FAKSETHYRIS NIELSENI n. g. et n. sp. (TEREBRATULACEA) FROM THE MIDDLE DANIAN OF DENMARK

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ASGAARD, U.: *Faksethyris nielseni* n.g. et n.sp. (Terebratulacea) from the Middle Danian of Denmark. *Bull. geol. Soc. Denmark*, vol. 20, 385–389. Copenhagen, June 21st, 1971.

The small terebratulacean *Terebratula cincta* Nielsen, 1911 (non Cotteau, 1857) is redescribed under the new name *Faksethyris nielseni.* Its internal characters place the genus in the family Dyscolidae Fischer & Oehlert, 1891. The shell structure is described for the first time and shows interesting features so far not known in Cainozoic terebratulaceans. *Faksethyris nielseni* has not been found outside the environment of interfingering coral and bryozoan limestone banks in Fakse quarry (Middle Danian, Denmark).

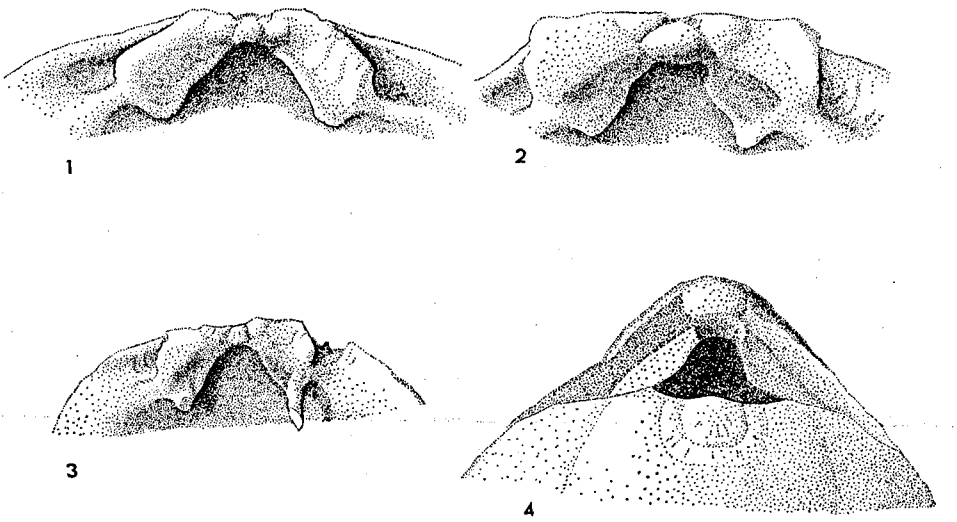
In 1911 Nielsen described a small terebratulacean brachiopod from the bryozoan limestone of Fakse quarry (Middle Danian, Denmark). Unfortunately he named it *Terebratula cincta,* not knowing that this name was preoccupied by *T. cincta* Cotteau, 1857, now *Epithyris cincta* (see Barczyk, 1965). In 1914 Nielsen redescribed the species and this time also recorded its presence in the coral limestone of Fakse quarry.

Rosenkrantz (1945) with some doubt referred the species to *Ornatothyris* Sahni, 1929 on the basis of a similarity in the cardinalia and the ornamentation of the valves.

Among the specimens of *"Terebratula cincta"* collected by Nielsen from his locality Ko = "Ravn's Nose" (see Asgaard, 1968, p. 107) is a complete example: MMH no. 11032; Pl. 1, figs. 1–2 and 4–6. This specimen shows great similarity in cardinalia and brachidium with *Dyscolia,* especially in the feeble transverse cardinal process, the narrow outer hinge plates which closely follow the curvature of the brachial valve and the poorly developed crural processes. However, the brachidium in *"Terebratula cincta"* is longer and narrower than that in *Dyscolia. "T. cincta"* therefore appears to belong to the family Dyscolidae Fischer & Oehlert, 1891.

Faksethyris n. g.

Type species: *Faksethyris nielseni* nomen subst. pro *Terebratula cincta* Nielsen, 1911 (non Cotteau, 1857).
Diagnosis: see the diagnosis of *F. nielseni.*
Derivatio nominis: From Fakse quarry.



Figs. 1–4. *1–3:* Slightly schematic camera lucida drawings of cardinalia of 3 brachial valves from the submarine talus of "Hvedeland" pit. The length of the valves is 4.4 and 2.5 mm. × 25. *4:* Camera lucida drawing of umbonal region of a 2.1 mm long specimen from the submarine talus of "Hvedeland" pit (compare with pl. 2, fig. 1). × 50.

Faksethyris nielseni

Text-figs 1–6; pls. 1–2.

1911 *Terebratula cincta* Nielsen: p. 609, pl. 12, figs. 16–19. (Non Cotteau, 1857.)
1914 *Terebratula cincta.* – Nielsen: p. 290 and text-fig.
1945 *Ornatothyris cincta.* – Rosenkrantz: p. 450.
1968 *"Terebratula cincta".* – Asgaard: p. 104, 107–109.

Derivatio nominis: In honour of the late K. Brünnich Nielsen.

Lectotype: MMH no. 574 figured by Nielsen 1911, pl. 12, figs 17–19. In the present paper pl. 2, fig. 1.

Syntypes: MMH no. 582. Nielsen, 1911, pl. 12, fig. 16. The specimen has an incomplete brachial valve and was, therefore, figured in ventral view only. MMH no. 11032: Pl. 1, figs 1–2 and 4–6.

Locality of lectotype: Bryozoan limestone, Fakse quarry.

Locality of syntypes: MMH no. 582: Bryozoan limestone, Fakse quarry (Nielsen's locality Bry. X). MMH no. 11032: "Ravn's Nose", unconsolidated equivalent of coral limestone, Fakse quarry (Nielsen's locality Ko).

Stratum typicum: Bryozoan limestone and coral limestone, Middle Danian (*Tylocidaris bruennichi* zone) Fakse quarry, Denmark.

Diagnosis: A small biconvex terebratulacean with extremely prominent, concentric ornament of regularly spaced ribs resembling growth lines which gives the valves a stepped appearance (pl. 1, figs 4–6; pl. 2, fig. 1). Foramen hypothyridid to submesothyridid, large, attrite. Pedicle collar is present. Beak ridges indistinct. Symphytium very narrow and only formed late in the brachiopod's life (pl. 1, fig. 3; pl. 2, fig. 1 and text-fig. 4). No muscle impressions have been observed except those on the cardinalia. The cardinal process is transverse and feeble (figs 1–3 and pl. 1 figs 1, 2 and 4). Outer divided hinge plates present; they are very narrow and closely follow the curvature of the brachial valve. The form of the brachidium is shown in pl. 1, figs 1, 2 and 4).

Dimensions: Abbreviations. LP: length of pedicle valve; LB: length of brachial valve; W: width; T: thickness. All measurements in mm.

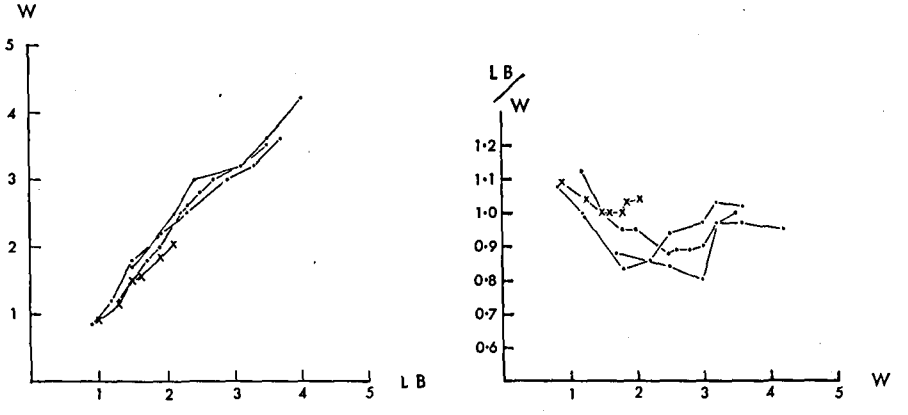
		LP	LB	W	T	LB/W
Lectotype	MMH no. 574	2.5	2.1	2.0	1.2	1.05
Syntype	MMH no. 582	5.9	5.5	4.9	4.1	1.12
Syntype	MMH no. 11032	?	5.4	5.1	3.7	1.06
	MMH no. 11033	6.5	?	5.9	?	

Details of changes of dimensions during growth are shown in figs 5 and 6.

Ornament and microstructures of the shell

Pl. 1, figs 4–6; pl. 2, figs 2 and 3

The stepped appearance of the valves has been ascribed to extremely prominent growth lines (Nielsen, 1911, 1914). However, microscopic examination



Figs. 5 and 6. Measurements of the concentric ridges of 3 brachial valves from the submarine talus of "Hvedeland" pit and the brachial valve of the lectotype MMH no. 574 (×). The two graphs illustrate that *Faksethyris nielseni* passes through 3 ontogenetic stages: elongate – circular to transverse – elongate.

reveals that the growth lines are in fact concentric ridges on the outside of the valves reflected as shallow grooves on the inner side. A radial section of the pedicle valve, (pl. 2, fig. 3) shows that true growth lines, i. e. due to a temporary retraction of the mantle edge resulting in a regression plane (Williams & Rowell 1965, fig. 78; Brunton 1969), are not present. Instead, the ornament is due to an apparently rhythmic inflexion of the mantle edge which causes a change in direction in the fibres of the secondary layer but no disruption of the fabric. The primary layer is slightly thickened at the top of the ridge and somewhat thinner in front of the ridge where the mantle edge has resumed its normal position. This difference in thickness may be due to a retardation of the "conveyor belt" cell migration system described by Williams (1968, p. 3) and Brunton (1969, p. 190). Normal progress of the "conveyor belt" was resumed after the formation of the ridge.

Material: Bryozoan limestone: 3 complete specimens and numerous fragments; coral limestone: 13 complete specimens; submarine talus of "Hvedeland" pit: 4 complete specimens, 4 pedicle valves, 7 brachial valves and numerous fragments.

Occurrence: This characteristic little terebratulacean has so far not been found in other Middle Danian localities. It seems to be endemic to the special environment of the coral and bryozoan limestone banks of Fakse quarry. It is not common.

Plate 1

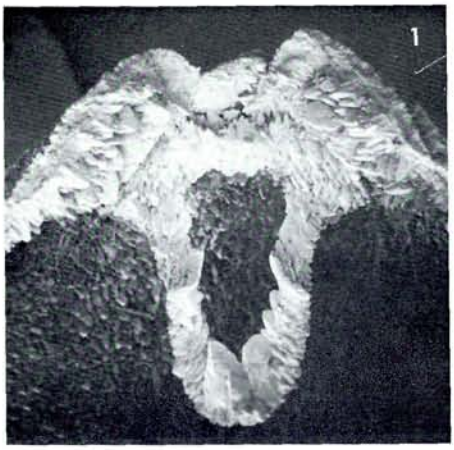
Faksethyris nielseni n. g. et n. sp.

Figs. 1 and 2. Ventral and half-lateral views of the cardinalia and brachidium of the syntype, MMH no. 11032. Note the diagenetic grain-growth of the fibres of the secondary layer. The crystals reflect the regular mosaic on the lateral and anterior part of the loop and the irregular mosaic on the posterioventral side of the transverse band (compare Williams 1968, p. 23 and text-fig. 16). × 25.

Fig. 3. Umbonal region of a large pedicle valve, MMH no. 11033. Note the narrow symphytium, the attrite foramen, the pedicle collar and the feeble hinge teeth. × 30.

Figs. 4–6. Ventral, lateral and anterior views of the syntype, MMH no. 11032. Note the concentric ornament resembling growth lines. Tilting in fig. 4 has foreshortened the cardinalia and brachidium. × 10.

All figures are "Stereoscan" micrographs.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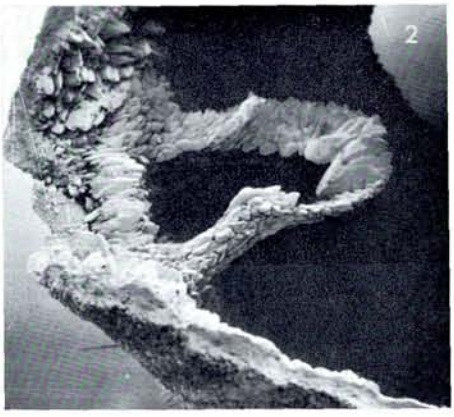
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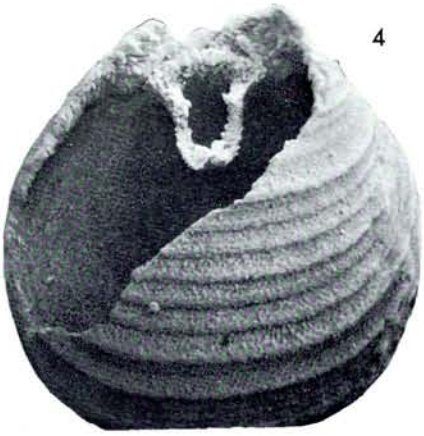
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Plate 2

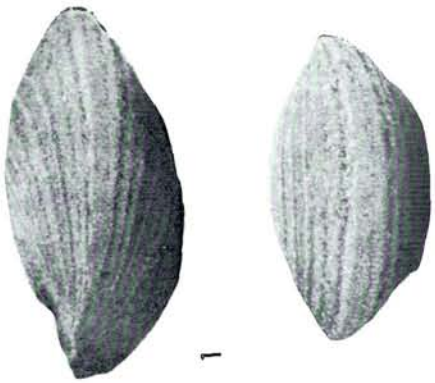
Faksethyris nielseni n. g. et n. sp.

Fig. 1. Dorsal, lateral and anterior views of the lectotype MMH no. 574. Compare the immature foramen region with text-fig. 4. × 21.

Figs. 2 and 3. Radial section close to the medial plane of the ventral valve of a specimen about 3 mm long from the submarine talus of "Hvedeland" pit.

Fig. 2 shows the primary and secondary layers, × 785. Fig. 3 shows transverse section of three concentric ribs (anterior to the left). The two arrows indicate places where the section has passed close to punctae. × 393.

All figures are "Stereoscan" micrographs.



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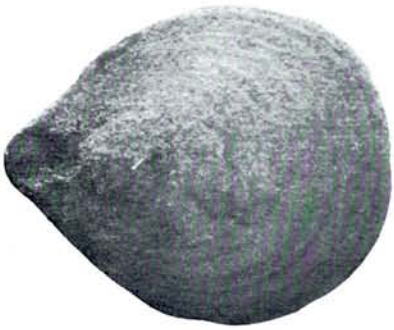

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Dansk sammendrag

Den lille *Terebratula cincta* Nielsen, 1911 (non Cotteau, 1857) besrives pånу under navnet *Faksethyris nielseni*. Baseret på de indre karakterer hører den nye slægt til familien Dyscolidae Fischer & Oehlert, 1891. Brachidium og skalstrukturen beskrives for første gang. *Faksethyris nielseni* er kun kendt fra Mellem Danien i Fakse kalkbrud.

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