

MUSÉUM DE MINÉRALOGIE ET DE GÉOLOGIE
DE L'UNIVERSITÉ DE COPENHAGUE
COMMUNICATIONS PALÉONTOLOGIQUES. N° 122

CTENOPYGE (CTENOPYGE)
PECTEN TENUIS N. SUBSP.
FROM
THE UPPER CAMBRIAN
OF BORNHOLM

BY

VALDEMAR POULSEN

Reprinted from

BIOL. MEDD. DAN. VID. SELSK. 23, NO. 13 (1963)

KØBENHAVN

BIANCO LUNOS BOGTRYKKERI A/S

1963

Biologiske Meddelelser
udgivet af
Det Kongelige Danske Videnskabernes Selskab
Bind **23**, nr. 13

Biol. Medd. Dan. Vid. Selsk. **23**, no. 13 (1963)

CTENOPYGE (CTENOPYGE)
PECTEN TENUIS N. SUBSP.
FROM
THE UPPER CAMBRIAN
OF BORNHOLM

BY
VALDEMAR POULSEN



København 1963
Kommissionær: Ejnar Munksgaard

Synopsis

Ctenopyge (Ctenopyge) pecten tenuis n. subsp. was originally (C. POULSEN, 1923) assigned to *Ctenopyge pecten* SALTER. The original material of crania, pygidia, and thoracic parts is redescribed and discussed.

Introduction

A few years ago, Dr. A. H. WESTERGÅRD in a letter called Dr. C. POULSEN's attention to the specimens, which C. POULSEN had previously referred to *Ctenopyge pecten* SALTER. The specimens from Læsaa, Bornholm, clearly differed from *Ctenopyge pecten* in being narrower.

C. POULSEN kindly placed the material at the present writer's disposal for study and publication.

Several trilobite families, including the Olenidae, contain narrow and wide forms, which in other respects may be almost identical. The significance of the difference in width is unknown, and in the literature such forms are usually differentiated either at the specific or at the subspecific level. For reasons given below, the present writer prefers to differentiate the Læsaa specimens of *Ctenopyge pecten* at the subspecific level.

Family **Olenidae** BURMEISTER, 1843

Subfamily Leptoplastinae ANGELIN, 1854

Genus ***Ctenopyge*** LINNARSSON, 1880

Type species: *Olenus (Sphaerophthalmus) pecten* SALTER, 1864; designated by VOGDES, 1890.

Ctenopyge (Ctenopyge) pecten tenuis n. subsp.

Text fig. 1 a—c

1922. *Ctenopyge pecten* (SALTER) [partim] — WESTERGÅRD: Sveriges Geol. Undersökning, ser. Ca, no. 18, pl. 12, figs. 26, 27, 29. (Figs. of cranidia).
1923. *Ctenopyge pecten* SALTER — C. POULSEN: Danm. Geol. Undersøgelse, ser. 2, no. 40., pp. 42—44, pl. 2, figs. 1—3. (Descr. and figs. of cranium and thorax with pygidium attached).

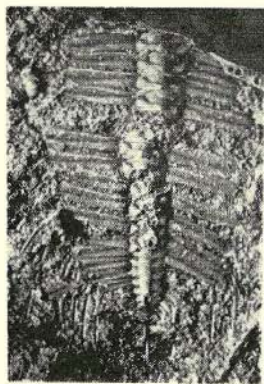
1957. *Ctenopyge (Cl.) pecten* (SALTER) [partim]—HENNINGSMOEN:
 Norske Vidensk.-Akad., Oslo, I Kl., no. 1, pp. 208—09.
 (C. POULSEN's reference cited).



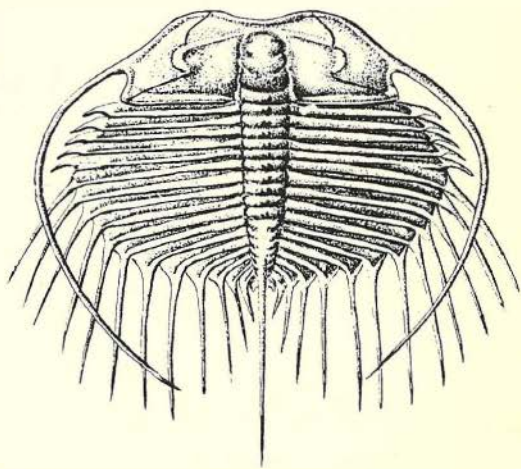
a



c



b



d

Fig. 1. Subspecies of *Ctenopyge (Ctenopyge) pecten* (SALTER, 1864).

a-c: *Ctenopyge (Cl.) pecten tenuis* n. subsp.

a. Incomplete thorax with pygidium attached (MMH no. 1973), holotype, X 3.

b. Cast of natural mold (MMH no. 1972) of holotype (MMH no. 1973), holotype, X 3.

c. Cranidium (MMH no. 1971), X 3.

d: *Ctenopyge (Cl.) pecten pecten* (SALTER, 1864), X 3. After C. POULSEN, 1959.

Holotype: Incomplete thorax with pygidium attached (MMH no. 1973) and natural mold of the same specimen (MMH no. 1972); C. POULSEN, 1923: Pl. 2, figs. 2—3. Also text-fig. 1 a—b, herein.

Material: A number of cranidia, a dorsal exoskeleton with slightly dislocated segments and with the cephalon missing, thorax fragments, a few fragmentary detached pygidia. The material is preserved in anthraconite. The figured specimens are new photographs of C. POULSEN's specimens (MMH nos. 1971—1973). These specimens are preserved in the collections of the Mineralogical and Geological Museum of the University of Copenhagen.

Redescription: The cranidium is subtrapezoidal in outline. The almost parallel-sided glabella is only slightly tapering forward, flatly rounded anteriorly, moderately convex transversely, strongly convex sagittally, profile highest slightly behind midpoint. There are three pairs of lateral glabellar furrows; anterior and second pair are short and indistinct, at right angles to glabella; posterior pair curving inward-backward, united into a transglabellar furrow, which is laterally well-impressed, mesially shallow. Occipital ring moderately long and wide, mesially slightly expanded, provided with a node; the occipital furrow is wide and well-impressed throughout, laterally further accentuated by oblong pits, which are parallel to the occipital furrow. The axial furrows are shallowing up opposite the preoccipital glabellar lobes, otherwise well-impressed; the preglabellar furrow is indistinct, coincident with the anterior border furrow.

Frontal area is extremely narrow, only consisting of the narrow and upturned anterior border, which is delimited by an ill-defined and narrow border furrow; anterior margin of cranidium is strongly concave, almost reaching glabella.

Anterior area of fixigenae wide, moderately convex, strongly inclined anteriorly, moderately inclined laterally; anterior border is narrow (sag.) and upturned; border furrow narrow and ill-defined; faint genal caeca are seen just in front of the eye ridges. Palpebral area of fixigenae of approximately the same width as adjacent portion of glabella, essentially flat, up-sloping, making

the cranium appear concave, as seen from above; the palpebral lobes (missing in the figured specimen) are small, strongly arcuate, situated slightly in front of midline across glabella, anteriorly continuing into prominent, slightly curved and oblique eye ridges, which join glabella at the antero-lateral corners; the palpebral furrows are wide and shallow; faint genal caeca are situated close to the eye ridges. Posterior area of fixigenae moderately long and wide, somewhat downsloping postero-laterally; posterior border furrow moderately wide, well-impressed, terminating a little short of the axial furrows; posterior border almost straight, moderately convex.

Anterior sections of facial suture curving inward-forward, cutting anterior margin of cranium not far out at sides; posterior sections of facial suture sinuous, diverging backward at an angle of 50—60° to the sagittal axis, at posterior border furrow curving back, cutting posterior margin moderately out at sides.

The hypostoma and librigena are not known.

Thorax consisting of 10 segments, attaining its maximum width at the middle segments. The axis is about two-thirds the width of the pleural regions (excluding spines), slightly tapering backward. Axial furrows are well-impressed; the axial rings are short mesially, provided with a simple node, laterally expanding, assuming a globular shape. The pleural regions are flat, consisting of moderately long (tr.) pleurae, which are laterally drawn into flat, long and arcuate spines that are more strongly backward-directed in the posterior part of the thorax; the oblique pleural furrows are well-impressed.

The pygidium consists of 7 or 8 segments. The axis is slightly tapering, with rounded terminal axial piece; the axial rings are fused, and traces of segmentation and nodes are lost mesially, whereas ring furrows and the abaxial globular structure of the axial rings are preserved laterally. Axial rings 5—7 provide the base for a mesial ridge, which is posteriorly drawn into a straight, horizontal, long and slender spine (broken off in the figured specimen). The pleural regions are tapering rapidly backward; the pleurae are apparently free and in most respects identical to those of the thorax; the pleural spines are almost parallel to sagittal axis, posteriorly becoming progressively shorter and

simultaneously turning inward-backward; the terminal plate is crescent-shaped.

Dimensions of figured cranidium:

Length	about	3.5 mm.
Width at posterior margin		7.0 —
Width between the eyes	estimated	5.0 —
Length of glabella		2.3 —
Width of glabella at base		1.7 —

Dimensions of holotype thorax with pygidium:

Length of thorax	estimated	5.0 mm.
Width of thorax at middle segments (excluding spines)		8.5 —
Width of axis at middle segments		2.0 —
Length of pygidium (excluding spines)		3.3 —
Width of pygidium at anterior margin	about	6.0 —

Occurrence: Denmark: *Peltura scarabaeoides* zone (*Ctenopyge linnarssoni* and *Parabolina lobata* subzones); C. POULSEN's loc. no. 6 at the stream Læsaa, Bornholm.

Sweden: *Peltura scarabaeoides* zone (*Ctenopyge linnarssoni* subzone = Upper part of WESTERGÅRD's *Peltura scarabaeoides* subzone); Scania, Västergötland.

Discussion: The new subspecies in many respects resembles *Ctenopyge pecten pecten*, and the only notable differences pertain to the width of the dorsal exoskeleton. The difference is very conspicuous, when complete exoskeletons are at hand (see text-fig. 1), but also detached cranidia can readily be differentiated. In *Ctenopyge pecten tenuis* n. subsp. the posterior sections of facial suture are diverging backward at an angle of 50—60° to the sagittal axis. This feature is demonstrated by all the Læsaa specimens, and it also quite apparent in several specimens of *Ctenopyge pecten* figured by WESTERGÅRD (1922, pl. 12, figs. 26, 27, 29). In cranidia of *Ctenopyge pecten pecten* the corresponding angle of the suture is about 80°. The thoracic axis is about two-thirds the width of the pleural regions (excluding spines) in the new subspecies and about one-fourth the width of the pleural

regions in *Ct. pecten pecten*. The posterior part of the thorax of *Ctenopyge pecten pecten* is more rapidly tapering than in the new subspecies, and, accordingly, the pygidia will be of practically equal dimensions in the two subspecies.

Ctenopyge pecten pecten is apparently restricted to the *Ctenopyge linnarssoni* subzone, but the new subspecies also occurs in the *Parabolina lobata* subzone.

The significance of the occurrence of wide and narrow forms of otherwise identical trilobites has not been satisfactorily explained. In the present case sexual dimorphism must be left out of consideration, as all the Læsaa specimens are narrow, and as they range into the *Parabolina lobata* subzone, from which *Ctenopyge pecten pecten* is unknown.

It is possible that extremely stagnant conditions may have caused the narrowing of the dorsal shields (KAUFMANN, 1933), but the available data do not allow of any definite conclusions.

As it may be impossible to refer detached pygidia and imperfectly preserved cranidia to either the wide or narrow form of *Ctenopyge pecten*, the present writer prefers a differentiation at the subspecific level. He further believes this taxonomical procedure warranted, as long as the significance of the variation in width is unknown.

References

- HENNINGSMOEN, G. 1957: The Trilobite Family Olenidae. Skr. Norske Vidensk.-Akad., Oslo, I Kl., 1957, no. 1.
- KAUFMANN, R. 1933: Variationsstatistische Untersuchungen über die »Artabwandlung« und »Artumbildung« an der Oberkambrischen Trilobitengattung *Olenus* DALM. Abhandl. Geol.-Pal. Inst. Univ. Greifswald, 10.
- POULSEN, C. 1923: Bornholms Olenuslag og deres Fauna. Danmarks Geol. Undersøgelse, ser. 2, no. 40.
- 1959: Olenidae. In: Treatise on Invertebrate Paleontology, part O, Arthropoda 1. Univ. Kansas Press.
- WESTERGÅRD, A. H. 1922: Sveriges Olenidskiffer. Sveriges Geol. Undersökning, ser. Ca, no. 18.
- 1947: Supplementary notes on the Upper Cambrian trilobites of Sweden. Sveriges Geol. Undersökning, ser. C, no. 489.