

15. LARGER FORAMINIFERA FROM HOLE 98

W. H. Akers, Chevron Oil Company, New Orleans, Louisiana

Large specimens of *Heterostegina antillea* Cushman, *Miogypsina panamensis* (Cushman), *Lepidocyclina* (*Lepidocyclina*) *canellei* Lemoine and R. Douvillé, and *Camerina* cf. *C. panamensis* (Cushman) were identified in the core catcher sample from Core 5, Hole 98 (Plate 1). The association of these fossils with abundant planktonic microfossils (see data by C. W. Poag elsewhere in this volume) reflects disparate environments for the living organisms whose remains occur in Core 5. The component of larger foraminifera undoubtedly was derived from a relatively shallow-water reef milieu.

The taxonomy of Cole (1957 and 1964) is followed for the larger foraminifera discussed here. Our specimens of *Miogypsina panamensis* (Cushman), as illustrated on Plate 1, Figure 2, closely resemble the individual figured by Drooger (1952, Plate 3, Figures 1a,b) as *Miogypsina* (*Miogypsina*) *thalmanni* Drooger from the Tabera Formation at Baitao, Dominican Republic. Cole (1957, p. 321) placed Drooger's species in *Miogypsina* (*Miogypsina*) *gunteri* Cole and later (1964, p. 145), in *Miogypsina panamensis* (Cushman). Only two specimens, referred here provisionally to *Camerina panamensis* (Cushman), were observed.

There are no age disparities evident in Core 5. Both the larger foraminifera and the stratigraphic distribution of planktonic species indicate the Late Bormidian Stage (lower part of Zone N. 3 of Blow, 1969, Figure 20).

The association of *Heterostegina antillea* Cushman, *Miogypsina panamensis* (Cushman), *Lepidocyclina* (*Lepidocyclina*) *canellei* Lemoine and R. Douvillé, and *Camerina panamensis* (Cushman) is characteristic of the Bohio Formation and the middle member of the Caimito Formation of the Panama Canal Zone (Cole, 1964, p. 146). Woodring (1960, p. 27, 29) referred the middle member of the Caimito Formation to the *Globorotalia kugleri* Zone of the planktonic foraminiferal sequence developed by Bolli (1957, p. 100) for the Cipero and Lengua formations of Trinidad. Blow (1969, p. 282) related the *Globorotalia kugleri* Zone to his own Zone N. 4 and later part of Zone N. 3.

The association of the species of larger foraminifera identified in Core 5 is also characteristic of lower

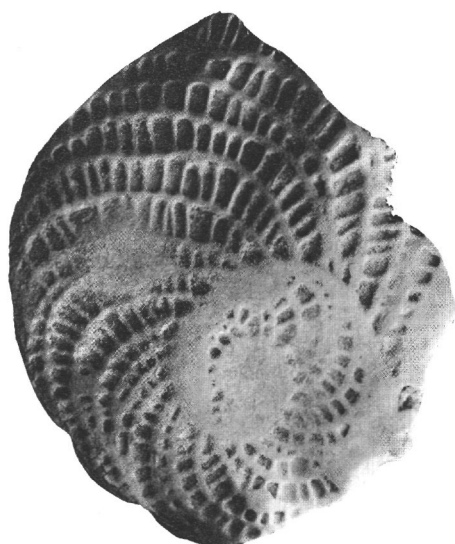
carbonate beds of the "*Heterostegina*" and upper beds of the "*Marginulina*" Zones of the Anahuac Formation of the northern Gulf of Mexico region (Akers and Drooger, 1957, Figure 1). These occurrences are at or just prior to the evolutionary incipience of *Globorotalia kugleri* Bolli. These subsurface beds of coastal Texas, Louisiana, Mississippi, Alabama, and Florida (part) are assignable to the lower part of Zone N. 3 of Blow (1969).

"Half-sections" of the specimens illustrated for this report were prepared by finger pressure using carborundum grit and a glass plate after the method employed by C. W. Drooger (personal communication, 1957) in much of his researches on the Miogypsinidae.

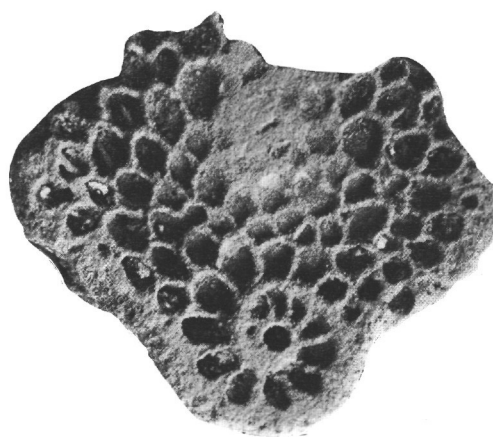
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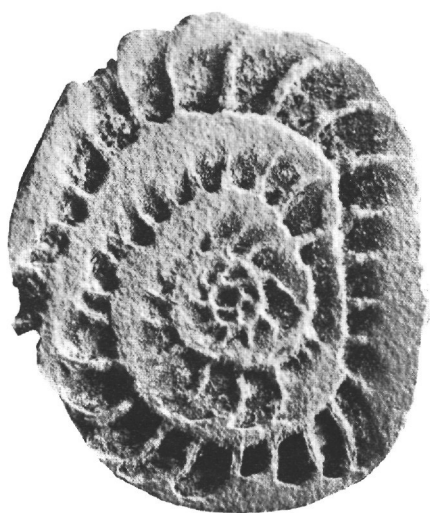
PLATE 1



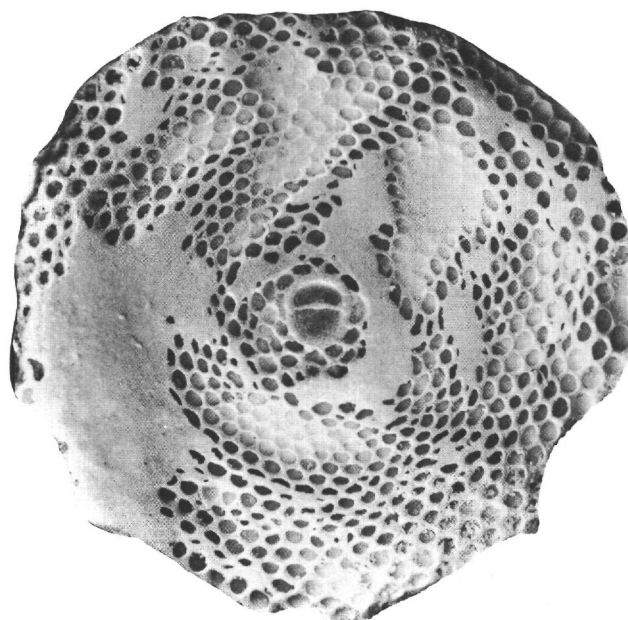
1



2



3



4

All figures are scanning electron micrographs of larger foraminifera from Hole 98, Core 5, Core Catcher.

Figure 1 *Heterostegina antilles* Cushman. Median section. X18.

Figure 2 *Miogypsina panamensis* (Cushman). Equatorial section. X42.

Figure 3 *Camerina* cf. *Camerina panamensis* (Cushman). Median section. X30.

Figure 4 *Lepidocyclina* (*Lepidocyclina*) *canellei* Lemoine and R. Douvillé. Equatorial section. X42.