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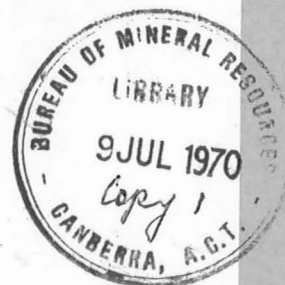
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Foraminifera and Age of samples
from the Star Mountains,
Territory of Papua & New Guinea

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by

J.G. Bennekamp

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FORAMINIFERA AND AGE OF SAMPLES FROM THE
STAR MOUNTAINS, PAPUA-NEW GUINEA.

by

J.G. Binnekamp

RECORDS 1970/14

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SUMMARY

Fifty-six samples collected in an area to the north-west of Olsobip (Blucher Range 1:250,000 Sheet), near the West Irian border, have been examined for age determination on the basis of the observed foraminiferal fauna. Rocks of possibly Eocene, Oligocene, lower and middle Miocene, and Pliocene or younger ages are present.

INTRODUCTION

The samples were collected by J.A.J. Smit of the Port Moresby Office in 1968. Most of the samples are hard limestones which were first examined on polished surfaces for microfaunal content; thin sections were prepared from selected samples. Ages are based mainly on associations of larger benthonic Foraminifera and are expressed in 'East Indian letter stages', with the equivalents in standard ages according to Clarke & Blow (1969). A map showing the location of the samples is attached. All samples have got the prefix 6869.

RESULTS OF EXAMINATION

Sample number	Field Information	Foraminifera
1621	Cretaceous	<u>Miogypsina</u> sp. (common) <u>Lepidocyclina</u> (s.l.) sp. <u>Gypsina</u> sp. <u>Elphidium</u> sp.
	Age	lower to middle Miocene, upper "e" to "f" stages.
1622A		no foraminifera
B and C		<u>Spiroclypeus</u> sp. <u>Lepidocyclina</u> (<u>Nephrolepidina</u>) sp. L. (<u>Eulepidina</u>) sp. <u>Miogypsina</u> sp. <u>Heterostegina</u> sp.
	Age	lower Miocene, upper "e" stage.
1623	Cretaceous	<u>Lepidocyclina</u> (<u>Eulepidina</u>) sp. <u>Operculina</u> sp. <u>Alveolinid</u> gen. indet.
	Age	Oligocene to lower Miocene, "e" stage.

Sample Number	Field Information	Foraminifera
68691624	Cretaceous	no foraminifera
1625	Cretaceous	no foraminifera
1626A	Cretaceous	<u>Miogypsina</u> sp. <u>Lepidocyclina</u> (s.l.) sp. <u>Operculinoides?</u> sp.
	Age	lower to middle Miocene upper "e" to "f" stages.
1627A and B	Mio-Pliocene or Lower Miocene	no foraminifera
	C	<u>Miogypsina</u> sp. <u>Heterostegina</u> sp.
	Age	lower to middle Miocene, upper "e" to "f" stages.
	D	planktonic foraminifera
1628	?	<u>Lepidocyclina</u> (<u>Nephrolepidina</u>) ruttenei van der Vlerk <u>Miogypsina</u> spp. <u>Operculina</u> sp.
	Age	middle Miocene, upper "f" stage
1629	?	no foraminifera (macrofossils?)
1630	Lower Miocene?	planktonic foraminifera Tertiary
1631	?	<u>Borelis</u> sp. <u>Heterostegina</u> sp. <u>Spiroclypeus</u> sp.
	Age	Oligocene to lower Miocene "e" stage.
1632	Cretaceous	no foraminifera
1633	Lower Miocene	<u>Miliolids</u> <u>Soritidae</u> gen. indet. <u>Alveolinid</u> gen. indet. <u>Operculina</u> sp.
	Age	Tertiary

Sample Number	Field Information	Foraminifera
1634A B	Lower Miocene	<u>Miliolids</u> <u>Borelis</u> sp. <u>Gypsina</u> sp. <u>Miliolids</u> <u>Austrotrillina</u> sp. cf. <u>A. striata</u> Todd & Post
	Age	Oligocene to lower Miocene, "e" stage
1635	?	<u>Fasciolites</u> sp. <u>Borelis</u> sp. <u>Gypsina</u> sp. <u>Austrotrillina</u> ? sp.
	Age	Eocene or lower to middle Miocene with derived Eocene "a" stage
1636 A B	?	no foraminifera <u>Austrotrillina</u> sp. <u>Miliolids</u>
	Age	Oligocene to middle Miocene, "e" to lower "f" stages
1637	Plio-Pleistocene	<u>Robulus</u> spp. <u>Cellanthus</u> sp.
	Pliocene or younger	Ostracods Macrofossils
1638A B	Lower Miocene	no Foraminifera <u>Miogypsina</u> sp. (2 specimens only)
	Age	lower to middle Miocene, upper "e" to "f" stages
1639	Cretaceous or ?	<u>Miogypsina</u> sp. (rare)
	Age	lower to middle Miocene, upper "e" to "f" stages.
1640A B	?	no Foraminifera <u>Miogypsina</u> sp. <u>Lepidocyclina</u> sp. (subgen indet.)
	Age	lower to middle Miocene, upper "e" to "f" stages

Sample Number	Field Information	Foraminifera
C and D		no Foraminifera
E and F		<u>Austrotrillina?</u> sp. <u>Miogypsina</u> sp. <u>Alveolinid</u> gen. indet.
	Age	lower to middle Miocene, upper "e" to "f" stages
1641	Lower Miocene	no Foraminifera
1642A	?	no Foraminifera
B		<u>Lepidocyclina</u> (<u>Eulepidina</u>) sp. <u>Spiroclypeus</u> sp. <u>Heterostegina</u> sp.
	Age	Oligocene to lower Miocene, "e" stage.
1634A	?	no Foraminifera
B		<u>Lepidocyclina</u> (<u>Eulepidina</u>) sp. <u>Austrotrillina striata-</u> <u>howchini</u> <u>Miogypsina</u> spp. <u>Ocellanthus</u> sp.
	Age	lower Miocene, upper "e" stage.
C		<u>Lepidocyclina</u> (s.l.) sp. <u>Miogypsina</u> sp.
	Age	lower to middle Miocene upper "e" to "f" stages.
1644A	Lower Miocene	<u>Lepidocyclina</u> spp. (incl. <u>Eulepidina</u>) <u>Spiroclypeus</u> sp.
	Age	Oligocene to lower Miocene, "e" stage.
B		<u>Flosculinella</u> sp. <u>Austrotrillina</u> sp. <u>Soritidae</u> gen. indet.
	Age	lower to middle Miocene, upper "e" to lower "f" stage.

Sample Number	Field Information	Foraminifera
1645A,B,C,D.	Lower Miocene	<u>Alveolinid</u> gen. indet.
	Age	Tertiary
1646A		<u>Austrotrillina</u> sp. <u>Borelis?</u> sp.
	Age	Oligocene to middle Miocene, "e" lower "f" stages.
B		<u>Borelis</u> sp. <u>Soritidae</u> (gen. indet)
	Age	Oligocene to Recent
1647A	Lower Miocene	<u>Lepidocyclina</u> (<u>Eulepidina</u>) sp. <u>Operculina</u> sp. <u>Heterostegina</u> sp. <u>Carpenteria</u> sp. <u>Gypsina</u> sp.
	Age	Oligocene to lower Miocene, "e" stage.
B		no Foraminifera gastropods, macrofossils
1648	Lower Miocene	no Foraminifera
1649	Lower Miocene	<u>Austrotrillina</u> sp. <u>Borelis</u> sp. <u>Marginopora</u> ? sp.
	Age	Oligocene to middle Miocene, "e" to lower "f" stages.
1650A	?	<u>Nummulites intermedius-</u> <u>fichteli</u> <u>Heterostegina</u> sp. <u>Operculina</u> sp.
	Age	Oligocene, "c" - "d" stages.
B	?	no Foraminifera
1651A	?	no Foraminifera
B		<u>Lepidocyclina</u> (<u>Eulepidina</u>) sp. <u>Alveolinid</u> gen. indet. <u>Heterostegina</u> sp.
	Age	Oligocene to lower Miocene, "e" stage.

Sample Number	Field Information	Foraminifera
C		<u>Lepidocyclina</u> (<u>Eulepidina</u>) sp. <u>Borelis</u> sp. <u>Operculina</u> sp. <u>Heterostegina</u> sp.
	Age	Oligocene to lower Miocene, "e" stage

CONCLUSIONS

Smit has subdivided the sequence from top to bottom into:

Pliocene/Pleistocene	Raised river terraces, piedmont deposits and marine deposits along sea arms
Pliocene/Miocene	Calcareous sandstones-siltstones-mudstones, conglomerate
lower Miocene	mainly massive limestones (possibly with Oligocene and Eocene at the base)
Cretaceous-Jurassic	Argillite-shale-siltstone, quartz sandstone, arkose, conglomerate. It seems that the upper part of this sequence is generally finer grained and interbedded with limestone lenses
lower Tertiary	intrusions

No Mesozoic faunas were encountered in the samples. Most of the samples thought by Smit to be of Mesozoic age did not contain any microfauna and their age could not be determined.

Massive limestones forming cliff faces up to 700 metres high overlie the Mesozoic sequence. They appear to range in age from Oligocene, 'c' - 'd' stages, to middle Miocene, upper 'f' stage. In one case (sample 1635) an Eocene genus, Fasciolites, was found but the possible presence of the younger genus Austrotrillina suggests that the Eocene fauna was derived.

Samples from the same area collected by Cooke in 1965 were given an 'e' to upper 'f' stage, late Oligocene to middle Miocene age by Belford (1965).

Crespin (1938) recorded and figured an assemblage of larger Foraminifera in a limestone from the Ok Ti River (higher portion of the upper Tedi or Alice River). The assemblage indicates a lower 'e' stage age which is now regarded as late Oligocene rather than lower Miocene. Crespin further recorded "Overlying the limestones are fossiliferous mudstones which contain a Mio-Pliocene fauna of molluscan shells similar to those which occur in the Blue Marl Group throughout Papua and New Guinea."

Limestone samples from an area immediately to the north of the area studied by Smit were examined by Terpstra (1968). He found the same range in ages as found in the samples here studied. He also found indications of reworked Eocene material in younger sediments.

In the headwaters of the Fly River, just south of Olsobip, Osborne (1945) mapped as Mesozoic sequence of dominantly argillaceous and arenaceous strata (Feing Group and Kuabgen Group) underlying Tertiary limestones (Kaban Limestone). According to Osborne the uppermost Cretaceous and the whole of the Eocene (which includes strata now referred to the Paleocene) are missing.

From the adjacent area in the Star Mountains, immediately across the West Irian border, Bar et al. described a similar sequence. They found mainly clastic Mesozoic deposits (Kembelangan Formation) separated by an hiatus from the overlying New Guinea Limestone Formation. These limestones form extensive outcrops with enormous cliffs. Some samples were found to contain a 'c' - 'd' stage fauna (reticulate Nummulites). From elsewhere in the area where the base of the limestones was exposed the faunal assemblage of the lowermost limestones indicates a late Oligocene, 'e' stage age. Along the southern flank of the Star Mountains the association of larger Foraminifera indicates an upper 'f' stage, middle Miocene age for reef type coral limestones.

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