van Heerdt & Sluiter (1956). — The results of bat banding in the Netherlands in 1955. Nat. Hist. Maandbl. 45, 5/6, p. 62.

Samenvatting:

De auteurs melden de resultaten van het vleermuis-onderzoek in Nederland gedurende het jaar 1956.

Vergeleken met de resultaten van het vorige jaar is het aantal gedurende de winterslaap in de mergelgrotten van Zuid-Limburg gevangen dieren weer enigszins teruggelopen (Tabel I). *Myotis dasycneme, M. emarginatus, M. myotis, M. nattereri* en *Rhin. hipposideros* zijn alle in aantal afgenomen. *M. daubentonii, M. mystacinus* en *Plecotus auritus* handhaven zich. Van de overige soorten zijn de aantallen te klein om conclusies te kunnen trekken.

Thans worden alleen nog de soorten *M. dasycneme, M. daubentonii, M. mystacinus* en *M. nattereri* geringd.

Twee interessante vangsten werden gedaan door de heer Van der Starre, die te Reeuwijk resp. op 7 november 1955 en op 1 februari 1956 een *Myotis dasycneme* ♀ vond. De eerste was geringd op 14 augustus 1955 in een (natuurlijke) grot te Furfooz, bij Dinant, de tweede op 17 april 1954 in een dito grot te Godine-sur-Meuse, gelegen tussen Namen en Dinant. Wij kunnen geen verklaring geven voor de zonderlinge zwerftocht van dit tweetal midden in de winter.

Een andere interessante vondst deden wij in een kraamkamer van *M. daubentonii* te Groenekan nabij Utrecht op 29 mei 1956. Van de 32 ♀ ♀, die de holle boom verlieten, was er één, nr. 20731, welke geringd was op 5 januari 1955 in de Nieuwe Groeve te Heer. Het diertje had een afstand van 155 km afgelegd.

Er werden voorts nog enige kraamkamers bezocht in Zd. Limburg en één in Friesland, in welke laatste we 39 *M. dasycneme* ringden. Het onderzoek in de forten rond Utrecht werd voortgezet. Holle bomen in de bossen van Bilthoven en Groenekan werden geregeld gecontroleerd, waarbij 115 exs *Nyctalus noctula* en 32 *Myotis daubentonii* van een ring werden voorzien.

Wij willen allen, die, aan het Vleermuis-onderzoek in 1956 hun medewerking verleenden, hier danken, in het bijzonder Ir. D. C. van Schaïk, die ons, als steeds, met raad en daad terzijde stond.

Utrecht, december 1956.

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

THE DEVELOPMENT OF SIGMOMORPHINA SOLUTA BROTZEN AND OF SIGMOMORPHINA BROTZENI nov. sp.

by J. HOFKER

Sigmomorphina soluta Brotzen, 1948, Sver. geol. Unders., Ser. C, No. 493, p. 53, pl. 8, figs 6—10; text-fig. 10, 16.

Sigmomorphina soluta Brotzen, Visser, Thesis, Leiden, p. 247, pl. 3, fig. 1.

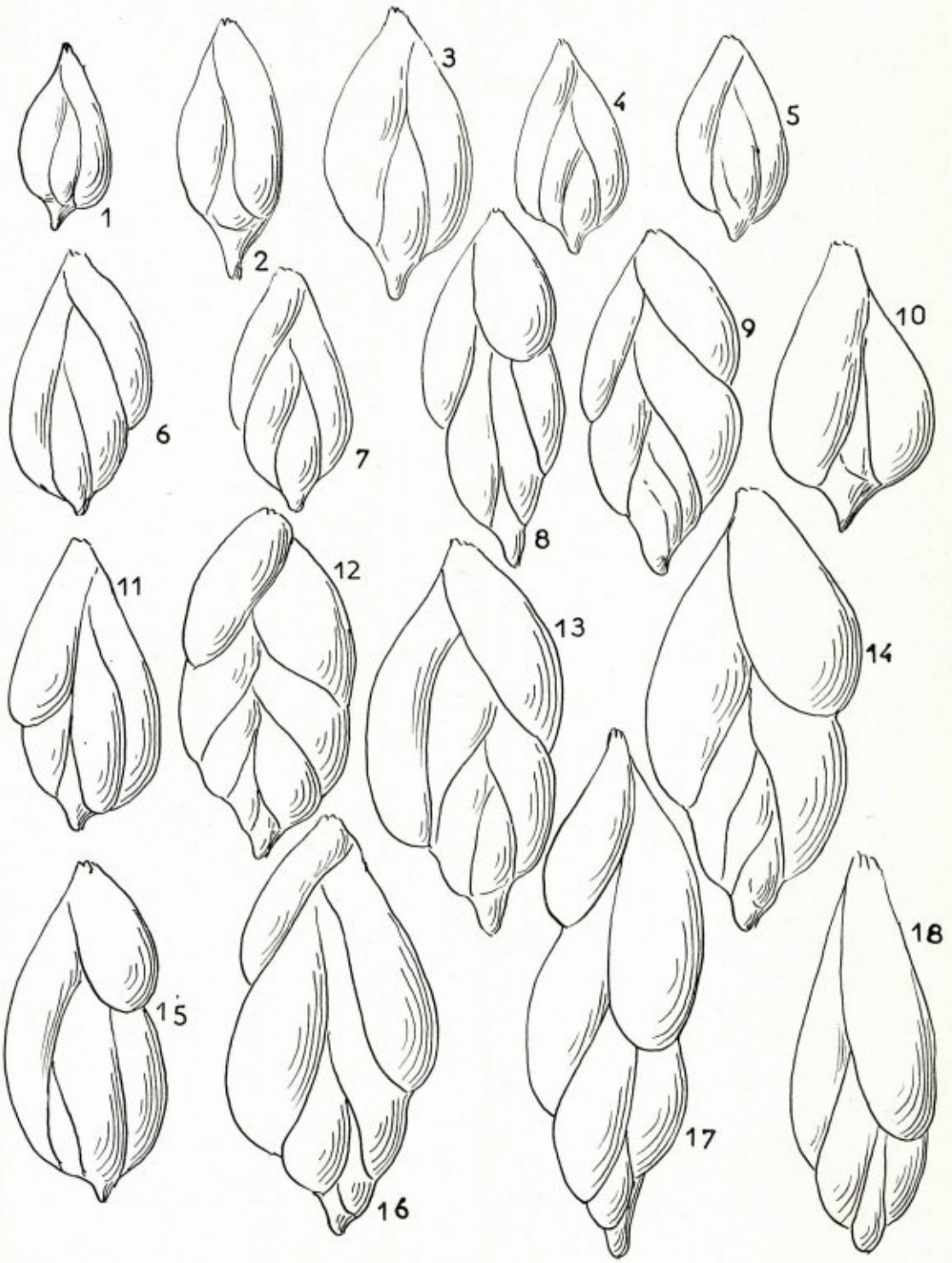
Guttulina caudata (d'Orbigny), Visser, ibid., p. 237, pl. 4, fig. 6.

Sigmomorphina sp., Visser, ibid., p. 248, pl. 3, fig. 2.

In the upper layers of the "craie grise" in Belgium, then commonly in the "craie tuffoide" in Belgium and the Cr 4 of Holland, a small species of a *"Guttulina"* is found, which in the lowermost Mb develops gradually in a slightly more complex form. In the Craie grise and the Cr 4 the species shows some similarity with the Eocene species *Guttulina caudata,* but for the fact, that in the latter species the apical spine is formed by a thin, solid chalk spine, whereas in all specimens observed from our Cretaceous, the spine is not solid but is formed by the lengthened proloculus. In that way it is impossible to identify this species with the Eocene one, as Visser did (Specimens of the type-locality were available) (Fig. 1—3).

This first form of a grandiose development shows the few chambers of the test in a strictly quinqueloculine series, as is the case in typical *Guttulina* in the sense of Cushman and Ozawa (1930, Proc. U.S. Nat. Mus., Vol. 77).

But all species of *Sigmomorphina* also start with a quinqueloculine arrangement of the chambers, whereupon the typical sigmoline arrangement starts. Thus, in the Lower Mb, the beginning of that sigmoline arrangement is started by some chambers added to the primitive form, which chambers do not reach the apical end of the test (Fig. 4—7). In the Upper Mb, the Mc and the Md the species develops into stout forms, adding more and more sigmoline chambers to the first quinqueloculine part (Fig. 8, 9, 11—15), and this arrangement comes to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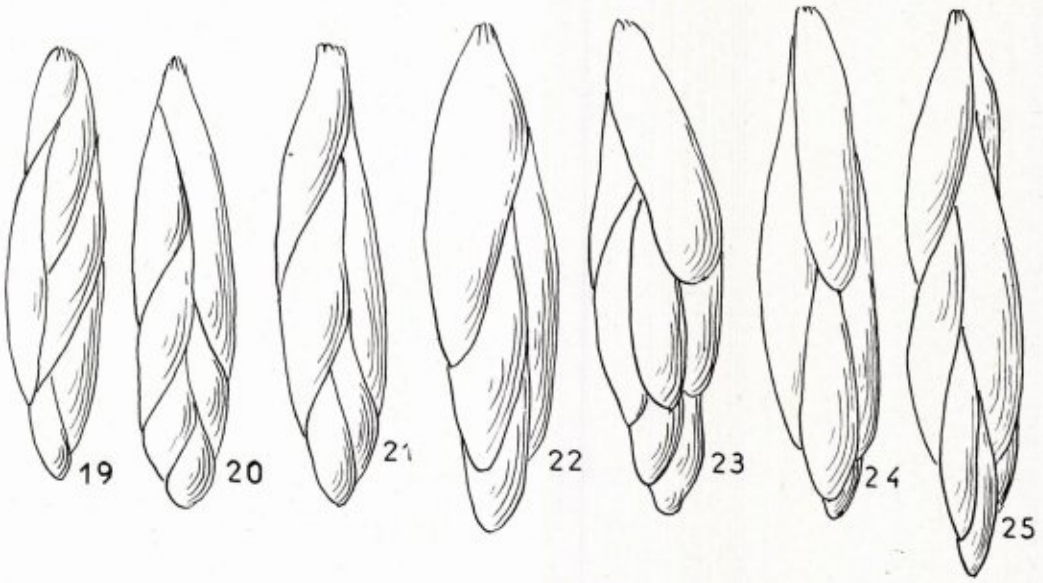


an abrupt end in the Lower Paleococene found just above the Upper Md-strata. Here the later formed chambers become voluminous and bulky, giving rise to forms which have also been figured by Brotzen, 1948, viz. his pl. 8, fig. 10 (Fig. 16, 17).

In the Upper Mc between the typical outgrown forms of *Sigmomorphina soluta,* once again smaller forms appear, though stouter than those in the beginning of the development (craie grise, Cr 4), which once again show a much simpler structure and a more or less quinqueloculine arrangement (Fig. 10).

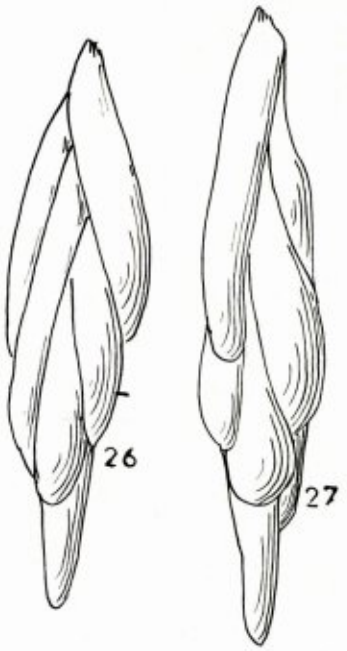
In the Lower Md these forms with a somewhat more slender habitus than the typical *soluta* continue their development in adding, as did in the Lower Mb the typical form, sigmomorphine chambers, not reaching the apical base of the test (Fig. 11, 18). In the Upper Md those tests are fairly common and have been figured and mentioned by Visser, 1950, as *Sigmomorphina* sp. (p. 248, pl. 3, fig. 2). The development is parallel to that of the typical *soluta,* but for the much more slender test (Fig. 19—22). Once again more and more sigmoline chambers are added, and once again the last formed chambers are more inflated and not even reaching the middle of the test. In the Lower Paleocene this development continues (Fig. 23—25), and very slender, even grotesque forms are found in the tropical Montian above the Tuffeau de Ciply, which overlies the Lower Paleocene. Here the species once again comes to an abrupt end (Fig. 26, 27).

Such slender forms have been figured by Brotzen also; they cannot be distinguished from his figures 8 and 9, pl. 8 (1948). Only the most slender forms of the Montian were not found by Brotzen, and he missed the poor primitive forms which we find in the Upper Md.

So we must conclude, that Brotzen in reality did mix two different species, very much allied, in his species *Sigmomorphina soluta.* Since Brotzen begins his description with "This species includes elongate and narrow forms and forms of broad and strongly compressed types", we can choice for the name.

I will retain the name of *Sigmomorphina soluta* for the species which begins its development in the Upper Gulpen Chalk and ends in the Lowermost Paleocene; the second species, the slender one, beginning its first development in the Upper Mc or Lowermost Md, and ending in the tropical Montian. I name here *Sigmomorphina brotzeni,* in honor of its discoverer. It is obvious that *S. brotzeni* is a mutant of *S. soluta.*

This development of these two species is of much stratigraphic value. For, in the Cr 4 the typical quinqueloculine primitive stages are rather common; at the end of the Mb, at the boundary with the Mc, the much stronger sigmoline forms are very typical and common; in



the Lower Paleocene the *soluta* species is rather common with its strongly developed sigmoline chambers.

In the Uppermost Md, in which *Lockhartia roestae* (Visser) finds its highest development, the more primitive stages of the slender form, *S. brotzeni,* are very conspicuous and are found in nearly all samples; the Lower Paleocene is much characterised by the stout end-stages of *soluta* and the slender, not yet totally developed forms of *brotzeni.* In the Montian above the Tuffeau de Ciply, the very slender and grotesque forms of the end-development of the *brotzeni*-species are common.

Figures. All × 55.

1. primitive *S. soluta;* sample Kruit, 545, Cr 4, ENCI, Maastricht.
2. Idem; sample Kruit, 549, Cr 4, ENCI, Maastricht.
3. Idem; sample Kruit, 554, highest Cr 4, ENCI, Maastricht.
4. First sigmoline chamber added; sample Egeler and Den Text, 40; Ma, Pietersberg, Maastricht.
5. Idem; sample Kruit, 465, lowest Mb, ENCI, Maastricht.
6. Idem; sample Kruit, 496, Upper Mb, ENCI, Maastricht.
7. Idem; sample 496 Kruit, same locality.
8. More chambers which do not reach the apical end are added, typically sigmoline; sample 482, Upper Md, ENCI, Maastricht.
9. Idem, Idem.
10. First stage of *Sigmomorphina brotzeni,* quinqueloculine; sample 1344, Geol. Stichting, quarry Van der Zwaan, Pietersberg, Maastricht.
11. More sigmoline chambers are added to *S. brotzeni;* sample Hofker, 146, quarry of the Tombe, Pietersberg, Maastricht.
12. Outgrown specimen of the broad form, *S. soluta;* sample Kruit, 517, ENCI, upper Mc, Pietersberg, Maastricht.
13. Outgrown specimen of *S. soluta;* sample Kruit, 519, Upper Mc, ENCI, Maastricht.
14. Bulky specimen of *S. soluta,* sample Egeler and Den Text, 66, ENCI, Md, Maastricht.
15. Bulky specimen of *S. soluta,* sample Hofker, 33, quarry Curfs, upper Md, Houthem.
16. End-stage of *S. soluta;* sample Hofker, 27, quarry Curfs, Lower Paleocene, Houthem.
17. End-stage of *S. soluta;* sample Hofker; quarry Terblijt, Lower Paleocene.
18. Specimen of *S. brotzeni,* more sigmoline chambers added; lowest Upper Md, outcrop 4, ENCI, sampling Romein; 26, 25 m, Pietersberg.
19. *S. brotzeni,* typical specimen for the Upper Md; outcrop 4, ENCI, sampling Romein; 28,50 m, Pietersberg.
20. *S. brotzeni,* idem; outcrop 4, ENCI, Upper Md, sampling Romein; 29 m, Pietersberg.
21. *S. brotzeni,* idem; outcrop 4, ENCI, Upper Md, sampling Romein; 30 m, Pietersberg.
22. *S. brotzeni,* idem; outcrop 4, ENCI, Upper Md, sampling Romein; 33,50 m, Pietersberg.
23. *S. brotzeni,* development typical for the Lower Paleocene; sample Hofker, 441, outcrop Ravensbos, Lower Paleocene.
24. *S. brotzeni,* idem; sampling Meyer, Canal Albert near Vroenhoven, at km 27, Belgium; Lower Paleocene.
25. *S. brotzeni,* idem; same outcrop as 24, Lower Paleocene.
26. *S. brotzeni,* most slender and bizarre form, typical for the tropical Montian; shaft Maurits III, 177, 50 m.
27. *S. brotzeni,* idem; same locality as 26, same depth.