

XI. AGE ASSIGNMENT OF THE DREDGE AND PISTON CORE SAMPLES

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1. Dredge samples

During the present cruise, dredge sampling was carried out at 7 sites and 2 sandstone and 5 siltstone samples were obtained from 3 sites (Table XI-1). Calcareous microfossils were found in the Sample D218-soft.

The author reports the age of this sample, determined by planktonic foraminifera. Planktonic foraminifera found in this sample are shown in Table XI-2.

In this report, 2 foraminiferal datum planes are used to determine the relation with the paleomagnetic time scale (Fig. XI-1).

Judging from the occurrences of the selected species, the age of the Sample D218-soft is assigned within the interval shown as lines in Fig. XI-2.

2. Piston core samples

During the present cruise, piston core sampling was carried out at 4 sites (Table XI-3).

For the foraminiferal study 1 cm thick portions of these cores were taken at stratigraphic intervals of 10 cm between 40–41 cm and 150–151 cm, and at intervals of 10–50 cm between 150–151 cm and the bottom.

The change in the coiling direction of *Globigerina pachyderma* (EHRENBERG) as a paleoclimatic indication was observed first in the deepsea cores of the Atlantic Ocean (ERICSON, 1969) and in 12 cores from off California (BANDY, 1960). In particularly using the sea bottom cores from off California, Bandy revealed a distinct change from the sinistral dominant population to the dextral dominant one at about 11000 yrs B.P. based on carbon-14 dating, and he regarded it as an index of the Holocene-Pleistocene boundary. The author noticed a quite similar change of coiling ratios between 80 cm and 131 cm below the top of P104, and between 50 cm and 121 cm of P105 (Figs. XI-3). The quick change from a sinistral dominant population to a dextral dominant one at about 105 cm below the top of P104, and at about 85 cm of P105 is thought to show a paleoclimatic change from the glacial Pleistocene to the post-glacial Holocene. When the sedimentation rate estimated for the Holocene part of P104 and P105 of 19.1 cm per 100 years is applied to the lower part, the bottom will have ages of about 54000 yrs and 30000 yrs B.P. respectively.

Although many siliceous microfossils are found in all of the dredge and piston core samples, no analysis was made. Examination of siliceous fossils should give more confidence in the results in this report, and may suggest the age of the other remaining samples.

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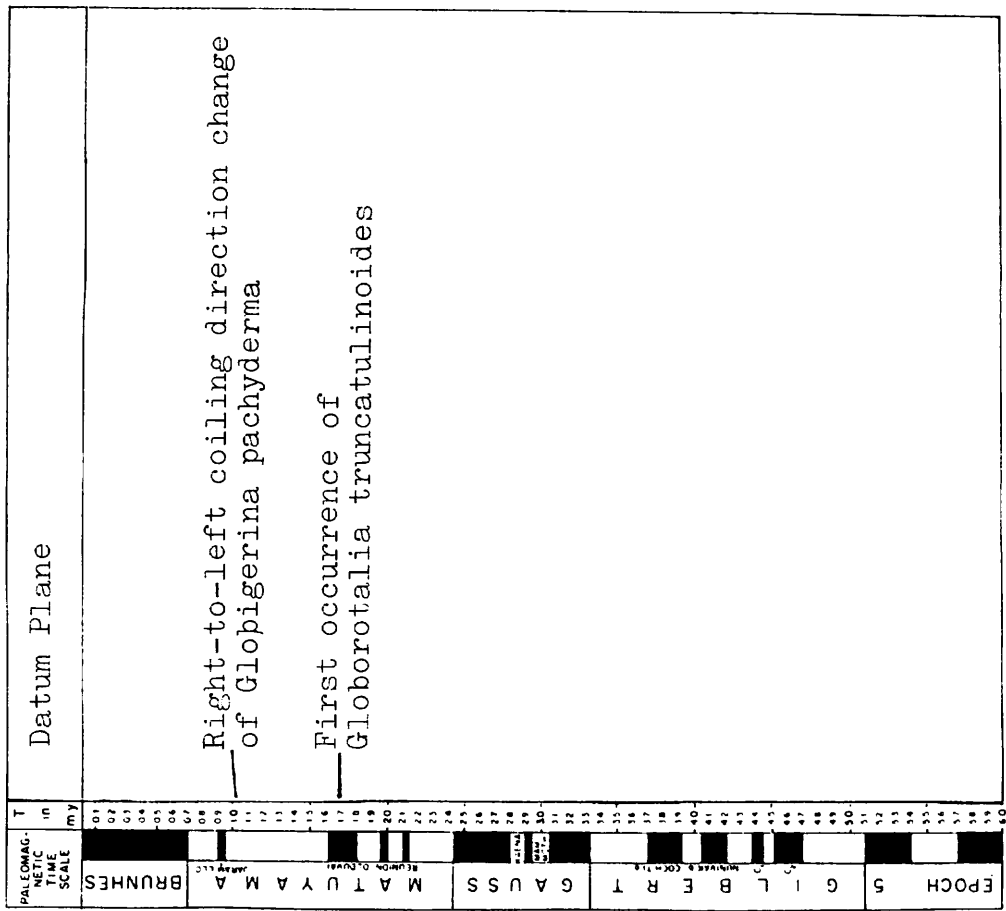


Fig. XI-1 Datum planes of planktonic foraminifera.

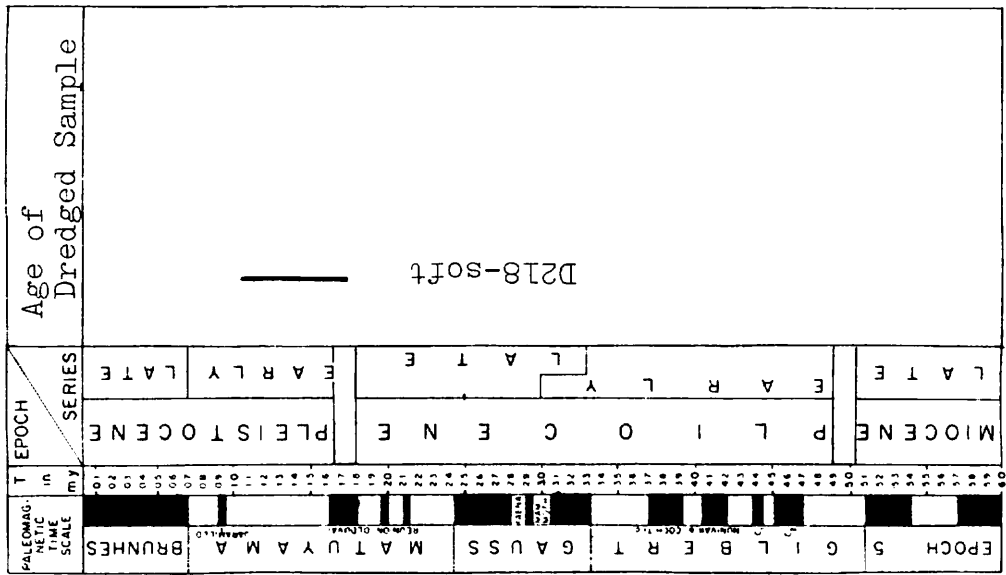


Fig. XI-2 Age of a dredged sample (D218). It is estimated within the interval shown as solid lines.

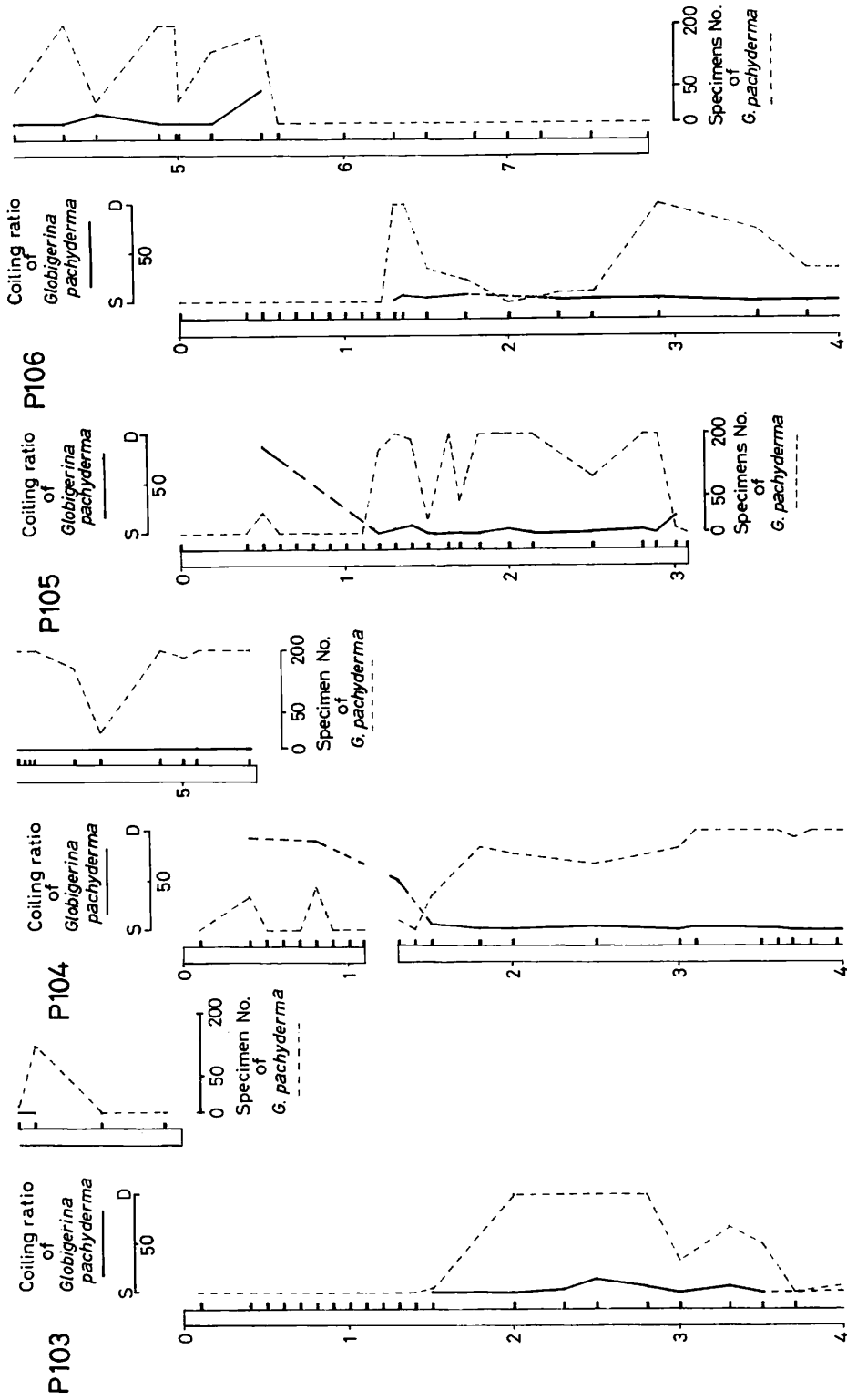


Fig. XI-3 Foraminiferal analysis of the cores.

Table XI-1 Sampling localities of dredges in GH77-2 Cruise and analyzed microfossils.
In right column, F designates planktonic foraminifera.

Sample No.	St. No.	Position		Depth (m)	Fossil analyzed
		Lat. (N)	Long. (E)		
D218-soft D218-calc.	754	35°03.5' 35°03.6'	131°13.3' 131°13.8'	101-100	F
D219-soft D219-fine D219-coarse	756	35°31.0' 35°30.8'	131°06.8' 131°07.0'	152-150	
D220-fine D220-coarse	758	35°21.4' 35°21.5'	131°15.4' 131°15.3'	106-107	

Table XI-2 Planktonic foraminifera from dredged siltstone sample in GH77-2 cruise.

D218-soft	Globorotalia inflata inflata (d'Orbigny) Globorotalia truncatulinoides (d'Orbigny) Globoquadrina dutertrei d'Orbigny Globigerina pachyderma (Ehrenberg) (right coiling) Hastigerina siphonifera (d'Orbigny) Orbulina universa d'Orbigny Pulleniatina obliquiloculata obliquiloculata (Parker and Jones) (right coiling)
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Table XI-3 Sampling localities of piston cores in GH77-2 Cruise.

Sample No.	St. No.	Position		Depth (m)	Length (cm)
		Lat. (N)	Long. (E)		
P103	759	36°55.8'	130°33.7'	2188	499
P104	760	36°24.9'	131°07.1'	2025	545
P105	762	36°37.1'	131°16.0'	2088	308
P106	766	37°35.7'	131°33.4'	2444	785

References

- BANDY, O. L. (1960) The geologic significance of coiling ratios in the foraminifer *Globigerina pachyderma* (EHRENBERG). *Jour. Paleont.*, vol. 34, no. 4, p. 671-681.
- BERGGREN, W. A. and VAN COUVERING, J. A. (1974) The Late Neogene: Biostratigraphy, geochronology and paleoclimatology of the last 15 million years in marine and continental sequences. *Paleogeography, Paleoclimatology, Paleoecology*, vol. 16, p. 1-216.
- ERICSON, D. B. (1969) Coiling direction of *Globigerina pachyderma* as a climatic index. *Science*, vol. 130, p. 219-220.
- MAIYA, S., SAITO, T. and SATO, T. (1976) Late Cenozoic foraminiferal biostratigraphy of Northwest Pacific sedimentary sequences. In TAKAYANAGI, Y. and SAITO, T. eds., *Progress in Micropaleontology-Selected Papers in Honor of Prof. K. Asano*, p. 395-422, Spec. Publ. Amer. Mus. Nat. Hist., New York.