gest breadth slightly above the middle. The alar prolongations of the sutures in the last-formed chambers are distinct, 5—6 of them at a suture, whereas the other ornamentation consists of some irregular knobs. The margin is rounded.

The specimens seem to belong to *Bolivinoides polonica* Pozaryska (Acta Geologica Polonica, Vol. 4, Wardzawa, 1954, p. 252, fig. 1). This species was described from Gora Pulawska. in a drilling, 24 m, in Danian marls.

When we consider that the highest developed *Bolivinoides* in the Cretaceous of Holland and Belgium, *Bolivinoides gigantea,* in its utmost ornamentation is found in the Lower Cr 4 and reworked in the overlying Ma, and that in the thick layers (thickness up to 50 m) of the whole M-complex no *Bolivinoides* occur, this discovery is of much importance. Pozaryska mentioned, that the Danian deposits yield a rich foraminiferal fauna, some of them bearing type characters of the Tertiary fauna, since such genera as *Uvigerina, Alabamina* and *Coleites* are to be found there (p. 63 of the reprint, summary in English). Quite the same can be said of the Upper Md fauna; here also the Tertiary character of the Foraminifera is striking. In this respect the finding of this species of *Bolivinoides,* the last known form of the cretaceous group of *Bolivinoides decorata,* together with many other species with Tertiary character, as in Poland, seems to be of importance.

FORAMINIFERA FROM THE CRETACEOUS OF SOUTHERN LIMBURG, NETHERLANDS. XVII.

by J. HOFKER

LAGENA ACUTICOSTA Reuss. Pl. 3.

Lagena acuticosta Reuss, Sitz. ber. Math. Nat. Cl. k. Akad. Wiss. Vienna, Vol. 44, 1861 (1862), p. 305, pl. 1, fig. 4.

Lagena acuticosta Reuss, Visser 1950 Thesis Leiden, p. 234, pl. 2, fig. 1.

Test globular or slightly elongate, covered by 12 rounded, often somewhat irregular costae, running from the base of the test towards the protruding aperture, but not reaching it, and ending at the base into a very short spine. Base rounded to flattened; wall in most cases shining, with very fine pores between the costae. Wall thick. Aperture provided with inconspecuous and fine radial openings, closed at its end. Never a real neck is formed.

Length 0,75 mm, or somewhat smaller(thickth 0,55 mm.

Brotzen (1936, Sver. geol. Unders., Ser. C, 396, p. 112) believes that his *Lagena isabella* d'Orbigny from the Santonian of Sweden and *L. acuticosta* Reuss may be the same species. But not only his specimens lack the closed aperture, but also they are much smaller with much finer costae. Visser described one single specimen, which is very small, from the Mc of South Limburg, where it is always very rare.

The species is not found in any sample from the Ma, the lower Mb; it occurs in several samples, always rarely, from the basal conglomerate with Kunrade habitus of the lowest Mc upward, and becomes more abundant to common in samples from the lower Md; in the upper Md it is equally missing or extremely rare.

L. acutocosta has been found also in many samples from the Kunrade chalk, especially those which seem to be of the lower Md time.

Striking is, that the specimens seem to lack the typical antapical closed part at the centre of the base, always found in Lagenae. So it may belong to quite a different group.

FORAMINIFERA FROM THE CRETACEOUS OF SOUTHERN LIMBURG, NETHERLANDS. XVIII.

by J. HOFKER

EPONIDES TOULMINI (Brotzen). Pl. 4.

Eponides boueana Toulmin, 1941, p. 601, pl. 81, figs. 6, 7.

Eponides toulmini Brotzen, 1948, p. 78, pl. 10, fig. 16.

Pseudoparrella meeterenae Visser, 1950, p. 278, pl. 7, fig. 9.

Eponides gratus (Reuss), Van Bellen, 1946, p. 57, pl. 7, figs. 4—9.

Test slightly oval, lenticular, ventral side sometimes more convex than dorsal side. Chambers at ventral side somewhat inflated and thus forming a small umbilical depression.

Periphery subacute to acute. Chambers distinct on both sides, often at the centre of the dorsal side somewhat indistinct by thickening of the wall. Chambers at dorsal side gradually increasing in size, longer than broad, with very oblique sutures wich run smoothly into the periphery which is slightly lobulate in the later formed chambers. Sutures at dorsal side distinct, often slightly limbate, transparent. At the ventral side the sutures are slightly depressed, radiating from the centre. In the last formed whorl 5—6 chambers are visible.

The wall is coarsely and distinctly perforate; at the ventral side only the peripheral parts of the chamberwalls show the coarse pores, and in geologically older specimens or in young specimens the ventral walls may also lack the pores.

Aperture a narrow slit on the ventral suture of the last formed chamber, covered by an irregular lip which sometimes adhaeres at the wall of the chamber on which the aperture is formed. Near to the margin a distinct closed protoforamen forms an indentation of the apertural face.

Length of tests in the M and K of South-Limburg about 0,66 mm, often somewhat smaller, thickness of test 0,40 mm.

Transverse sections show the thickened walls in older chambers and the septal foramina formed by somewhat widened apertures, with a small solid toothplate at the marginal border of the apertures.

Toulmin describes the species from the Eocene (?) of Alabama; Brotzen showed, that it cannot be identified with *Rotalina boueana* from the Tortonian of Vienna; I could study specimens from that locality and can affirm Brotzen's view. Visser described it as a *Pseudo-parrella,* obviously mistaking the closed protoforamen for the real foramen. Brotzen does not mention this indentation of the apertural face, though his figure of the apertural face shows it.

The coarse pores, the indentation of the apertural face and the inner toothplate, together with the oblique sutures on the dorsal side point to the genotype of the genus *Rotalia, R. trochidiformis* from the Eocene of France. So the species may be a true *Rotalia.* In that case it has to be called *Rotalia toulmini* (Brotzen), and *Pseudoparrella meeterenae* is a synonym.

I found the species in many specimens in some of the samples from Basbeck, in some specimens in the highest samples from Hemmoor ("Stensiöinen-freier Bereich" of Wicher), in the *Pseudotxtularia*-zone, it is present in many samples of the Kunrade Chalk, not so common in the uppermost Mb, the Mc and the Md. Furthermore I found it in samples from the Montian (Drilling of Beeringen; drilling Beatrix in the Peel; in some layers covering the coal-layers in the mine Emma and in the mine Oranje Nassau). In the Montian it has been described by Van Bellen as *Eponides gratus Reuss* (1946, p. 57, pl. 7, figs. 4—9). *E. gratus* (Reuss) however is a quite different species.

Eponides toulmini is small in the Basbeck and Hemmoor samples and here it shows only traces of pores at the ventral sides, especially in the microspheric specimens; in the K and M it is larger, and the ventral side of outgrown specimes show the pores, but for the centre. The Paleocene specimens always show the pores at the ventral side. Since Brotzen mentions a poreless ventral side (in his figure pores are drawn at the ventral side near to the periphery) it may be that these specimens from the lower Paleocene are reworked, as is the case with many others of his species.