

NOTISER

**A new silicified coral from the Upper Ordovician of
the Oslo Region,**

By

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Rugose corals with polygonal (mainly triangular) and elliptical cross section have recently been described from several areas, and their taxonomy and phylogeny has been discussed (DUNCAN 1957, OLIVER 1958). In the upper Ordovician they are good guide fossils (DUNCAN 1956). The presence of a calceoloid silicified rugose coral from zone 5b in the Oslo Region might therefore be worth notice.

Silicified fossils are rare in the Cambrosilurian of the Oslo Region, the only previously known occurrence is in zone 5b at Ullerntangen in Ringerike where compound corals are commonly silicified in certain beds. The silicification of rugose corals facilitate the study of the external morphology and the development of the septae, and the generally abundant material can make a statistical study possible. The internal structure especially of the septae are, however, destroyed by the same process.

The present material come from zone 5b in a road section on road 334 just at the junction with the road to the Hærøya factories, at Gunneklev, some 3 km S of Porsgrunn in the Skien-Langesund District, the southernmost part of the Oslo Region. The silicified fossils are found in a bed about 30 cm thick, which is found just below a coquinal bed full of *Holorynchus giganteus*, the pentamerid brachiopod which is the guide fossil for the zone. Some other coquinal beds of this type are found higher up in the section. The youngest beds of 5b which are exposed are coral bioherms and conglomerates, ab. 7 m above the silicified corals. Silicified fossils might possibly be found also at other levels and localities. No systematic search for them has been made.

The majority of the silicified fossils are rugose corals, and among them more than 95% belonged to the new species, *Holophragma duncanæ*. Among the other corals were an unidentified heliolithid

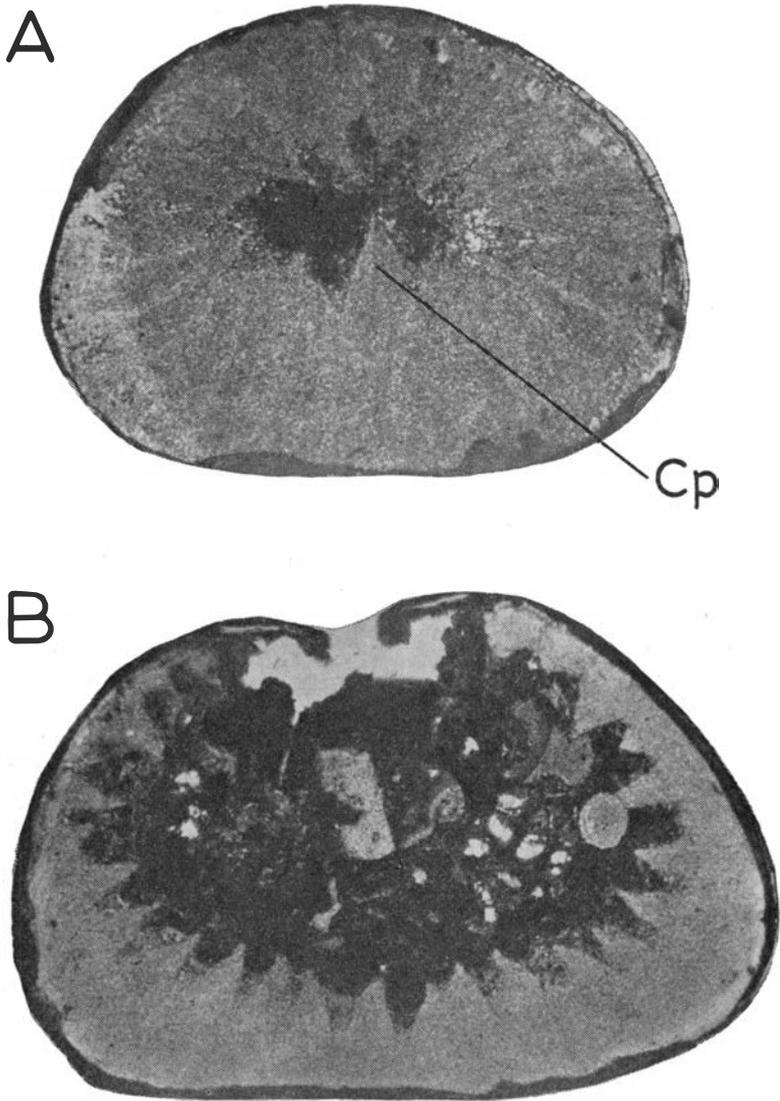


Fig. 1. *Holophragma calceoloides* LINDSTRÖM, from the Visby Marl (Upper Llandovery), at Ireviken, Gotland, Sweden. A. is a deep section showing the columella formed by swelling of the central part of the cardinal septum. The columella less developed, and lower than in *H. duncanæ* sp. n. Cp = Columella. B. is a high section, corresponding to that figured by LINDSTRÖM (1896, pl. 6 fig. 85). The section passes above the columella. The light spots in the centre of the picture are fossil fragments. Both sections are photographed from dry peels of the same specimens (PMO A 28139), and are ab. 10 x.

species forming thin crusts, and some few fragments of a *Paleofavosites* sp. The other silicified fossils, which are few, consist of fragments of *Holorynchus giganteus*, which is not completely silicified, whorls of gastropods, fragments of a strophomenid brachiopod, and one specimen of a rhomboporoid bryozoan, and a hypostome, possibly belonging to a Lichid trilobite.

Genus *Holophragma* LINDSTRÖM 1896.

Not much has to be added to the description of this genus given by LINDSTRÖM (1896, pp. 35—37, figs. 74—86) and DUNCAN (1957, p. 609). The only observation which has to be added to the diagnosis of this genus is that a columella consisting of the swollen central part of the cardinal septum is regularly present. LINDSTRÖM's statement (1896, p. 36) that the genus has no columella, might due to a misinterpretation of the figured thin section (l.c. pl. 6 fig. 85). In this section the columella is not shown, because the section do not cut through the central part of the coral. A deeper section from a topotype (fig. 1) clearly show the columella.

Holophragma duncanæ sp. n.
(textfigs. 2—3).

Diagnosis: *Holophragma* species with thin septa and columellar structure consisting of a blade-like expansion of the cardinal or counter septum and variable amounts of vesicular tissue.

Type data: The holotype, PMO 72152 is an almost complete, silicified specimen from zone 5b, at Gunneklev, Skien-Langesund district, Norway.

Material: About 80 complete specimens, and a large number of fragmentary ones, all silicified.

Description: The apical part of the corallae are irregularly cylindrical to narrowly conical. At a diameter of ab. 1,5 mm they expand rapidly, getting a calceoloid shape. Later again, in the mature or gerontic stage of growth, they expand more slowly, and attain an almost cylindrical shape. The development of the shape possibly indicate that the mode of living changed from erect to resting on one side, finally with the calyx turned from the bottom.

The external ornamentation is not well preserved, and only rather coarse longitudinal striation is observed, especially in the apical part of the corallae. The strong external ridge marking the cardinal septum in *Holophragma calceoloides* (cf. LINDSTRÖM 1896, pl. 6 fig. 77) is not found in this species. Growth-lines are not prominent.

The number of septae is 39 in the holotype, in more mature specimens the number may reach 47. The septae form thin discrete plates, the cardinal one is often slightly more prominent than the others.

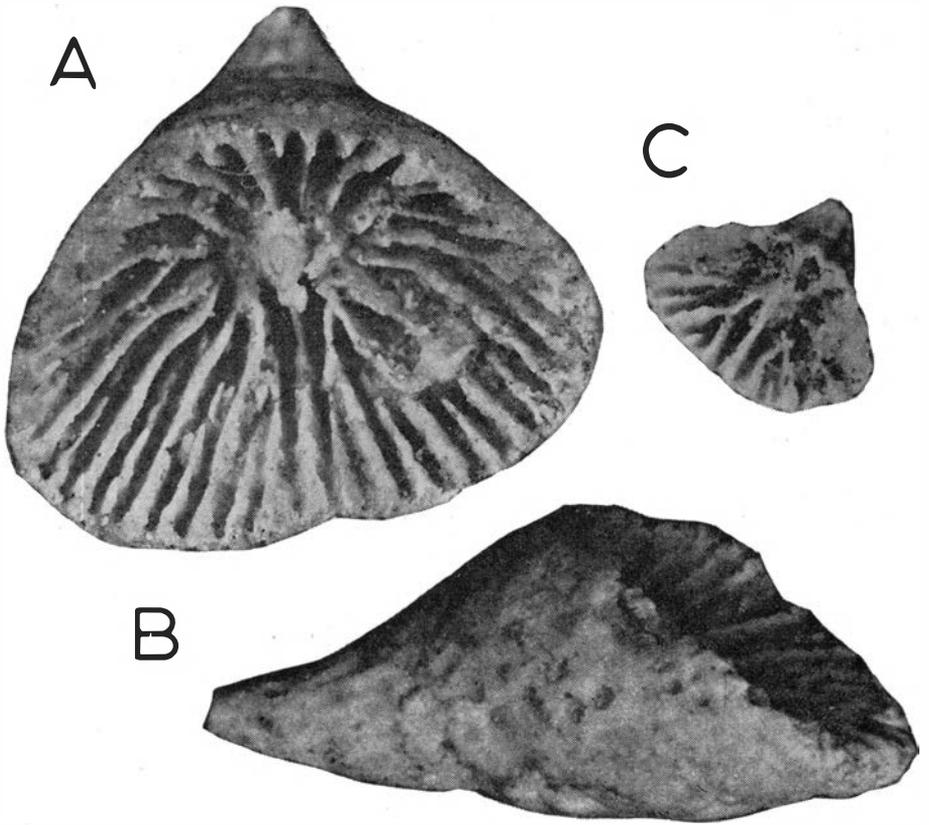


Fig. 2. *Holophragma duncanæ* sp. n. from zone 5b (uppermost Ordovician), Gunneklev in the Skien-Langesund District, Oslo Region, Norway. A-B. Two views of the holotype (PMO 72154) C. A small specimen. All figures ab. 10 x.

It is found on the flattened side of the coralum. Except in very small specimens (fig. 2c) all the other septae are of equal strength.

The columellar structure is rather variable, consisting partly of a blade-like expansion from the central part of the cardinal septum, and partly of an irregular vesicular mass formed by coalescence of a number of septa. In young specimens the former structure is dominating, in older ones more or less of the vesicular material is developed. In adult specimens the blade-like structure seems to be connected with the counter septum, but in the younger ones it forms an expansion of the central part of the cardinal septum.

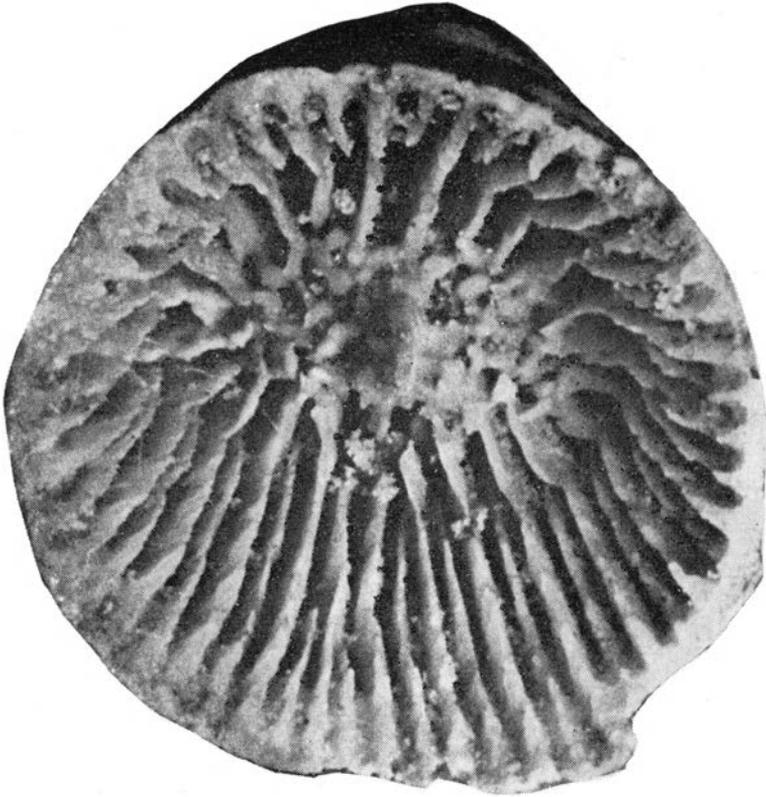


Fig. 3. *Holophragma duncanae* sp. n. from zone 5b (Uppermost Ordovician) at Gunneklev, in the Skien-Langesund District, Oslo Region, Norway. A large specimen (PMO 72156) showing almost circular outline, columella consisting of the swollen cardinal (?) septum and vesicular tissue. Magnification ab. 10 x.

No diaphragms are observed.

Remarks: This species differs from the type species in the thinner septa, number of septa, and the structure of the columella. The development of the septa, and the shape is remarkably similar in the two. *H. calceoloides* is larger than *H. duncanae*.

The specimen recorded as *H. calceoloides* by SOSHKINA (1955, pl. VIII, figs. 6–7) from the Silurian of Podskamenskaja Tunguska seems to lack columella, and has a large, open cardinal fossula, and twisted septa. It appears, therefore to differ both from the species described here, and *H. calceoloides*.

According to DUNCAN (1957) most of the species referred to *Holophragma* from the Upper Ordovician of North America belong to the genus *Bighornia* DUNCAN, which differ from the present species and other *Holophragma*'s in the absence of the cardinal septum, and in being flattened on the counter side instead of the cardinal one. This species is the first real *Holophragma* recorded from the European Ordovician. It is remarkable that both the Upper Ordovician and Lower Silurian has a number of different polygonal or other nonconical rugose corals (*Bighornia*, *Holophragma* and *Goniophyllum*). This might have some importance in the study of the phylogeny of the rugose corals, and because these forms generally are shortlived, for the stratigraphy.

The present find was immediately associated with the externally similar genus *Bighornia* because several members of the Red River fauna invaded NW-ern Europe in 5b-time, and the presence of that genus was expected (cf. DUNCAN 1957, p. 611). At present the coral fauna of the Upper Ordovician and Lower Silurian of the Oslo Region is not well enough known to allow any definite conclusions about the distribution of the calceoloid rugose corals. *Bighornia* and other genera might well be present beside *Holophragma*.

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