

gedurende de laatste 500.000 jaren zocht de rivier zich een weg, die in grote lijnen overeenkomt met haar huidige loop. In het begin werden toen zanden en grinden afgezet op het niveau van de huidige Pietersberg. Maar naarmate de Maas zich verder in haar huidige dal insneed werden de sedimenten, die vanuit Noord-Frankrijk en de Ardennen werden aangevoerd, op lagere niveaus ("terrassen") afgezet. Pas in de laatste honderduizend jaar heeft het Maasdal haar huidige vorm verkregen.

Dankbetuiging

De schrijver is zeer erkentelijk voor de hulp, die hij mocht ontvangen van de zijde van Mevr. Th. Verboeket, die het manuscript meermalen moest uittypen, en van Dhr. J.C. Franssen bij het afwerken der figuren.

Summary

The paleogeographic evolution of the southern Netherlands and northern Belgium since the Paleozoic shows the continuous influence on the sedimentation pattern of the two principal tectonic elements in that area: the Brabant Massif in the south and a complex graben zone to the north. Presumably, during the Devonian and Carbonife-

rous the Brabant Massif has been covered several times by a relatively thin and incomplete sequence of sediments. These deposits disappeared almost completely as a result of subsequent erosion phases. Thick, and more or less complete sequences accumulated in the grabens to the north. This overall sedimentation pattern has been only interrupted during the Late Cretaceous and Early Tertiary when inversion movements caused temporary uplift of the graben area. During that period the Brabant Massif was flooded by a shallow sea.

The boreholes Heugem and Kastanjelaan in Maastricht have proved that this area was located at the eastern flank of the Brabant Massif. During the Devonian-Carboniferous a narrow graben or depression existed between Visé and Maastricht. This graben is characterized by rapid local changes in the thickness and facies of the deposits.

Trilobites from the Dinantian Tn2b-c of the Kastanjelaan-2 borehole (Maastricht, the Netherlands)

C. Brauckmann

Fuhlrott-Museum, Auer Schulstrasse 20, 5600 Wuppertal 1, Federal Republic of Germany

The trilobites from the 335.10 - 335.25 m interval of the Kastanjelaan-2 borehole in the municipality of Maastricht (South Limburg, the Netherlands) belong to four different genera: *Cummingella maastrichtensis* Brauckmann nov.sp., *Phillipsia (Phillipsia) sp.*, *Piltona? sp.* and *Archegonus? nov.sp.* The conodonts and corals in this interval suggest a Dinantian Tn2b-c age.

Up to present, Carboniferous trilobites from the Netherlands have only been regarded by DORSMAN (1945), who briefly described some fragments from the marine Aegir level (base of Westphalian C; Upper Carboniferous) as *Griffithides* sp. (now probably better determined as *Paladin* sp.). Lower Carboniferous (Dinantian) trilobites were hitherto completely unknown. The more surprising was the discovery of trilobite fragments from several levels of the borehole Kastanjelaan-2 in the municipality of Maastricht (cf. BLESS *et al.*, 1981). The better preserved ones, to be described in this paper, are from the 335.10 - 335.25 m level, which is dated as Dinantian Tn2b-c by means of conodonts and corals. It should be noted that in equivalent strata in Belgium only different trilobite taxa have been found yet, while comparable species occur in slightly youn-

ger strata (Tn3a-b) of the Tournai region. Striking is the difference between the low number of specimens and the high number of different taxa.

Family PHILLIPSIDAE OEHLERT 1886
Subfamily CUMMINGELLINAE G. & R. HAHN 1967
Genus *Cummingella* Reed 1942.

Type species: *Phillipsia jonesii* Portlock 1843.

Diagnosis: G. & R. HAHN (1972), p. 341-342 ("Beziehungen").

Cummingella maastrichtensis Brauckmann nov.sp. (fig. 1-4, ?5).

Bollandia n. sp.?; BRAUCKMANN in: BLESS *et al.*, 1981, p. 352, pl. 15, (fig. 1).

Holotype: Pygidium (steinkern) NHMM 198243 (fig. 2a-b, 4a-c).

Type location: Borehole Kastanjelaan-2 in the municipality of Maastricht (South Limburg, the Netherlands).

Type horizon: The 335.10 - 335.25 m level of borehole, Dinantian Tn2b-c (see BLESS *et al.*, 1981, p. 348).

Distribution: Known only from the type locality and the type horizon.

Other specimens: *Cranidium* NHMM 198244 (fig. 1a-b, 3a-c), and perhaps free cheek NHMM 198245 (fig. 5).

Derivation of name: After the type locality.

Diagnosis: A species of *Cummingella* with the following characteristics. Glabella very compact, subquadratic in dorsal view, strongly convex both in longitudinal and transverse section, scarcely contracted at mid-length; 4 pairs of very shallow glabella furrows; anterior border covered by the overhanging glabella. Pygidium with 11 rings on the rhachis and 11 pairs of ribs on the pleural fields; pleural furrows broad (exsag.), reaching the border; interpleural furrows passing onto the border; anterior band of all ribs distinctly continuing on the border. Steinkern surface of the glabella densely granulated, pygidial rhachis (steinkern) with well marked irregular, rather spinous nodes.

Description: **Glabella** (paratype NHMM 198244; other parts of the cranidium are not preserved). Lateral

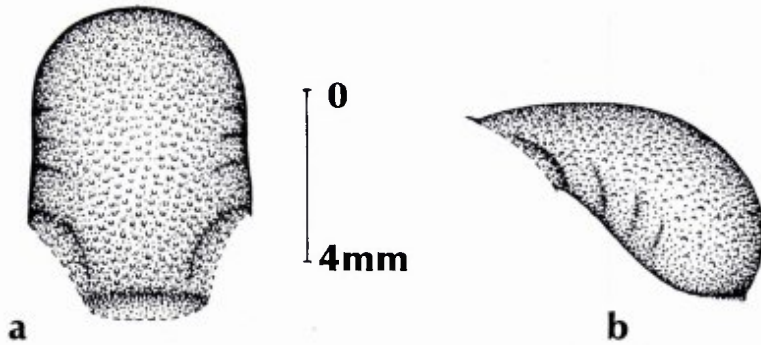


Figure 1. *Cummingella maastrichtensis* Brauckmann nov. sp. Reconstruction of paratype glabella, NHMM 198244. a: dorsal view. b: lateral view.

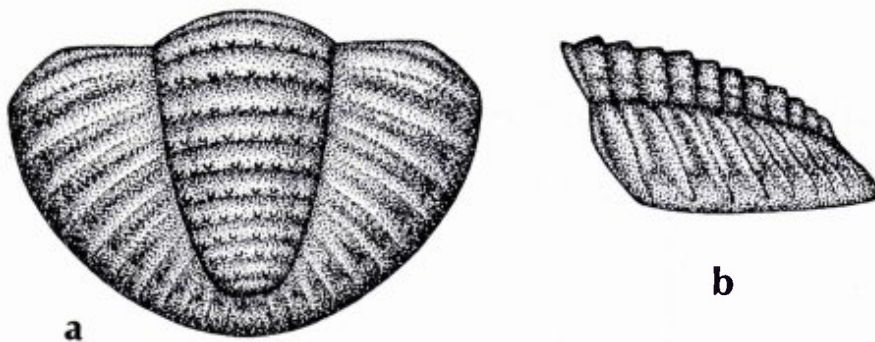


Figure 2. *Cummingella maastrichtensis* Brauckmann nov. sp. Reconstruction of holotype pygidium, NHMM 198243. a: dorsal view. b: lateral view (same scale as fig. 1).

view (fig. 1b, 3b): Scarcely curved (nearly plain and horizontal) in posterior half, but frontal lobe strongly bent down, distinctly overlapping the anterior border. Very strongly arched in anterior view (fig. 3c). Dorsal view (fig. 1a, 3a): Subquadratic, scarcely contracted at mid-length, frontal lobe nearly truncate in outline. 4 pairs of very shallow glabellar furrows; S1 and S2 beginning at the dorsal furrow, strongly curved backward (S1 perhaps not reaching the occipital furrow, but the poor preservation does not allow a definitive conclusion), S3 and S4 not connected with the dorsal furrows, very weak, directed more transversely than S1 and S2. The whole surface of the steinkern is distinctly granulated. Length 6.0 mm. Breadth at mid-length 4.0 mm.

Pygidium (holotype NHMM 198243). Lateral view (fig. 2b, 4b): Rhachis relatively low (ratio height of rhachis: height of pleural field = 1:3), curving gently down backward to the last ring,

then falling down steeply to the very short (sag.), convex post-axial part of the pleural fields; rings moderately prominent, with steep posterior slope; pleural field slightly inclined backward, nearly plain beside the rhachis, but becoming more convex against the posterior border; ribs moderately prominent; border convex. Posterior view (fig. 4c): Rhachis equally arched; inner half of pleural fields directed horizontally, outer half strongly bent downward to the convex border; dorsal furrows only weakly incised. Dorsal view (fig. 2a, 4a): Slightly elongate; rhachis broader than one pleural field, nearly parabolic in outline, long, with 11 rings; anterior 7-8 rings rather prominent, posterior ones more indistinct, but visible; axial furrows broad (sag.), weakly incised, directed nearly straight transversely, showing only very slight backward curvature against the dorsal furrows; dorsal furrows rather distinct; pleural fields with 11 ribs, no place for more

ribs; pleural furrows broad (exsag.), not deeply incised, reaching the convex, rather narrow and indistinctly marked border; interpleural furrows (= rib furrows) of all ribs weak, but passing onto the border; anterior bands of the ribs continuing on the border, breadth of the anterior and posterior bands of the ribs nearly the same (exsag.); steinkern of the rhachis with well marked, rather spinous irregular nodes. Lengths: pygidium 7.6 mm; rhachis 6.8 mm. Breadths: pygidium 10.6 mm; rhachis 4.2 mm.

Remarks: Perhaps also to this species belongs an isolated free cheek (NHMM 198245; fig. 5) of nearly cummingelloid outline, which shows a sculpture very similar to that of the glabella described above. Unfortunately the poor preservation does not allow an exact identification.

Discussion: Among the characteristic features of *C. maastrichtensis* the most important ones are (1) the very strong convexity of the overhanging glabella, in which this species shows quite un-cummingelloid, but bollandoid tendencies, and (2) the prominent sculpture both on the glabella and on the pygidial rhachis, which is also very uncommon in *Cummingella*. Both features led to the preliminary determination as "*Bollandia* n. sp.?", based on the at that time uncompletely prepared specimens. But mainly the configuration of the glabella furrows and the outline and structure of the pygidium (anterior bands of the ribs continuing on the border!) show that this species belongs to *Cummingella*. There is no other known species within *Cummingella* with shows this kind of combination of characteristics. Most closely related to *C. maastrichtensis* is a still undescribed taxon from the Tn3a-b, collected in several specimens in the Tournai region (SW Belgium), which will be described in detail in one of the next parts of the monograph on the trilobites of the Belgian Lower Carboniferous by G. & R. Hahn and the present author.

The main differences between these two taxa seem to be in the even much more spinous sculpture of the pygidium (both on the rhachis and the pleural fields) in the Belgian taxon, which

reminds that of the fruit of the Ericacean *Arbutus* and is comparable with the sculpture of the Japanese Carboniferous griffithidid trilobite *Parvidumus densigranulatus* Kobayashi & Hamada 1980. At present, without having examined the Belgian specimens in detail, the preservation does not allow an exact comparison, because the pygidium from Maastricht is exfoliated, while the Belgian ones are not. The differences in the sculpture could have been caused either by the different preservation or - perhaps more likely - by the more advanced development of the slightly younger Belgian taxon.

Subfamily PHILLIPSIIINAE OEHLERT 1886

***Phillipsia* (*Phillipsia*) sp.** (fig. 6).

Remarks: 1 very fragmentary and poorly preserved cranidium (NHMM 198246, fig. 6) shows in (1) the narrow, parallel-sided, smooth glabella and (2) the broad (tr.) anterior part of the fixed cheeks some features, which allow us to group it with *Phillipsia* (*Phillipsia*). But more detailed informations are impossible.

***Piltonia*? sp.**

Remarks: 1 small posterior part of an unnumbered pygidium is characterized by a very coarse granulation of *Piltonia*-type and can therefore tentatively be placed within this genus.

Subfamily CYRTOSYMBOLINAE HUPE 1953

***Archegonus*? nov.sp.** (fig. 7).

Remarks: 1 fragment of a right free cheek (NHMM 198247; fig. 7) is characterized by the following features: (1) border narrow, well marked, slightly elevated, (2) cheek area rising against the eye, (3) anterior branch of facial suture (a-j) strongly arched outwards (tr.), (4) eye (as far as visible) probably moderately large, and (5) - as the most important feature - a strongly convex swelling with densely granulated surface situated just obliquely in front of the eye. Concerning this last feature, the specimen is totally unique and surely belongs to a new species. Only the "eye cushions" of *Archegonus* (*Langgonbole*) KOBAYASHI & HAMADA 1973

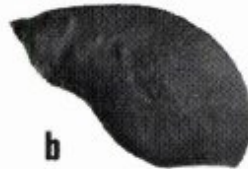
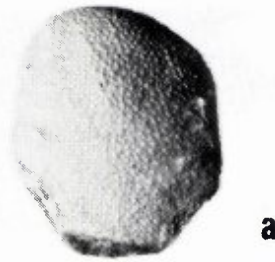


Figure 3. *Cummingella maastrichtensis* Brauckmann nov. sp. Paratype glabella, NHMM 198244, X5 a: dorsal view. b: lateral view. c: slightly oblique anterior view.

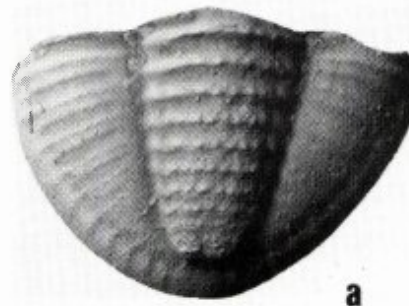


Figure 4. *Cummingella maastrichtensis* Brauckmann nov. sp. Pygidium, holotype, NHMM 198243, X5. a: dorsal view. b: lateral view. c: posterior view.



Figure 5. ? *Cummingella maastrichtensis* Brauckmann nov. sp. Fragmentary left free cheek, NHMM 198245, X8.



Figure 6. *Phillipsia* (*Phillipsia*) sp. Fragmentary cranidium, NHMM 198246, X8.



Figure 7. *Archegonus*? nov. sp. Fragmentary right free cheek, NHMM 198247, X8. Observe swelling just obliquely in front of the eye.

described by GANDL (1980) are faintly comparable. This is one of the reasons why this specimen is here tentatively assigned to *Archegonus* Burmeister 1843, the main genus of the Dinantian Cyrtosymbolinae, which also occurs in the limestone facies of Belgium (see G. & R. HAHN & BRAUCKMANN, 1980). Because the free cheek is insufficiently preserved, it is not expedient to erect a new species. The meaning of such a swelling is not known yet; the dense granulation in this region could perhaps be a reference to its sensory function.

Acknowledgements

The Maastricht trilobites have been discovered and kindly made available for examination to me by Dr. M.J.M. Bless (Natuurhistorisch Museum Maastricht). I am also grateful to Dr. E. Paproth (Geologisches Landesamt Nordrhein-Westfalen, Krefeld) and to Prof. Dr. G. Hahn and Dr. R. Hahn (Philipps-Universität Marburg) for helpful advice. The photographic work has been done by Mr. D. Korn (Sundern).

Repository

The material is deposited in the Natuurhistorisch Museum of Maastricht, and bears the numbers NHMM 198243-198247. Some indeterminate fragments are unnumbered.

Samenvatting

Aleen DORSMAN (1945) had tot nu toe enkele trilobieten uit het Carboon van Nederland beschreven. Deze door hem als *Griffithides* sp. benoemde fragmenten van het mariene Aegir Niveau uit het onderste Westphalien C van Zuid-Limburg behoren waarschijnlijk tot het genus *Paladin*

Verrassend was het voorkomen van een aantal trilobieten-resten in de boring Kastanjelaan-2 te Maastricht. Vooral de kalksteen uit het tot het Midden-Tournaisien (Tn2b-c) behorende interval 335.10 - 335.25 m heeft een aantal tot vier verschillende geslachten behorende trilobieten-fragmenten opgeleverd: *Cummingella maastrichtensis* Brauckmann nov. sp., *Phillipsia (Phillipsia)* sp., *Piltona?* sp. en *Archegonus?* nov. sp. De nieuwe soort *Cummingella maastrichtensis* is o.a. gekenmerkt door de doorn-achtige bulten op de elf ringen van de rhachis en het duidelijk korrelige oppervlak van de glabella.

References

- BLESS, M.J.M., P. BOONEN, J. BOUCKAERT et al, 1981. Preliminary report on Lower Tertiary-Upper Cretaceous and Dinantian-Famennian rocks in the boreholes Heugem-1/1a and Kastanjelaan-2 (Maastricht, the Netherlands). Meded. Rijks Geol. Dienst, 35 (15): 333-415.
- BRAUCKMANN, C. & G. HAHN, 1977. Erforschung der Trilobiten des belgischen Kohlenkalks. Nachr. dt. geol. Ges., 17: 82-83.
- DORSMAN, L., 1945. The marine fauna of the Carboniferous in the Netherlands. Meded. geol. Sticht., Ser. C-IV-3-No. 3: 1-101.
- GANDL, J., 1980. Die Karbon-Trilobiten des Kantabrischen Gebirges (NW-Spanien), 3: Trilobiten mit "Kulm-Charakter" aus dem Namur B. Sencckenbergiana Lethaea, 60(4/6): 291-351.
- HAHN, G. & R. HAHN, 1972. Trilobitae carbonici et mermici III. Fossilium Catalogus. I: Animalia, 120: 332-531.
- HAHN, G., R. HAHN & C. BRAUCKMANN, 1980. Die Trilobiten des belgischen Kohlenkalks (Unter-Karbon). 1. Proetinae, Cyrtosymbolinae und Aulacopleuridae. Geologica et Palaeontologica 14: 165-188.
- KOBAYASHI, T & T. HAMADA, 1980. Carboniferous trilobites of Japan in comparison with Asian, Pacific and other faunas. Spec. Pap. Paleontol. Soc. Japan 23: I-VII, 1-132.

Deux nouvelles espèces de Tétracoralliaire du sondage de Kastanjelaan-2 à Maastricht, Pays-Bas

E. Poty

Laboratoire de Paléontologie animale, Université de Liège, Plache XX-Août 7, 4000 Liège, Belgique

L'inventaire paléontologique du Dinantien du sondage de Kastanjelaan-2 à Maastricht, Pays-Bas, a livré plusieurs espèces de Tétracoralliaire. Deux d'entre elles sont nouvelles: *Caninia tregaensis* Poty nov.sp. et *Siphonophyllia (?) kremersi* Poty nov.sp. Elles font l'objet de cette note.

Famille CYATHOPSIDAE DYBOWSKI 1873.

Genre *Caninia* Michelin in Gervais 1840.

Espèce type: *Caninia cornucopiae* Michelin in Gervais 1840.

Caninia tregaensis Poty nov.sp.; figures 2-5.

Caninia (?) sp. A; POTY, in: BLESS et al., 1981, pl.16, fig. 5-6.

Siphonophyllia sp. A; POTY, in: BLESS et al., 1981, pl. 16, fig. 7.

Holotype: Kast. 2/436.5-436.8/3, NHMM 198252 (2 coupes transversales et 1 coupe longitudinale.)

Locus typicus: Sondage de Kastanjelaan 2, Maastricht, Pays-Bas.

Stratum typicum: Tournaisien inférieur (Tn1b), 436.5 - 436.8 m.

Derivatio nominis: Trega, nom antique de Maastricht.

Matériaux d'étude: 9 spécimens (20 coupes transversales et 3 coupes longitudinales) du Tn1b et sommet du Tn1a du sondage de Kastanjelaan-2, 400.9 à 445.95 m, Maastricht, Pays-Bas. 4 spécimens (7 coupes transversales et 1 coupe longitudinale) du Tn1b, coupe du chemin de fer à Anseremme, environs de Dinant, Belgique.

Diagnose: *Caninia* d'un diamètre moyen de 13.6 mm et maximum de 17 mm possédant habituellement 28 à 30

septes majeurs et au maximum 36. Septes mineurs courts ou rudimentaires. Présence de dissépinements transeptaux de 1er ordre très larges. Fossule cardinale indistincte.

Description: Caractères externes: Les polypiers sont cylindriques. Leur diamètre est de 13.6 mm en moyenne et de 17 mm au maximum. Les plus longs fragments que nous possédons atteignent 7 cm de longueur. L'ornementation de la muraille, le calice et la zone apicale des polypiers n'ont pas été observés.

Caractères internes, coupes transversales: Les septes majeurs sont en général droits ou faiblement sinueux, parfois tortueux. Ils peuvent montrer des anastomoses. Leur épaisseur est de 0.05 à 0.1 mm