

niet genoemde Syrphiden, alle min of meer zeldzaam en meestal fraai van kleur en tekening, die ik in de Doort gevangen heb. Het zijn: *Volucella inflata*, *Penthesilia ranunculus*, *Zelima nemorum*, *Z. florum*, *Z. curvipes*, *Chrysotoxum cautum*, *Ch. festivum*, *Ch. bicinctus*, *Ch. vernale*, *Ceriodes conopoides*, *Temnostoma bombylans*, *T. vespiforma*, *Spilomyia saltum*, *Cinxia borealis*, *Tropidia scita*, *Parhelopilus versicolor*, *P. lunulatus*, *Eurimyia lineata*, *Eu. transfuga*, *Ischyrosyrphus laternarius*, *I. glauca*, *Didea alneti*, *D. intermedia*, *D. fasciata*, *Baccha elongata*, *Xanthogramma citrofasciata*, *Triglyphus primus*, *Syrphus lapponica*, *Pipiza luteitarsis*, *P. signata*, *P. noctiluca*, *P. lugubris*, *P. austriaca*, *Neoscia interrupta*, *Melanostoma ambiguum*. Sommige zijn nieuw voor de Nederlandse en (of) voor de Limburgse fauna, volgens de Diptera-kenner Th. van Doesburg te Baarn, die mijn materiaal determineerde, zoals hij al eerder deed met *Lampetia spinipes*. Op deze en andere novae species kom ik terug in een volgend artikel.



Spilomyia saltum ♀. x2

Tek. R. Schwarzenberg naar foto.

Uit het voorgaande blijkt, dat het Querceto-Betuletum van de Doort, met zijn sub-associatie's een rijk gevarieerde Diptera-fauna herbergt, een reden te meer om te hopen, dat dit natuurmonument nog lang in de tegenwoordige toestand mag blijven. Meer dan elders misschien zal men hier de Nederlandse insektenfauna, de biologie vooral van de boeiende Diptera-wereld, kunnen bestuderen.

Conclusion: In the southern part of the com-

munity of Echt, prov. of Limburg, there is a wood, called The Doort, mediaeval „Dorent”, that means Thornbush. It is the remaining of an old natural oak and hornbeam wood with several sub-associations and of large importance not only for its flora but also for its great variety of insects. Its fauna has still to be studied and a rather great number of insects (flies, gnats and others) that are unknown in the Dutch fauna up till now, surely will be discovered. For this reason as for others we should like the Doort be declared a nature reserve.

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

The pore-increase of *Gavelinella danica* (Brotzen) in Danian, Lower Paleocene and Montian in Denmark and in Holland-Belgium, showing the Maestrichtian of Dumont's being of Danian age.

by J. HOFKER

Pore-diameter orthogeneses have been proved of considerable stratigraphic value (Hofker, Orthogenesen von Foraminiferen, N. Jahrb. Geol. Pal., Abh., vol. 108, 1959, p. 239-259). They have already been used by the author to obtain a general stratigraphy of the Cretaceous of South Limburg and for comparison of that Cretaceous with that of neighbouring countries (Hofker, 1956, Species of the genera *Gavelinella* and *Gavelinopsis*, etc. Natuurhistorisch Maandblad, vol. 45, p. 99-110, with table); the pore-increase of *Gavelinopsis involuta* (Reuss, 1862) proved already the identity in time of the Danian of Denmark with the Maestrichtian Tuff Chalk (Maestrichtian of Dumont's) (Hofker, The Danian age of the Maestrichtian Chalk Tuff proved by the orthogenesis of *Gavelinopsis involuta* (Reuss); Natuurhist. Maandblad, vol. 48, 1959, p. 51-53). Moreover, the author proved by means of the planctonic species of Foraminifera, that the Tuffeau de Ciply, the type of the Montian, must be younger than the lowest Paleocene of Holland and Belgium (Hofker, Arguments for a lower Paleocene age of the sediment above the Upper Md in the quarry Curfs, near Houthem; Natuurhistorisch Maandblad, vol. 48, 1959, p. 18-30).

Samples	Stages	Pore-diameters	Averages
Denmark			
Egsmark 840	Paleocene	3 32 32 16 5	62 .
Hvallöse 859	Paleocene (lower)	14 27 18 8 3 4	6,3 .
Rugaard 843	Paleocene	3 8 44 15 3 2	6,1 .
Hyttehusvej	Danian Zone V (Wind)	4 12 35 25 18 7	6,0 .
Hvallöse 863	Danian Zone IV (Wind)	6 11 43 16 7	5,9 .
Hjerim	Danian Zone III? (Wind)	1 5 20 18 6 3	4,9 .
Dalbyovre 898	Danian Zone III (Wind)	3 17 47 21 9 3 1	4,1 .
Stevns Klint	White Chalk top	* 18 20 13 2	3,3 .
Holland - Belgium			
Ciply, Carr. Hyon	Montian (type)	4 10 9 11 20 3	7,4 .
Maurits III, 178m	Montian	6 18 25 24 10	7,0 .
Beatrix	Montian	5 12 28 16 4	6,7 .
Curfs, 27	Paleocene (lower)	5 12 27 26 14 3	6,5 .
ENC3 Mb	„Maestrichtian“ (Dumont)	4 12 21 16 4 1	4,5 .
ENC3 Ma	Base „Maestrichtian“ (Dumont)	7 15 10 4	3,6 .
μ 3 35 4 45 5 55 6 65 7 75 8 85			μ 3 4 5 6 7 8

Pore-diameters of *Gavelinella danica* in Danian-Lower Paleocene in Denmark and in „Maestrichtian“-Lower Paleocene-Montian in Holland and Belgium.

Another species which shows an increase of pore-diameters during time is *Gavelinella danica* (Brotzen). It already begins in the upper Maestrichtian (in international sense), together with the appearance of *Belemnitella junior*. It then shows pores from 1,5-3 μ .

At the top of the white chalk, in the *Pseudotextularia*-zone, the pores of this species attain the diameter of about 3 μ (Hofker, *Die Pseudotextularia*-zone der Bohrung Maasbüll I und ihre Foraminiferen-Fauna; Pal. Zeitschr., vol. 30, p. 59-79, 1956); this is the case in the upper-Cr 4 of Holland, as well as in Germany and Denmark.

In the Danian of Denmark (type-Danian) the pores increase from about 3,5 up to 6,0 μ , during the zones I-V of Wind's; in the Lower Paleocene just above the Danian in Denmark, pore-diameters have been found from 6,1 to 6,3 μ in average.

In the Holland-Belgium area, the base of the Maestrichtian of Dumont's shows specimens with pore-diameter of 3,3 μ average; in the Mb above this zone, they amount to 4,5 μ average. During Mc-Md the species is too rare to get reliable results, but in the Paleocene just above the Md it is very common, and here

pores measure 6,5 μ in diameter, thus revealing once again, that this Paleocene is of the age of the lower Paleocene of Denmark. In the Montian, however, in Belgium (near Mons, type-locality) as well as in the same formation in Holland, pores were found from 6,7 to 7,4 μ in average, distinctly proving once again, that that stage is younger than the Paleocene above the Md as well as the lower Paleocene above the Danian in Denmark.

This result, in absolute agreement with what I found on other data previously, is in striking contradiction with the supposition made by Loeblich and Tappan (Correlation of the Gulf and Atlantic Coastal Plain Paleocene and Lower Eocene formations by means of planktonic Foraminifera; Journ. Pal., vol. 31, 1957, p. 1109-1137), especially where they deny the identity in age of the Maestrichtian Tuff Chalk with the Danian (p. 1115-1117) and stipulate a Danian age for the Montian (p. 1119). In reality, the type-Montian, as was already stated by the author, invariably lies above the lowest Paleocene, which in Denmark is found above the Danian; so, stratigraphically the Montian is younger than the Danian, and is not the oldest Paleocene at all; this once more is proved

by the pore-diameters of *Gavelinella danica*: in three undoubtedly Montian localities, these pores are larger than as found in the Lower Paleocene; and in the Lower Paleocene they are larger than in the Danian and the Maestrichtian Tuff Chalk. On the other hand, the pore-diameters of *Gavelinella danica*, found in the Montian stage, are nearly identical in diameter with what was found in the Vincentown-formation of New Jersey in America: 7,0-7,5 μ (Hofker, The Foraminifera of the Vincentown formation; Reports from the McLean Foraminiferal Laboratory, No. 2, 1955, p. 12); one of the commonest planktonic Foraminifera in the Vincentown formation, *Globorotalia pseudomenardii* Bolli, also is abundant in the Montian of Ciply (type-Montian); this species also is mentioned by Loeblich and Tappan, from the Vincentown Formation (Planktonic Foraminifera of Paleocene and early Eocene age from the Gulf and Atlantic Coastal Plains; U.S. Nat. Mus., Bull. 215, 1957, p. 173-198); since Loeblich and Tappan place the Vincentown formation into the upper half of the Paleocene, this would lead to the conclusion, that the Montian cannot be placed, together with the Danian, into the lowest part of the Paleocene, as Loeblich and Tappan suggest.

The successive forms of *Gavelinella danica* (Brotzen) have been fully described and figured by the author (Hofker, *Gavelinella danica* (Brotzen), Natuurhist. Maandblad, vol. 44, p. 49-52).

Belgium-Holland	Denmark
Montian	Clayisch Paleocene
Lowest Paleocene	Lowest Paleocene
Maestrichtian Tuff Chalk	Danian Stage
White Chalk (Upper Gulpen Chalk, Cr 4)	White Chalk (just below Fisch Clay)

MACROLEPIDOPTERA IN MIDDEN-LIMBURG

door A. W. P. MAASSEN

In het volgende overzicht vermeld ik slechts mijn meest interessante vangsten in Midden-Limburg uit de jaren 1956-1960. Indien niet anders vermeld, hadden de vangsten plaats in de gemeente Montfort.

Pontia daplidice L. 1 ex. 22-6-1960.

Leptidea sinapis L. 1 ex. in mijn tuin 12-8-1956.

Colias crocea Tourc. f. *alba* ♀ Lempke, 1 ex. 8-8-1958. f. *helice* ♀ Hübner, 1 ex. Melick 30-7-1958.

Nymphalis polychloros (L.) Deze momenteel in ons land zeldzame vlinder komt hier geregeld voor en is er zeker niet zo zeldzaam.

Celerio galü Schiff. 2 ex. in 1959 (31-5 en 13-9) Dit laatste ex. behoort tot de 2e generatie.

Harpyia bicuspis Borkhausen. Een ex. van Vlodrop (13-8-1959) heeft slechts een halve middenband. In de Cat. van Lempke is deze vorm nog niet vermeld.

Leucodonta bicoloria Schiff. Gevangen te Boukoul (Swalmen) 2 ex. in 1958 (1-7 en 9-7) Hier ook weer gevangen in 1959 (Mevr. Pijpers).

Ochrostigma velitaris Hufn. Van deze zeer zeldzame soort ving ik 23-6-1959 een ♀ op licht.

Epicnaptera tremulifolia Hb. In 1960 2 ex. op licht (15-5 en 17-5). Deze vlinder vliegt in de schemering. Men moet dan ook reeds vroeg in de avond de M.L. lamp laten branden om deze soort te vangen.

Gastropacha populifolia L. Geregeld voorkomend, maar niet talrijk. In 1960 kreeg ik van een op licht gevangen ♀ ± 150 eitjes. Alle eitjes bleken echter onbevruucht te zijn.

Pelusia obtusa Henrich-Schäffer. Eén ex. op licht 20-7-1960. Dit is de 1e vangst in Limburg van deze soort!

Panthea coenobita Esp. Eén ex. 5-7-1957. Een zeer zeldzame soort. In Cat. Lempke (IV) worden slechts 2 vindplaatsen vermeld: Epen en Meerssen. Later ook in Vaals gevangen.

Cryphia raptricula Schiff. Een ex. 18-7-1960. Zeer talrijk in 1960 te Steyl en Tegelen (Ottenheym).