

A PALAEOCENE *HETEROSTEGINA*

by F. E. EAMES and W. J. CLARKE

ABSTRACT. *Heterostegina adamsi* sp. nov. is described from beds of Upper Palaeocene age in Somalia; this is the earliest known occurrence of the genus.

DURING the examination of field samples from Gerigoan Hill (10° 18' N., 45° 18' 30" E.) about 10 miles south of Berbera, Somalia, a small, primitive species of *Heterostegina* was encountered in a series of beds conformably overlying the massive Auradu Limestone. These beds also yielded, in an intervening sample, an assemblage of planktonic foraminifera indicative of the *Globorotalia* (*G.*) *pseudomenardii* Zone as distinguished in the lower Lizard Springs formation of Trinidad (see Bolli 1957, p. 66). At two other Somalian localities, 10° 13' N., 44° 35' 30" E. and 10° 10' 20" N., 44° 33' E., to the south-east of Dabela and respectively about 32 and 37 miles south-west of Berbera, this species occurs in the upper part of the Auradu Limestone in association with larger foraminifera, such as *Daviesina khatiyahi*, *Lockhartia haimeii*, and *Miscellanea miscella*, indicating an Upper Palaeocene age.

Text-fig. 1 shows the occurrence of *H. adamsi* through some 120 ft. of beds. In the lower part of its range it occurs with a suite of larger foraminifera and it is overlain by a planktonic assemblage, both of which are age-diagnostic. From the upper part of its range forms diagnostic of a Palaeocene age are unfortunately lacking, as also are indices of a younger age. However, since nowhere in the surrounding area have we been able to find evidence for younger Eocene deposits, we presume that the beds up to and including DJ. 744 are entirely within the Palaeocene.

Samples collected by Dr. W. D. V. Jones, planktonic foraminifera identified by Dr. W. H. Blow. Thin sections deposited in the Department of Palaeontology, British Museum (Natural History), and registration numbers quoted.

SYSTEMATIC DESCRIPTION

Genus *HETEROSTEGINA* d'Orbigny 1826

Type species. *H. depressa* d'Orbigny 1826; designated by Parker, Jones, and Brady 1865.

Heterostegina adamsi sp. nov.

Plate 51, figs. 13–15

Holotype. P46427, an equatorial section of a megalospheric form (sample DJ.742).

Other material. Two topotypic thin sections: equatorial section of a microspheric form (P 46428), and axial section (P 46429) (sample DJ.742). Also numerous thin sections, in the collection of BP, from six other limestone samples; in all about a score of specimens.

Type horizon and locality. Sandy limestone overlying Auradu Limestone, Gerigoan Hill, Somalia.

[*Palaeontology*, Vol. 10, Part 2, 1967, pp. 314–16, pl. 51.]

Age. Upper Palaeocene.

Derivation of name. After Dr. C. G. Adams.

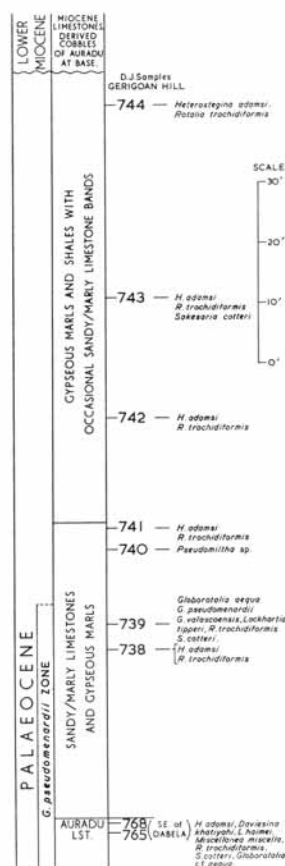
Description. From the axial section, the species is seen to be evolute and to have a small polar boss. In equatorial section the nucleoconch is bilocular, the protoconch measuring 0.12 mm. \times 0.1 mm., and the deutoconch 0.11 mm. \times 0.07 mm. The diameter of the test is 1.5 mm. There is 1 whorl in a radius of 0.4 mm., and $1\frac{1}{2}$ whorls in a radius of 1.05 mm. There are 11 septa in the first whorl, and 11 septa in the next half whorl, the chambers being narrow, high, and very operculine in appearance. There are apparently no partitions subdividing the chambers in the first whorl, subsequent to which they are sporadically developed and often incomplete or broken (in those cases where the median canal is not closed over distally), except near the end of growth where some complete partitions are present forming chamberlets which are 0.13 mm. high and 0.11 mm. wide.

In the microspheric form there are about $2\frac{1}{2}$ whorls in a radius of 0.8 mm., and approximately the first $1\frac{1}{2}$ whorls have no partitions, the later stages being like the megalospheric form.

Remarks. A thorough search through the literature (including Ellis and Messina's 'Catalogue of Foraminifera') has failed to reveal any form which could be regarded as at all closely related. In Miocene forms such as *H. costata* d'Orbigny *levitesta* Papp and Küpper, *H. costata* d'Orbigny *politata* Papp and Küpper, *H. granulata* Papp and Küpper *praeformis* Papp and Küpper, and *H. heterostegina* (Silvestri) *praecostata* Papp and Küpper, partial partitions appear at an earlier stage of growth, are more numerous, and when complete the chamberlets formed are relatively much higher than in *H. adamsi*. The relatively long undivided stage in *H. adamsi*, with narrow, high chambers, and the subsequent fairly high proportion of partial partitions in relation to complete ones, are considered to be primitive characters.

Acknowledgement. Permission to publish this paper has been given by the British Petroleum Company Limited.

VERTICAL DISTRIBUTION OF *Heterostegina adamsi* IN SOMALIA



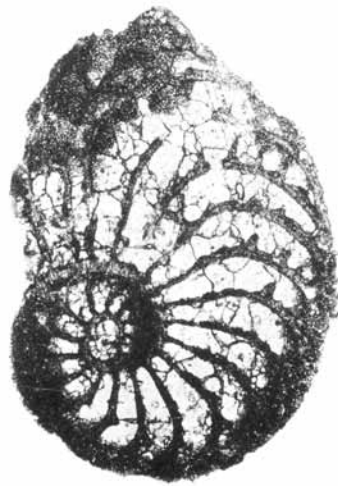
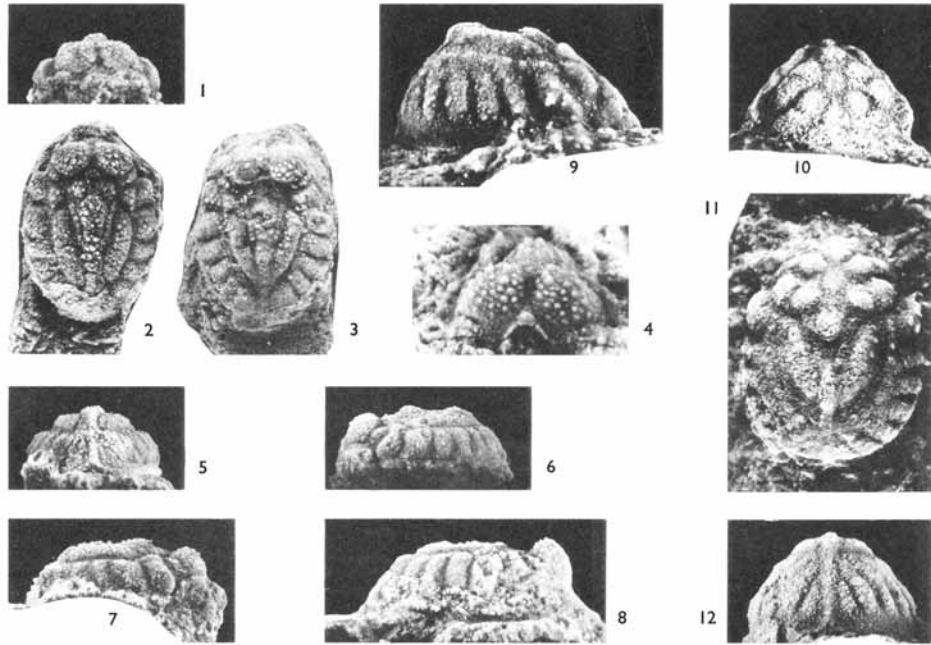
TEXT-FIG. 1.

REFERENCES

- BOLLI, H. M. 1957. The genera *Globigerina* and *Globorotalia* in the Palaeocene-Lower Eocene Lizard Springs Formation of Trinidad, B. W. I. *Bull. U.S. natn. Mus.* **215**, 61-82.
- ELLIS, B. F. and MESSINA, ANGELA, 1940. *Catalogue of Foraminifera*. Am. Mus. Nat. Hist. (supplements post-1940).

F. E. EAMES
W. J. CLARKE
British Petroleum Co. Ltd.,
BP Research Centre
Chertsey Road,
Sunbury-on-Thames,
Middlesex

Manuscript received 4 March 1966



13



14



15

GOLDRING, *Cyclus*
EAMES and CLARKE, Palaeocene *Heterostegina*