FORAMINIFERA FROM THE CRETACEOUS OF SOUTH-LIMBURG, NETHERLANDS, LXXVIII.

The occurrence of SIPHOGENERINOIDES ELEGANTA (Plummer)

as a time-marker in Holland and Belgium.

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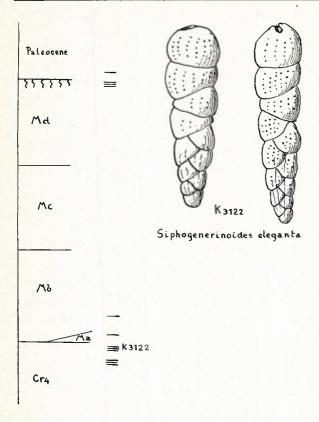
In a former paper I described this species and gave already many data about its ocurrence (Natuurhist. Maandblad, 1957, vol. 46, pp. 101—102, figs A—E). More localities have now been traced with this typical guide-fossil which many authors already have indicated as a very reliable guide for the Cretaceous-Tertiary boundary. From the data found here we can be sure that also in Holland and Belgium this species is of utmost value to detect that boundary. I will give here a list of all appearences of the species known to me now from specimens which I determined without doubt.

- 1. Drill-hole Grand Vivier, near Mons, Belgium, 63 m. Tuffeau de Saint Symphorien.
- Samples Hofker 350 and 351, quarry North, just at the boundary between Cr 4 and Mb, North Eastern Belgium.
- 3. Canal Albert, samples Hofker 628 and 629, North Eastern Belgium, just at the boundary between Cr 4 and Mb. Samples A13, A14, A21, A22, ga'thered by Prof. Calembert in Canal Albert, Upper Cr 4 and boundary Cr4/Mb.
- 4. Saint Pietersberg, quarry ENCI, Ma-layer just behind the administration-building, sample Hofker 154.
- 5. Sample 709, quarry Blankenberg, Ma-layer.
- 6. Samples 668 and 669, Way Wylre-Berghoven, Ma-layer and just below that layer.
- In many samples taken from the holes in the hard ground at top of the Md in the quarry Curfs, Houthem (Brotzen's Paleocene).

- 8. Sample Hofker 493, Way Wittem-Eys, near Eyserlinde, top of the Cr 4.
- 9. In a sample from Kjölby-Gaard, Jutland, Denmark, in the top of the *Pseudo-textularia-zone*.
- In several samples form the Lower Danian at Stevns Klint, and in samples from the Middle Danian from Fakse.
- 11. In the Wills Point Formation, Stream Bluff, Texas, America. (Hofker, l.c., p. 102, fig. A).
- 12 In the Basin of Gams, Austria, Coll. Wicher, from the Paleocene.
- 13. In the Lower Paleocene of Sweden (Brotzen, Sver. geol. Unders., 1948, C. 493, pl. 10, fig. 11, given here as Loxostoma applinae).
- 14. In a sample of uppermost Cr 4 in the hollow way from Wahlwylre to Eys.
- 15. K 3122, Petit Lanaye, Belgium (Chateau Caster), 20 cm below the typical Mb.

So in Holland and Belgium we find the species in 'two levels: one at the boundary between the Cr 4 or Craie Tuffoide and the Mb, or in the Tuffeau de Saint Symphorien, which corresponds with that level; in Denmark at the boundary of the Skrivekridt and the Danian, and in the Danian itself; and than once again in the Lower Paleocene of Belgium and Holland (Brotzen's Paleocene), and in Austria, and many other localities of the Tethys-region (literature), inTexas, New Yersey, Alabama, in America. As yet, in the Maestrichtian Chalk Tuff, stratigraphically found between those two levels, the species was found very rarely; this may be due to facial circumstances; but its occurrence in the Danian of Denmark gives the continuation in more favorable circumstances. So we may resume, that Siphogenerinoides eleganta is typical for the boundary Maestrichtian-Paleocene, in which boundary the Maestrichtian Chalk Tuff as well as the Danian is found.

Wicher (Paläont. Zeitschr., vol. 30, 1956, p. 113) mentions Siphogenerinoides eleganta as "die stratigraphisch wichtigste Art..... die in Paläozän besonders haüfig wird" (im Becken



von Gams, Austria). Nakady (Journ. Pal., vol. 31, 1957, p. 435) mentions it from the Dano-Montian of Egypt, from just at the boundary Maestrichtian-Danian up into his "Montian"; so here it appears just as is the case in Belgium, Holland and Scandinavia (see also his table I, p. 436). He also mentions it from the Lizards Springs Formation of Trinidad, which is Paleocene in age (p. 444). Olsson (1960, Journ. Pal., vol. 34, p. 31, fig. 24) describes it from the Hornerstown Formation and states that "this species has been found only from beds of Paleocene age". Le Roy (1953, Ged. Soc. Amer., Mem. 54, p. 49, Pl. 2, fig. 20—21) found it in Egypt only in the basal Paleocene.

The species is abundant at the type-locality of the Maestrichtian of Dumon't, the Pietersberg, where it is found at those places in which the the Ma is missing (Canal Albert, Southern part of the ENCI-quarry), or in the Ma itself, just below or in the basal beds of the Maestricht

Tuff Chalk. It here occurs together with the first primitive evolution stages of Globigerina pseudobulloides and G. daubjergensis, stages which the author described already from those localities (Natuurhist, Maandblad, 1960, vol 49, p. 37, pl. 1). Luterbacher and Premoli Silva (Riv. Ital. Paleont., 1964, vol. 70, pp. 67-128) found the same fauna of small Globigerines at the top of the Cretaceous (or the base of the Danian) in the Appennines in Italy; they call the small first stages of G. pseudobulloides: Globigerina sabina and G. eugubina, and the first stages of G. daubjergensis they named Globigerina minutula. Since above this "zone of Globigerina eugubina" they detected bioclastic chalks with Omphalocyclus macroporus, Lepidorbitoides sp., Hellenocyclus, Orbitoides apiculata and Siderolites calcitrapoides, and since they found between these beds Globigerina pseudobulloides and G. daubjergensis, just as they are found in the Tuff Chalk of Maastricht, also a bioclastic chalk, their discovery of that zone below these chalks with the characteristic species from the Tuff Chalk of Maastricht, clearly shows that in Holland and Belgium the stratigraphy is identical, and that the Maestrichtian of Dumont, the Tuff Chalk of Maastricht, is of Danian age. Luterbacher and Premoli Silva believe that these bioclastic chalks above their Zone with Globigerina eugubina (identical with the zone just below our Tuff Chalk of Maestricht) have been deposited secondarily in the Danian; the Tuff Chalk of Maastrich't also shows many characters of a secondarily deposited sediment. But the occurrence of Siphogenerinoides eleganta clearly shows, that this sedimentation of the bioclastic Tuff Chalk of Maastricht, equal to the bioclastic chalk in the Appennines, with the same foraminiferal fauna, are of Danian age; in that these authors are quite correct. Once again we come to the conclusion, that the age of the Maestricht Tuff Chalk, the type of the Maestrichtian of Dumont, has been deposited in the Danian.

NIEUWE LEDEN

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