The types are from the Upper Cretaceous, White chalk of Meudon, near Paris. It occurs fairly widely distributed in the upper Senonian of Europe. In our material it ranges from the Saratoga chalk down to the Annona chalk.

**Cibicides constrictus** (Hagenow) (Pl. 7, fig. 10)


*Cibicides constricta* CUSHMAN, Journ. Pal., vol. 5, 1931, p. 315, pl. 36, figs. 7a-c.

Specimens similar to the one figured on our plate have been referred to the above species. They are common in the Saratoga chalk, but have not been noted elsewhere in our collections.

**Cibicides berryi** Cushman (Pl. 7, fig. 11)


"Test free, biconvex, dorsal side less convex than ventral, peripheral margin slightly rounded and slightly subcarinate; chambers numerous, 9 to 10 in the last coil, involute on ventral side, sutures depressed, slightly distinct, wall punctate; aperture an arched opening at the base of the last formed chamber with a slit extending under the dorsal margin of the chambers. Diameter, 0.35 mm."

The types are from the Ripley, from Dave Week's place on Coon Creek, 3½ miles S. of Enville, 7½ miles N. of Adamsville and ½ mile E. of main Hendersonville-Adamsville road, McNairy County, Tennessee. The holotype is redrawn on our plate.

I have not found material in our collections.

---

**219. SOME NOTES ON THE GENUS CANDORBULINA**

By J. A. Cushman and A. L. Dorsey

The genus *Candorbulina* was erected by Dr. Jedlitschka in 1933. It has not been referred to since in the literature so far as we have observed. It is of interest therefore to record the occurrence of the genus in America, and to note some of its re-
relationships to other genera of the Globigerinidae.

Genus CANDORBULINA Jedlitschka, 1933

Genoholotype, Candorbulina universa Jedlitschka, 1933

Test similar to Orbulina, but with the apertures consisting of one or more rings of small openings coinciding with the edge of contact of the earlier attached Globigerina-like chambers with the adult spherical one.

Jedlitschka described the single species, Candorbulina universa, from the Miocene of Czechoslovakia, and gave numerous figures of the exterior showing the pores, and of interiors with the early attached globigerine chambers. In our material, we have found very similar specimens, some of which are figured on our plate. The early stages while definitely globigerine, suggest that there may be dorsal secondary apertures which would indicate that Candorbulina was derived from Globigerinoides instead of from Globigerina. Jedlitschka figures a young stage with two openings, which strongly suggest Globigerinoides.

If such be the case, it would not be a very great step to the circular group of pores characteristic of Candorbulina. The globular chamber in Candorbulina does not usually entirely cover the earlier ones, as it does in Orbulina, and instead of being truly spherical the final chamber usually has an area which slightly projects above the general outline of the spherical chamber, and represents the area of the earlier chambers. In some specimens, this projection is very marked. The early chambers are shown in Plate 8, figure 7.

In the same paper in which he figures the specimens of Candorbulina, Jedlitschka figures and names certain bilobed tests as Candeina biloba. Such specimens apparently differ from Candorbulina according to his figures in not developing a complete, spherical chamber, but having a ring of pores about the line of contact of the chambers, a structure which in reality does not differ from that of Candorbulina. We have noted these “bilobed” tests (Pl. 8, fig. 8) occurring with Candorbulina in the Miocene of Austria, Egypt, and Florida. The surface details in both forms seem identical, and it is strongly suggested that they are but forms of one species. Although not showing well in the figure, the original specimen of figure 8 shows the early stages
at the surface just as they occur in *Candorbulina* in the same sample.

In figure 9 is shown a specimen in which two globular chambers have been added on opposite sides. Although difficult to make out, some of our specimens do show the line of pores along the line of attachment of the globular chamber and the preceding one. All the evidence seems to point to the fact that these forms all represent a single species which, in its adult form or possible senescence, adds one or more globular chambers at the sides which only partially enclose the earlier ones. If this be correct, the "Candeina" species figured by Jedlitschka would be included in the range of variation of *Candorbulina universa*.

So far as we have seen from the material at our disposal, *Candorbulina* has occurred only in the Miocene. Being a pelagic form, it would naturally have had a wide distribution. Our material shows specimens from the Miocene of Czechoslovakia, Hungary, Austria, Egypt, and in America from the Eastern Coastal plain regions of the United States from Maryland and Florida, and in Panama and Venezuela. We have not found the genus earlier in the upper Oligocene material available, nor in the Pliocene or Recent. It would seem therefore that *Candorbulina* originated from *Globigerinoides* in the Miocene, and gave rise to *Orbulina*, but itself becoming extinct. If this be the case, *Candorbulina* should make a good index fossil for the Miocene.

---

220. TWO NEW SPECIES OF FORAMINIFERA FROM THE Oligocene, Lincoln Formation, of Washington

By J. A. Cushman and D. L. Frizzell

Pending the publication of a paper on the fauna of the Lincoln formation, descriptions of two new species are given here with figures, so that they may be available to workers on this group.

**EPONIDES KLEINPELLI** Cushman and Frizzell, n. sp. (Pl. 3, fig. 11)

Test comparatively large for the genus, trochoid, biconvex, in peripheral view the ventral side flattened in the umbilical region