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MICROPALAEONTOLOGY OF SAMPLES FROM PORTUGUESE TIMOR

by

D.J. Belford

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Seventy-six outcrop samples from the south-west portion of Portuguese Timor were forwarded for palaeontological examination by Timor Oil Limited. No information is at present available concerning detailed localities or stratigraphic sequence of the samples.

Results of the examination are as follows:

Upper Miocene

The following samples are regarded as Upper Miocene in age: 6002, 6005, 6006, 6008, 6009, 6012, 6013, 6014, 6021, 6027, 6028, 6045, 6046, 6047 and 6048. These samples contain assemblages characterised by an abundance of planktonic species (Globigerininae and Globorotaliidae) and with a restricted benthonic element. A list of the species identified follows; the planktonic species are uniform throughout and to avoid unnecessary repetition a composite faunal list is given:

Orbulina universa
Globorotalia menardii
G. tumida
G. truncatulinoides
G. scitula
Globigerinoides quadrilobatus quadrilobatus
G. quadrilobatus trilobus
G. quadrilobatus immaturus
G. quadrilobatus irregularus
G. quadrilobatus sacculifer
G. ruber
G. conglobatus
G. obliquus
G. bollii
Globigerina bulloides
G. subcretacea
Globoquadrina altispira
Hastigerina aequilateralis
Pulleniatina obliquiloculata
Sphaeroidinella dehiscens
Sphaeroidinellopsis seminulina
Anomalina balthica

Bulimina inflata
B. rostrata
B. aculeata
Planulina wüllerstorfi
Uvigerina hispida
U. schwageri
U. peregrina
U. proboscidea
U. gemmaeformis
Sphaeroidina bulloides
Eponides umbonatus
E. praecinctus
Nonion pompilioides
Cassidulina subglobosa
C. sp. nov.
Pleurostomella alternans
Bolivinita quadrilatera
Ceratobulimina pacifica
Ehrenbergina serrata
Siphogenerina indica
S. striata
S. dimorpha
Stilostomella lepidula
S. insecta
Loxostomum karrerianum
Cibicides pseudoungerianus
Huglunina elegans
Pullenia bulloides
Gyroldinoides soldanii
Nodosaria longiscata
N. sp. cf. N. perversa
Spiroloculina circularis
Schenckella sp.
Eggerella bradyi
Laticarinina pauperata
Favocassidulina favus

Samples 6003, 6019, 6033 and 6034 are also probably Upper Miocene in age. They contain rare small planktonic foraminifera which in 6003 are very poorly preserved and cannot be identified specifically.

Samples 6011, 6015 and 6037 are also referred to the Miocene; these samples contain small planktonic foraminifera of Miocene age together with faunas derived from pre-existing rocks. The fauna recorded is as follows:

Sample 6011:

<u>Globigerina sp. cf. G. glutinata</u>	}	Miocene.
<u>G. subcretacea</u>		
<u>Sphaeroidinella sp. (Fragments)</u>		
<u>Hyperammia sp.</u>	}	Permian.
<u>Involutina sp.</u>		
<u>Conodonts</u>		

Sample 6015:

<u>Globigerina glutinata</u>	}	Miocene.
<u>Sphaeroidinella</u> sp. (fragments)		
<u>Globigerina ampliapertura</u>	}	Eocene.
<u>Globorotalia</u> sp. cf. <u>G. centralis</u>		
<u>?Rugoglobigerina</u> sp.)	?U. Cretaceous.
<u>Thuramminoides</u> sp.	}	Permian
<u>Glomospirella</u> sp.		
<u>Pelosina</u> sp.		
<u>?Ammoniovertella</u> sp.		

Sample 6037:

<u>Globigerinidae</u>	}	Tertiary (poorly preserved).
<u>Miliolidae</u>		
<u>Involutina</u> sp. cf. <u>I. nitida</u>	}	Permian.
<u>I.</u> sp.		
<u>Hyperammina</u> sp.		
Indeterminate arenaceous forms		

These samples recall the cuttings from 3000 feet- 3100 feet in the Ossulari No. 1A Bore, Portuguese Timor, previously reported on by the writer (Belford, 1960).

Lower Miocene

Samples 6038, 6040 and 6044 are considered to be Lower Miocene in age.

Sample 6038 contains Spiroclypeus sp. and Eulepidina sp., which indicate Lower Miocene ("e" stage); also present are fragments of a Globotruncana limestone, of Upper Cretaceous age. Sample 6040 also contains the fragments of Globotruncana limestone and although no diagnostic larger foraminifera have been observed in this sample, it is regarded as Lower Miocene in age because of the lithological similarity to sample 6038. Sample 6044 contains rare Spiroclypeus, Cycloclypeus and Globigerina.

Eocene.

Sample 6020 contains abundant Nummulites sp. and rare Alveolina sp. and is regarded as Eocene in age. Samples 6022 and 6032 contain abundant foraminifera of Middle to Upper Eocene age together with a derived fauna of Upper Cretaceous (Maestrichtian) age. Species identified are as follows, the Upper Cretaceous forms being indicated by an asterisk:

- *Globotruncana lapparenti lapparenti
- *G. arca
- *G. ventricosa
- *G. contusa
- *Rugoglobigerina rugosa
- *Planoglobulina glabrata
- *Gublerina sp.
- *Gumbelina sp. cf. G. costulata
- *Hastigerinella sp.
- *Reussella szajnochae subspp.
- *Bolivina incrassata
- *Bolivinoidea draco draco
- *Neoflabellina sp.
- Hantkenina alabamensis
- H. sp.
- Globigerina yeguaensis
- Globorotalia centralis
- G. sp. cf. G. acuta
- G. spinulosa
- Truncorotaloides sp. cf. T. topilensis
- Vulvulina advena
- Uvigerina dumblei

Samples 6039 and 6041 are fine-grained limestones containing Globotruncana, Globorotalia and Globigerina. The species of Globorotalia are of the acuta type recorded above in samples 6022 and 6032; this would suggest a Middle to Upper Eocene age for samples 6039 and 6041. The writer cannot find any evidence for regarding these samples as being younger than Eocene in age.

Permian.

Samples 6053, 6056, 6058, 6059, 6061, 6062 and 6064 are regarded as Permian in age. There is no evidence to suggest that the foraminifera observed occur as derived forms in younger sediments.

Sample 6053 is represented by two lithologies, first a grey to green siltstone containing Hyperammina elegans, H. elegantissima and ?Ammovertella sp. and second a fine-grained brown limestone containing Calcitornella sp., Trepilopsis sp. and Flectospira sp. cf. F. prima.

Sample 6056 contains very rare small foraminifera (Textularia sp. and Trepilopsis sp.) and very rare radiolaria. 6058 contains abundant arenaceous foraminifera - Involutina nitida, I. sp., Hyperammina elegans and Glomospira sp. 6059, 6061 and 6062 contain rare arenaceous foraminifera (Textularia sp. and ?Ammovertella sp.). 6064 contains abundant calcareous foraminifera ostracods and very rare radiolaria. The foraminifera are preserved as casts and include Geinitzina triangularis, Frondicularia sp., Nodosaria sp. and Lagenidae.

These Permian faunas show a marked similarity to the Permian faunas of Western Australia.

No microfossils were found in sample 6000; macrofossils occurring in this sample were identified by Mr. J.M. Dickins of the Bureau of Mineral Resources as Atomodesma exarata. This species occurs in Western Australia in beds ranging from Upper Artinskian to Kungurian age.

Several samples contain abundant radiolaria and the age of these is uncertain: 6035, 6043, 6054, 6060, 6064, 6065, 6067 and 6072. In addition to radiolaria these samples contain abundant very thin irregular filaments; it is not known if these are organic in origin and if they should be organic their affinities are not known. Sample 6072 also contains one probable nodosarian foraminifera.

Van Bemmelen (1949, p.74 et. seq.) states that radiolarian cherts occurring in Netherlands Timor may partly be of Cretaceous and partly of older Mesozoic age. A Permian age has been suggested for radiolarian cherts occurring in the Miomaffo area of Netherlands Timor, but this is questioned by van Bemmelen, who tentatively accepts a Cretaceous age.

One of the present samples, 6064, is represented by two lithologies, one a radiolarian chert and the other a brown siltstone which as noted above contains calcareous foraminifera of Permian age. The field relationships of the beds represented by these two lithologies should be checked. At present the writer is not inclined to assign any definite age to the radiolarian cherts.

Samples 6017, 6042 and 6070 contain rare poorly preserved foraminifera insufficient for age determination.

No microfossils were found in sample 6073; one gastropod was found, probably indicating a general Tertiary age. 6074 contains shell fragments and the age of this sample is not known. No microfossils were found in 6075; according to Mr. J.M. Dickins the macrofossils occurring in this sample are insufficient for age determination.

No fossils were found in the following samples and their age is not known: 6001, 6004, 6007, 6010, 6016, 6018, 6023, 6024, 6025, 6026, 6029, 6030, 6031, 6036, 6049, 6050, 6051, 6052, 6055, 6057, 6063, 6066, 6068, 6069 and 6071.

REFERENCES

- BELFORD, D.J., 1960 - Micropalaeontology of samples from
Ossulari No. 1 and 1A Bores,
Portuguese Timor. Bur. Min. Resour.
Aust. Rec. 1960/33. (Unpublished).
- VAN BEMMELEN, R.W., 1949 - The Geology of Indonesia. Volume 1A.
Government Printing Office, The Hague.