

THE GENUS *ORBITOIDES* IN AMERICA, WITH DESCRIPTION OF A NEW SPECIES FROM CUBA¹

DONALD W. GRAVELL
Gulf Production Company, Houston, Texas

ABSTRACT

The genus *Orbitoides* of Upper Cretaceous age is widely distributed in Eurasia but has been recorded only in Jamaica in the Western Hemisphere. A new species, *O. palmeri*, from a well near Havana, Cuba, is described here.

Recently, while at Scripps Institution of Oceanography, University of California, La Jolla, California, the writer was given by Mrs. Dorothy K. Palmer about 18 specimens of a species of *Orbitoides*, which were obtained by Dr. Robert H. Palmer from a depth of 950 feet in a well a short distance northwest of the village of Campo Florido, Havana Province, Cuba. Acknowledgment and thanks are here expressed to Dr. T. Wayland Vaughan for suggestions and criticism in the preparation of this note.

The genus *Orbitoides*, according to present information, is restricted to the Upper Cretaceous. It has long been known to occur in Europe, Arabia, India, and Tibet; but hitherto there has been only one previous mention of its occurrence in the Western Hemisphere. Matley (1929) records from the basal complex of Jamaica a species designated by A. Morley Davies as "an orbitoid foraminifera of Upper Cretaceous aspect, approaching *Orbitoides apiculata* Schlumberger." The specimens from Cuba are here described as a new species named *Orbitoides palmeri*.

GENUS *ORBITOIDES* D'ORBIGNY, 1847

Genolectotype, *Orbitoides media* (D'ARCHAIC)

Orbitoides D'ORBIGNY, 1847, Geol. Soc. London, Quart. Jour., Vol. 4, p. 11; 1850, Cours élément. Paléont., Vol. 2, p. 193, fig. 316.

Silvestrina PREVER, 1904, Rev. Ital. Paleont., Vol. 10, p. 122, pl. 6, fig. 3.

Orbitella H. DOUVILLE, 1915, Acad. Sci., C. R., Vol. 161, p. 666, figs. 5, 6; 1921, Soc. géol. France Bull., 4th ser., Vol. 20, p. 214.

Test lenticular, more or less compressed, surface ornamented with vermicular pillars or radiating costae. Embryonic apparatus enveloped by a thick wall, normally quadrilocular, in some specimens trilocular or

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bilocular. Equatorial chambers with a curved outer wall and converging lateral walls formed by the outer walls of the preceding annuli. Communication between the chambers by a few lateral stolons.

ORBITOIDES PALMERI GRAVELL, N. SP.

Plate 22, figures 1-10

Test small; form biconical, one side more rounded than the other; diameter up to 4 mm., average 2.5 mm.; thickness up to 3 mm., average 1.5 mm. Surface of test ornamented by costae formed by the distal ends of the pillars, which are of clear shell material and do not project appreciably above the general surface of the test. Costae originate at the apex, from which they radiate peripherally. They are vermicular and long, attaining a length of 1.0 mm. and a thickness of 200 μ . The costae near the periphery vary in outline as seen in plan from roughly circular, with a diameter of about 30 μ , to more or less curved ridges which may attain a length of 300 μ and a width of about 50 μ . The vermicular costae vary considerably in the degree of their development, being only slightly developed in some specimens.

Embryonic apparatus ellipsoidal, composed of four chambers in most specimens, apparently three in some specimens. The entire apparatus is embraced by a perforate, thick common-wall, perforations about 5 μ in diameter. Length of the apparatus, 450 to 530 μ ; width, 360 to 400 μ ; thickness of wall, about 60 μ . All of the specimens are of the megalo-spheric form.

The equatorial chambers in horizontal sections have curved outer walls. The inner walls of most chambers converge and are formed by the outer walls of the chambers of preceding annuli; the length of the transverse diameter exceeds that of the radial. Near the embryonic apparatus, the radial diameter ranges from 30 to 70 μ ; and the tangential diameter from 80 to 120 μ . Communication between the chambers is by means of stoloniferous openings, each chamber communicating with the two adjacent in both the preceding and succeeding annulus. The walls are about 10 μ thick; roofs and floors cribriform perforate, the perforations about 6 μ in diameter.

In vertical sections, the equatorial chambers are about 80 μ tall near the embryonic chambers; they increase in height toward the periphery, and at a distance of 1.1 mm. from center attain a height of about 200 μ . Most of the chambers show on their proximal sides two large stoloniferous apertures, which range in diameter from 18 to 30 μ .

The lateral chambers are low and arched; not arranged in definite tiers; about 12 layers on each side of the equatorial layer; length of chamber spaces from 35 to 70 μ ; height from 7 to 12 μ ; roofs and floors perforate, from 12 to 35 μ thick. In the central part of test there are pillars of irregular width, those near the periphery smaller and more regular.

This species, in the features of its embryonic apparatus and of its equatorial and lateral chambers, closely resembles *Orbitoides media* (d'Archaic) from the Upper Cretaceous (Maestrichtian) at Royan, on the Gironde, France. It differs, however, in the character of the surface ornamentation, *O. media* being entirely covered with vermicular radially arranged costae.

Locality and geologic horizon. Well drilled by Mr. Sage, a short distance northwest of the village of Campo Florido, Havana Province, Cuba; depth 950 feet; Upper Cretaceous. Material obtained by Dr. Robert H. Palmer.

Types. Cotypes, three uncut specimens, and three thin sections deposited in U. S. National Museum. Paratypes, Scripps Institution of Oceanography.

LITERATURE

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EXPLANATION OF PLATE 22

FIGS. 1-10.—*Orbitoides palmeri* Gravel, n. sp. 1-3, surface views $\times 10$; 4, same as 2, $\times 5$; 5, horizontal section, $\times 28$; 6, enlarged view of embryonic apparatus $\times 28$; 7, same $\times 74$; 8, same as 5, $\times 78$; 9, enlarged view of equatorial chambers showing chamber communications, $\times 74$; 10, vertical section, $\times 28$.

