet. Bore 15363 commenced in Lower Cretaceous marine beds and remained in this to total depth of 610 feet. Because of insufficient knowledge of the distribution of Foraminifera and the megaspores, they cannot be used at this stage to subdivide the Lower Cretaceous. Because of the paucity of the fauna in bore 15364, no correlation could be made between the two bores. On field evidence (Vine, Bastian and Casey, 1963) it is considered that bore 15364 commenced in the Winton Formation and entered the Mackunda Beds at 116 feet and bore 15363 commenced in the Mackunda Beds.

REFERENCES

- CRESPIN, I., 1944 - Some Lower Cretaceous Foraminifera from Bores in the Great Artesian Basin, Northern New South Wales. Journ. Proc. Roy. Soc. N.S.W., 78 (1), 17-24.
- CRESPIN, I., 1953 - Lower Cretaceous Foraminifera from the Great Artesian Basin, Australia. Contrib. Cushman Found. Foram. Research, 4 (1), 26-36.
- CRESPIN, I., 1962 - Australian Lower Cretaceous arenaceous Formainifera (in press).
- LOEBLICH, A.R. Jr. and TAPPAN, H., 1950 - Foraminifera of the type Kiowa Shale, Lower Cretaceous, of Kansas. Univ. Kansas, Palaeontological Contrib., Protozoa, Art. 2.
- MOORE, R.C. (ed.), 1961 - Treatise on Invertebrate Palaeontology, Part Q Arthropoda 3, Crustacea, Ostracoda. Geol. Soc. Amer. and Univ. Kansas Press.
- TERPSTRA, G.R.J. and EVANS, P.R., 1962 - Palaeontological examination of samples from Delhi-Santos Mornington Island No. 1 Well, Carpentaria Basin, Queensland. Bur. Min. Resour. Aust. Rec. 1962/177 (unpubl.)
- VINE, R.R., BASTIAN, L.V. and CASEY, D.J., 1963 - Geology of the Manuka, Richmond and part of the Hughenden 1:250,000 Sheets Queensland. Bur. Min. Resour. Aust. Rec. (in preparation).