

FORAMINIFERA FROM THE CRETACEOUS OF SOUTH LIMBURG, NETHERLANDS. LXIII.

Some Rotaliid Foraminifera from the lower Paleocene above the Maestrichtian Tuff Chalk.

By J. HOFKER

VALVULINERIA RAVNI Brotzen. Fig. 1.

Valvulineria ravni Brotzen, 1948, Sver. geol. Unders., C, 493, p. 74, pl. 9, fig. 13.

Test nearly biconvex, at the dorsal side in the centre slightly depressed, at the ventral side also depressed, but the overlapping lips of the last formed chamber often somewhat bulky. Margin rounded (Brotzen speaks of "fairly acute", but his figure shows a rounded margin). Periphery slightly lobulate. Number of chambers in the last formed whorl mostly 9, the last chambers inflate at the ventral side, more than at the dorsal side. Sutures radiating, slightly depressed. Walls smooth and shining, with very fine pores all over.

There is close resemblance with *Gyroidinoides pontoni* Brotzen, but the depressed centre of the dorsal side points to *Valvulineria* and not to *Gyroidinoides*, though species of the latter genus are known in which the lip at the ventral side equally overlaps the umbilical cavity. I believe, that the forms found in the hollows in the quarry Curfs near Houthem fall within the variability of Brotzen's *Valvulineria ravni*, which is found in the Lower Paleocene of Sweden.

GAVELINELLA LIMBATA (Brotzen). Fig. 2

Cibicides limbata Brotzen, 1948, Sver. geol. Unders., C, 493, p. 85, pl. 13, fig. 7.

Test flat, compressed. Dorsal side slightly convex, ventral side concave. Margin rounded or somewhat acute, seldom keeled. All the whorls visible at the dorsal side, with rapidly increasing size of the chambers, 6 chambers in the last formed whorl and with transparent and slightly raised distinct sutures which are rounded backward. On the ventral side a narrow umbilical hollow is surrounded by the chambers with slightly depressed sutures distinctly rounded backward; the last formed chamber is broad with a long apertural slit along the ventral suture and forms a distinct lip at the umbilicus,

which lips also are seen at some of the former chambers. Wall smooth and glossy, with very fine pores.

Though Brotzen believes the aperture to be of the *Cibicides*-type, the author found strong indications which point to the typical umbilical aperture of *Gavelinella*; moreover, the septa are double. The species in some respects resembles *Discopulvinulina trinitatis* (Cushman and Renz) (see: Hofker, Natuurhist. Maandbl., 51, 1962, p. 8, fig. 1 on p. 9) which was identified by the author with *Cibicides limbata* Brotzen; the specimens found in the hollows in the hard ground above the Maestrichtian Tuff Chalk in the quarry Curfs near Houthem, however, do not show the typical slightly keeled margin, and have a narrower umbilical hollow. Maybe that both forms found in this Lower Paleocene belong in the variability of Brotzen's species as well as in that of the species of Cushman and Renz.

GAVELINELLA PSEUDOLIMBATA

nov. spec. Fig. 3.

Test small, ventral side flat, margin sub-acute, dorsal side more convex. At the ventral side the umbilicus is very much open, showing some of the inner whorls, with very distinct curved sutures which are hyaline and slightly raised; the walls show rather coarse and distinct pores. At the dorsal side the chambers are strongly overlapping and reach the centre; the slightly curved sutures are somewhat depressed and do not show the structure of those of the ventral side. Here no pores are found, as in so many species of *Gavelinella*. The aperture is visible at the margin as a narrow slit, and continues at the ventral side under an indistinct lip, which lip also is seen at the umbilical margin of some of the older chambers.

In some respects the species resembles *Cibicides simplex* Brotzen, as figured 1948, l.c., pl. 13, fig. 5 (not fig. 4, which is the real *G. simplex* Brotzen); it may be the same species, and the latter was found by Brotzen in the Lower Paleocene of Sweden. Brotzen regards both his types as belonging to the same species, which I do not believe (compare Hofker, Natuurhist. Maandbl. 1961, p. 66, fig. 4, p. 64).

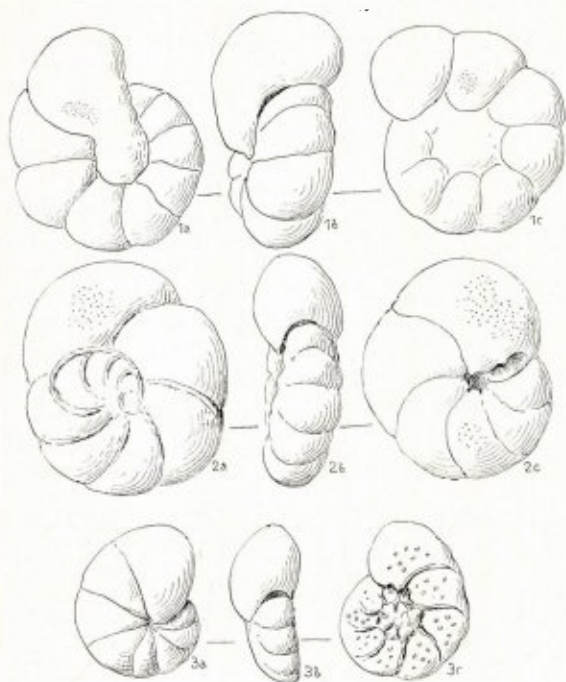


Fig. 1. *Valvulineria ravni* Brotzen. Holes in the hard ground on top of the Md in the quarry Curfs, near Houthem, South-Limburg. $\times 70$. a, ventral side; b, side view; c, dorsal side.

Fig. 2. *Gavelinella limbata* (Brotzen). Same sample. $\times 70$. a, dorsal side; b, apertural face; c, ventral side.

Fig. 3. *Gavelinella pseudolimbata* nov. spec. Same sample. a, dorsal side; b, side view; c, ventral side.

GAVELINELLA LELLINGENSIS Brotzen, Fig. 4.

Gavelinella lellingensis Brotzen, 1948, Sver. geol. Unders., C, 493, p. 75, pl. 11, fig. 1, 2; textfig. 20.

Test relatively large, dorsal side slightly concave in the centre, final chambers strongly inflated, 8 chambers in the last formed whorl, earlier chambers scarcely visible. Margin strongly rounded, periphery lobulate. At the ventral side the chambers reaching the small umbilical hollow. At both sides sutures straight or slightly bended. Aperture a sutural slit at the ventral side, covered by a distinct lip which also is seen at the former chambers around the umbilical

cavity. Wall coarsely perforated with strong pits in which the pores are found. Wall shining, thick.

The species is common in the fillings of the holes in the hard ground of the upper Md in the quarry of Curfs, near Houthem, and also, according to Brotzen, in the Paleocene of Lellinge, Denmark, which is lowermost Paleocene; it is found abundantly in the lowest Paleocene at Hvallöse, Jutland, Denmark.

GAVELINOPSIS MONTICULA nov. spec. Fig. 6, 7.

The ventral side of the test is flat; the margin is acute with distinct blunt keel, the dorsal side is convex. At the ventral side the umbilical part is filled by a distinct chalk knob, and surrounded by 9-10 chambers with slightly depressed sutures which are bent backward; the chambers are low. At the dorsal side the chambers reach the centre, with their most inflated part near that centre, and walls bending down towards the acute margin. The aperture is a low slit at the margin. The dorsal side is without pores, at the ventral side fine pores in the chamber walls.

The species was found in the lowermost Paleocene above the Maestrichtian Tuff Chalk in the quarry Curfs, near Houthem.

GAVELINOPSIS SUCCEDENS (Brotzen). Fig. 5.

Cibicides succedens Brotzen, 1948, Sver. geol. Unders., C, 493, p. 80, pl. 12, fig. 1, 2; textfig. 21.

Ventral side flat, with a hyaline filling of the umbilical hollow; margin acute, often slightly keeled; periphery slightly lobulate at the last formed chambers. At the ventral side the chambers are slightly broader than high, with sutures distinctly curved backward; sutures slightly depressed. At the dorsal side the chambers do not reach the centre which is occupied by a more or less prominent hyaline chalk bud, smooth with the surface. Here the chamberwalls gradually bend towards the acute periphery, and the sutures also are curved backward. At the ventral side the chamber walls are pierced by distinct, somewhat coarse pores; the margin is poreless,

At the dorsal side the last formed chambers

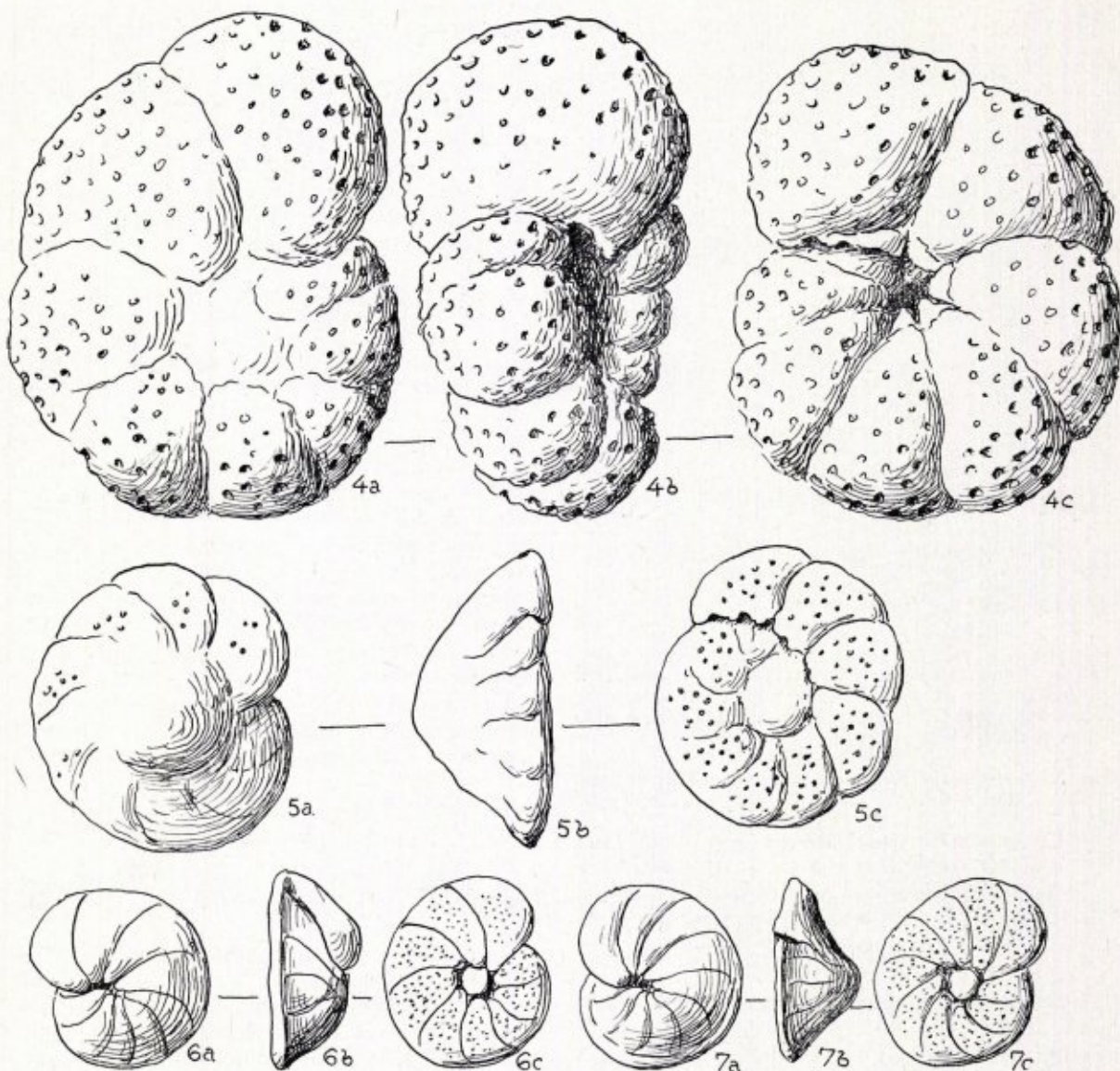


Fig. 4. *Gavelinella ellingensis* Brotzen. Paleocene above the Md in the quarry Curfs, near Houthem, South-Limburg; sample Hofker 254. $\times 65$. a, dorsal side; b, side view; c, ventral side.

Figd. 5. *Gavelinopsis succedens* (Brotzen). Same locality, sample Hofker 27. $\times 65$. a, dorsal side; b, side view; c, ventral side.

Fig. 6, 7. *Gavelinopsis monticula* nov. spec. Same locality, sample Hofker 254. $\times 65$. a, dorsal side; b, side view; c, ventral side.

also may show some pores, often finer than the ventral pores. The aperture is a narrow slit near the umbilical ventral suture, covered by an indistinct lip, and opening into the cavity between the chamber and the umbilical chalk knob.

The species is common in the lower Paleocene above the Tuff Chalk in the quarry Curfs near Houthem. It was found, also commonly in the lowest Paleocene at Hvallöse, Jutland, Denmark, and mentioned commonly in the lowest part of the Paleocene of Sweden. Similar specimens are found in the upper part of the Md in South-Limburg, Holland, and in the upper part of the Danian in Denmark.

SNUITKEVERS

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De naam dragen de Snuitkevers met recht. Het zijn over het algemeen kleinere kevers, waarvan de kop in een smalle puntige snuit uitloopt. Bij het begin van die smalle, lange snuit vinden wij de ogen, aan de top de monddelen, een bijtende mond.

Het zijn practisch allemaal planteneters; met dat ver vooruitgestoken mondje kunnen sommige soorten grote schade aanrichten.

Een van de bekendste en grootste soorten is wel de grote dennesnuittor, *Curculio abietis*, ruim een centimeter lang en donker van kleur, de haartjes, die op de harde chitinehuid zitten, vormen een enigszins lichtere tekening (fig. 1). Zij leggen haar eieren gewoonlijk aan de wortels van dennen en sparren, waar de larven dan beginnen te eten. De schade, die de volwassen kever aanricht, is echter groter, want die bijt op den duur hele stukken van de bast af, waardoor de naalden vergelen en afvallen. Zij eten zelfs ook van de knoppen.

Heel wat onschuldiger is de *Lixus iridis*, die ongeveer even groot is en bezet is met een gele uitscheiding. Zij legt haar eieren in schermbloemige planten, waar de larve van binnen in leeft. Daar ze zich gewoonlijk tot wilde planten bepaalt, kan men niet van schade spreken. Het is een mooie kever.

Even mooi en met kleine blokjes getekend, maar veel kleiner, is *Cionus scrophulariae*, een snuitkevertje, dat op het helmkruid voorkomt (fig. 2). Als de larfjes gaan verpoppen, maken ze eerst een perkamentachtig coconnetje, dat



Fig. 1. De grote dennesnuittor, *Curculio abietis* L. 4 ×.

nogal lijkt op de vruchtjes van het helmkruid. Mogelijk geeft het dus enige bescherming aan het popje.

Onder de snuitkevers komen ook soorten voor, die we in verschillende stadia in de vruchten van planten vinden. Zo legt *Anthrenomus pomorum* haar eitjes in de appelbloesem.

Een andere soort met heel lange en dunne snuit, *Balaninus nucus*, komt voor in hazelnoten.

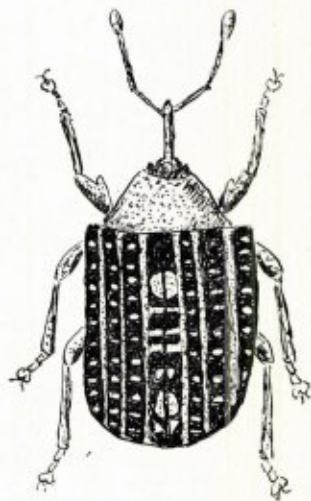


Fig. 2. *Cionus scrophulariae* L. 20 ×.