

Procyrtograptus garboei, a New Graptolite from the Lower Silurian of Bornholm.

By

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In 1910 Dr. A. GARBOE collected fossils from the *Rastrites* and *Cyrtograptus* shales of Bornholm Island. In this material, which is now the property of the Mineralogical and Geological Museum of the University of Copenhagen, the writer noticed a very remarkable cyrtograptus-like graptolite. The specimen was found in locality no. 2 at the river Øleaa, about 200 m SW of the farm Kjøllergaard in the parish of Persker (fig. 1).

According to BJERRING PEDERSEN (1922, p. 10) the shales in this locality have yielded:

- Climacograptus hughesi* NICH.
- *rectangularis* M'COY.
- *törnquisti* ELLES & WOOD.
- Diplograptus bornholmiensis* BJ. P.
- *minor* ELLES?
- *palmeus* BARR.
- *tamariscus* NICH.
- Monograptus fimbriatus* NICH.
- *gregarius* LAPW.
- *millipeda* M'COY.
- *revolutus* KURCK var. *austerus* TÖRNQ.
- — — *enermis* BJ. P.
- *simulans* BJ. P.
- *triangulatus* HARKN.
- Rastrites peregrinus* BARR.

This assemblage of species indicates that the shales in locality 2 belong to the *Monograptus gregarius* zone of the *Rastrites* series (BJERRING PEDERSEN 1922, pp. 16—17).

The find of a graptolite of the *Cyrtograptus* type in the *Rastrites* shales and moreover in the lower half of the series is very aston-

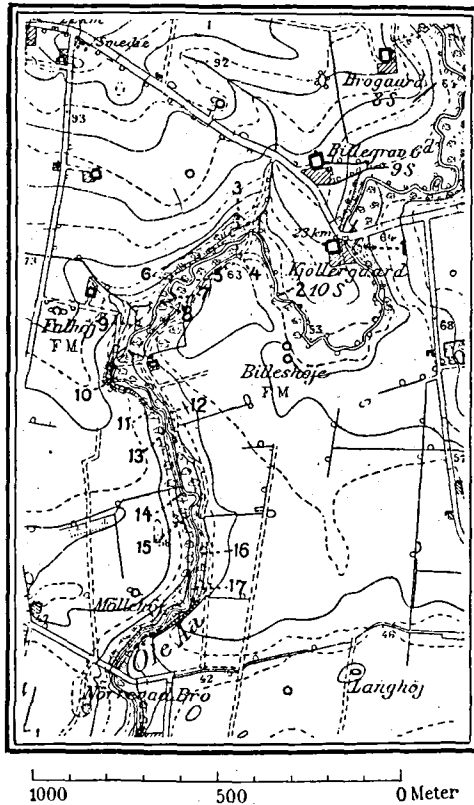


Fig. 1. Map (scale 1:20000), showing the outcrops of the *Rastrites* shales at the river Øleaa (after BJERRING PEDERSEN).

ishing. Dr. GARBOE, being aware of this, has written on the accompanying label: „NB *Cyrtograptus* sp. ??”.

This new graptolite is associated with a specimen of *Monograptus triangulatus* HARKN., and, accordingly, there can be no doubt that it belongs to the fauna of the *Monograptus gregarius* zone.

Description:

The material consists of a fragment of the main stipe with the proximal part of two cladia (fig. 2).

The preserved portion of the main stipe is considerably curved.

The hydrothecae are simple, slightly sigmoidal tubes, which overlap each other for about two-fifths of their length. The distal part of the ventral wall of the hydrothecae is parallel to the axis of the main stipe. The apertures are simple, their margins forming approx-



C. Halkier phot.

Fig. 2. *Procyrtograptus garboei* n. g. et n. sp. (x 9).

imately right angles with the axis of the main stipe when viewed from the side.

Judging from the preserved parts, the cladia are slightly curved and very slender; the space between their bases corresponds to the length of two hydrothecae of the main stipe. The first hydrotheca of the cladium is extremely long, the length being about 3.8 times that of the hydrothecae of the main stipe; its apertural region is strongly hooked.

Dimensions in mm:

Width of main stipe.....	0.55
» » the hydrothecae of the main stipe...	0.33
Length » » » » » » ...	1.33
Width » cladium at the base.....	0.13
» » » just above the first hydrotheca	0.28
Length » the first hydrotheca of the cladium..	5.00

There can be no doubt that these graptolite remains represent a form which is closely related to the genus *Cyrtograptus* CARRUTHERS;

it differs, however, from *Cyrtograptus* 1) in the cladia being much more slender than the main stipe, 2) in the extreme length of the first hydrotheca of the cladium, and 3) in the combination of the simple, primitive hydrothecae of the main stipe with the strongly spezialized, hooked hydrothecae of the cladia. A new genus, *Procyrtograptus*, is proposed here to embrace monograptidae of this type. For the abovedescribed species, the genotype and at present the only known representative of the genus *Procyrtograptus*, the writer proposes the name:

***Procyrtograptus garboei* n. sp.**

Remarks: The relatively strong curvation of the main stipe indicates that this fragment belongs to the proximal part of the rhabdosome. In *Cyrtograptus* this part of the main stipe shows a much higher degree of thecal elaboration than the distal part. Thus the main stipe of *Procyrtograptus* with its simple hydrothecae is more primitive than that of the majority of the *Cyrtograptus* species, in which the hydrothecae of the proximal part are more or less hooked. In *Cyrtograptus* the thecal elaboration of the main stipe exceeds that of the cladia. On the other hand, the cladia of *Procyrtograptus* have more strongly hooked hydrothecae than those of any known species of the genus *Cyrtograptus*. Accordingly, *Procyrtograptus* should probably not be considered a direct ancestor of *Cyrtograptus* in spite of the unquestionably close relationship of these genera. The writer is of opinion that *Procyrtograptus* belongs to a special, short-lived line of evolution, which may have derived from the same ancestor as *Cyrtograptus*.

The correctness of the assumption that *Cyrtograptus* may have derived polyphyletically from different species of the genus *Monograptus* GEINITZ, must be doubted in view of the fact that cyrtograptiform graptolites, such as *Procyrtograptus garboei*, occur in the lower half of the *Rastrites* series.

LITERATURE

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Resumé.

Procyrtograptus garboei, en ny Graptolit fra Bornholms nedre Silur.

Af CHR. POULSEN.

I Mineralogisk Museums Samlinger fra Bornholms Rastritesskifer findes en ejendommelig cyrtograptuslignende Graptolit. Stykket blev indsamlet i 1910 af Dr. A. GARBOE ved Øleaa paa Lokalitet 2, ca. 200 m SV for Kjøllegaard (Fig. 1). Skiferen paa denne Lokalitet tilhører ifølge BJERRING PEDERSEN (1922, S. 16—17) Rastritesseriens Zone med *Mono-graptus gregarius* LAPW. Fundet af en Graptolit af Cyrtograptustype i den nedre Halvdel af Rastritesskiferen er temmelig opsigtsvækkende; Ordlyden af Stykkets Etiket, »NB *Cyrtograptus* sp. ??«, viser, at Dr. GARBOE selv har været klar over, at Fundet havde betydelig Interesse.

Beskrivelse:

Materialet bestaar af et Fragment af en Hovedgren med den proximale Del af to Cladier (Fig. 2). Den bevarede Del af Hovedgrenen er betydelig krummet. Hydrothekerne er simple, svagt s-formede Rør, som dækker hinanden med en Overgribning paa ca. to Femtedele af deres Længde. Den distale Del af Hydrothekernes ventrale Væg er parallel med Hovedgrenens Akse. Mundingerne er simple og deres Rande staar omtrent vinkelret paa Hovedgrenens Akse.

Efter de bevarede Dele at dømme er Cladierne svagt krummede og meget slanke; Afstanden mellem deres Baser svarer til Længden af to af Hovedgrenens Hydrotheker. Cladiernes første Hydrotheke er overordentlig lang, ca. 3, s Gange saa lang som Hovedgrenens Hydrotheker; Mundingspartiet er stærkt ombøjet, udpræget krogformet.

Dimensioner i mm:

Hovedgrenens Bredde.....	0,55
Bredden af Hovedgrenens Hydrotheker.....	0,33
Længden » » »	1,33
Cladiets Bredde ved Basis.....	0,13
» » lige ovenfor første Hydrotheke ..	0,28
Længden af Cladiets første Hydrotheke.....	5,00

Der kan næppe være Tvivl om, at den her beskrevne Graptolitform maa være nært beslægtet med *Cyrtograptus* CARRUTHERS; den afviger imidlertid fra *Cyrtograptus* 1) ved, at Cladierne er meget slankere end

Hovedgrenen, 2) ved den extreme Længde af Cladiernes første Hydrotheke og 3) ved Kombinationen af Hovedgrenens simple, primitive Hydrothekeer med Cladiernes stærkt specialiserede, krogformede Hydrothekeer. Forfatteren foreslaar her Oprettelsen af en ny Slægt, *Procyrtograptus*, omfattende Monograptider af den ovenfor beskrevne Type. For den foreliggende Art, som er Genotypen og foreløbig den eneste kendte Repræsentant for Slægten *Procyrtograptus*, foreslaas Benævnelsen:

***Procyrtograptus garboei* n. sp.**

Den forholdsvis stærke Krumning af Hovedgrenen tyder paa, at det foreliggende Fragment hører til Rhabdosomets proximale Del. Hos *Cyrtograptus* er Hydrothekerne meget stærkere specialiseret i den proximale Ende af Hovedgrenen end i den distale. Hovedgrenen hos *Procyrtograptus* med sine simple Hydrothekeer er af mere primitiv Bygning end Hovedgrenen hos Flertallet af Cyrtograptusarterne, hvis Hydrothekeer i den proximale Del viser en mere eller mindre udtalt Udvikling hen imod den krogformede Type. For Cladiernes Vedkommende gælder det paa den anden Side, at *Procyrtograptus* har stærkere specialiserede (mere krogformede) Hydrothekeer end nogen Art af Slægten *Cyrtograptus*. *Procyrtograptus* kan derfor næppe betragtes som Cyrtograptusslægtens direkte Stamform, til Trods for det ubestridelige, nære Slægtskabsforhold. Efter Forfatterens Opfattelse tilhører *Procyrtograptus* en særlig, kortvarig Udviklingslinie, der muligvis har samme Oprindelse som Cyrtograptuslinien. Rigtigheden af den undertiden fremsatte Opfattelse, at Cyrtograptusarterne har udviklet sig polyphyletisk af forskellige Monograptusarter, maa betvivles, naar man saa nær Silurets Basis kan træffe en Graptolitform som *Procyrtograptus garboei*.