

PALYNOLOGICAL EXAMINATION OF TERTIARY SAMPLES
FROM WELL NERITA -1, OTWAY BASIN, AUSTRALIA

by

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Summary

Results of a palynological examination of cutting samples from well Nerita -1 are correlated with a section described on land from the nearby Princetown area, and the results of the well Pecten -1 previously investigated (Muller, September 1967).

Introduction

Cutting samples were available from 650'-4800'. Some 26 samples have been investigated, allowing sample intervals of 100 to 200 ft., except for the deepest four samples which have all been studied. Plant microfossil content proved to be fair to good. Sporomorph translucency values for pollen and spores fall in the light category (1-1½). Twelve new species have been added to the type-collection, all of which could be referred to published species or genera (Harris, 1965).

Discussion of results

Duplopollis orthoteichus (Pcs.60) could be recognized in the interval 650'-2440', with co-occurrences of Myrtacidites tenuis (Pcs.51), Duplopollis major (Pcs.45) and in the lowermost samples of the said interval Proteacidites ornatus (po3.92). In addition to these species Santalumidites cainozoicus (Po3.113) occurred in this interval. This species was found by Cookson & Pike (1954) in their microflora "C", which flora was considered by Harris (1965) to be younger than his Duplopollis orthoteichus assemblage-zone. Moreover Proteacidites pachypolus (Po3.47) occurred in two samples below the base of D. orthoteichus (2530' and 2830'). However, these findings could be due to caving, since only cutting material was available for investigation. While D. orthoteichus has not been found in cuttings below 2440', it has been reported in sidewall samples down to 2570'. The evidence from cuttings, therefore, cannot be considered diagnostic for determination of the limits of the Duplopollis orthoteichus assemblage zone.

The top occurrence of Triorites edwardsii (po3.20) was found at 3750', but it must be emphasized that the occurrences are very rare, down to 4780'.

The pollen flora in the interval between the lowest occurrence of D. orthoteichus and the top occurrence of T. edwardsii resembles very much the results of Muller in Pecten -1A. In Nerita -1 the flora in the interval 2530'-3400' is identical to the flora in Pecten -1A in the samples 3338' and 3362' on account of high occurrences of Triorites harrisii (Po3.19), Malvacipollis diversus (Po5.69), Nothofagidites emarcida (Pco.39), and Myrtacidites parvus (Pcs.41). Again as in Pecten -1A this interval is difficult to place in Harris' succession as the Triorites edwardsii-Duplopollis orthoteichus concurrent range zone, but following Muller it renders more likely a correlation of said interval with this transitional zone rather than with the Triorites edwardsii zone on account of Po5.69 (base occ. at 3200') and Pcs.41 (base occ. at 3400').

Below 3400' in Nerita -1 the same abundance of winged Conifer grains as Muller noticed in sample 3456' in Pecten -1A was noticed. These high occurrences range down to 4800' together with high occurrences of Pco.39 (Nothofagidites emarcida). Definite Cretaceous markers are not found, except for 2 specimens of Classopollis spec. in the sample 4730-40'. The three samples below 4730' revealed no Cretaceous markers. Therefore no top Cretaceous can be indicated.

The sporadic and low occurrences of microplankton in Nerita -1 may suggest a more continental origin of the sediments than in Pecten -1A.

Conclusion

It seems to be possible to correlate the pollen flora of Nerita -1 reasonably well with those of Pecten -1A and the land section in the Princetown area. Because, however, only cutting samples were available the results should be considered with caution and supplementary to results from sidewall samples.

References

- COOKSON, I.C., 1954 : The occurrence of an older Tertiary microflora in Western Australia. Aust. J. Sci., 17 (1).
- COOKSON, I.C. & PIKE, K., 1954 : Some dicotyledonous pollen types from Cainozoic deposits in the Australian region. Aust. J. Bot. 2 (2).
- HARRIS, W.K., 1965 : Basal Tertiary microfloras from the Princetown area, Victoria, Australia. Palaeontographica, B, 115.
- MULLER, J., September 1967 : Reporting on palynological results of the well Pecten -1A.