



The bryozoan collection of Prof. Dr Ehrhard Voigt (1905–2004)

at the Senckenberg Institute in Frankfurt.

Part 1 - Introduction and Cyclostomata

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Abstract: The bryozoan collection of Prof. Dr Ehrhard VOIGT (1905–2004) at the Senckenberg Research Institute in Frankfurt am Main, Germany is a world-renowned collection of great scientific value. It is the world's largest collection of fossil bryozoans from the Upper Cretaceous and Paleocene and a unique archive documenting the evolution of this phylum of marine invertebrates during this time interval in the Boreal Chalk Sea that extended from the British Isles to the Aral Sea in Central Asia.

The VOIGT Collection contains over 300,000 specimens and was relocated to the Senckenberg Institute in 2005 according to the bequest of Ehrhard Voigt. As a result of a DFG-funded project, we present here a three-part type catalogue of the holotypes and neotypes of 256 bryozoan species in the Voigt Collection, of which this is Part 1. In total over the three parts, 247 species are re-illustrated but the name-bearing type specimens of 20 species are missing and no material could be found for 9 species. Two species, described as ctenostome bryozoans by Ehrhard Voigt, are questionable, while a further three 'ctenostome' species and one 'ctenostome' genus are considered as ichnotaxa.

Key-words:

- Bryozoa;
- Cheilostomata;
- Cyclostomata;
- Ctenostomata;
- ichnofossils;
- type catalogue;
- palaeontological collections;
- Cretaceous

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Résumé : *La collection de bryozoaires du Prof. Dr Ehrhard Voigt (1905–2004) conservée à l'Institut Senckenberg de Francfort - 1ère partie - Introduction et Cyclostomes.*- La collection de bryozoaires du Prof. Dr Ehrhard VOIGT (1905–2004) conservée à l'Institut de recherche Senckenberg de Francfort-sur-le-Main (Allemagne) est une collection de renommée mondiale et de grande valeur scientifique. C'est la plus grande collection au monde de bryozoaires fossiles du Crétacé supérieur et du Paléocène. Elle constitue un patrimoine unique documentant l'évolution de ce phylum d'invertébrés marins au cours de cette période dans la mer de la Craie Boréale qui s'étendait des îles

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britanniques à la mer d'Aral en Asie centrale.

La collection VOIGT qui compte plus de 300.000 spécimens a été transférée en 2005 à l'Institut Senckenberg grâce à un legs testamentaire d'Ehrhard VOIGT. À l'issue d'un programme financé par la DFG, nous présentons ici en trois parties un catalogue des holotypes ou néotypes de quelques 256 espèces de bryozoaires de la collection VOIGT, catalogue dont la présente contribution est la première des trois. 247 espèces sont illustrées ici à nouveau, tandis qu'aucun matériel n'a pu être retrouvé pour neuf d'entre elles. Les spécimens-types porte-noms de vingt espèces n'ont pas été retrouvés, Deux espèces, décrites comme des bryozoaires cténostomes par Ehrhard VOIGT, sont douteuses, tandis que trois autres espèces "cténostomes" et un genre "cténostome" sont considérés comme des ichnotaxa.

Mots-clefs :

- Bryozoa ;
- Cheilostomata ;
- Cyclostomata ;
- Ctenostomata ;
- ichnofossiles ;
- catalogue des types ;
- collections de paléontologie ;
- Crétacé

1. Introduction

Prof. Dr Ehrhard VOIGT (1905–2004) was one of the most famous German palaeontologists of the 20th century. His main expertise concerned marine invertebrates of the phylum Bryozoa EHRENBURG, 1831. He began studying Bryozoa as a teenager and went on to publish on bryozoans for almost 80 years (VOIGT, 1923; ERNST & VOIGT, 2002). Several additional bryozoan projects were completed and published after his death by co-authors, and some unfinished projects are still pending publication. During his lengthy scientific career, VOIGT described more than 500 new bryozoan species and subspecies and established 80 genera or subgenera (excluding *Foraripora* VOIGT & SOULE, 1973, see 'Remarks for *Foraripora pesavis* VOIGT & SOULE, 1973') and 4 families within the phylum Bryozoa. This makes him one of the most prolific and significant bryozoologists.

VOIGT's passion and devotion for fossil Bryozoa is legendary among palaeontologists. Encouraged by his parents, he started collecting fossil bryozoans as a child after finding some bryozoans in Upper Cretaceous flints in his parents' garden. As a teenager, he began corresponding with some of the leading bryozoologists of the time and before leaving school, he had already submitted some substantial articles to well-known scientific journals. Given his prowess as a collector, it is not a surprise that Ehrhard VOIGT accumulated one of the world's largest collections of fossil bryozoans. Following the loss of his entire collection in 1943 during World War II (MARTHA, 2014), VOIGT amassed an even larger collection. This collection consists of over 300,000 specimens of mostly Upper Cretaceous to Paleocene bryozoans. The material was collected from hundreds of bryozoan-rich exposures in Europe, northern Africa, Central Asia and North America. The focus of the VOIGT Collection, however, comprises bryozoans from the Boreal Chalk Sea that endured for almost 50 million years, from the early Cenomanian to the Paleocene, and extended from the British Isles in Western Europe to the Aral Sea in Central Asia. The VOIGT Collection represents a

unique documentation of the evolution of bryozoans during this time span and is a key resource for anyone seeking to understand the evolutionary history of bryozoans.

The VOIGT Collection originally belonged to the *Geologisches-Paläontologisches Institut* (GPI) at the University of Hamburg, but was relocated to the *Senckenberg Forschungsinstitute und Naturmuseen* (SGN) in Frankfurt am Main in February 2005 according to the will of Ehrhard VOIGT. A DFG project (SCHO 581/12-1 "Enhancing documentation and digitalization of the Bryozoa collection donated by Professor Voigt (1905–2004) to the Senckenberg Research Institute, Frankfurt am Main, Germany") resulted in the digitization of almost 20,000 specimens from the VOIGT collection. The top priority of the project was the digitization of the published originals. Thus, 2,666 specimens examined in the works of Ehrhard VOIGT and other researchers were found and digitized. Unfortunately, c.15 % of the originals could not be traced and might be among the thousands of specimens that have not yet been digitized. The digitized data are accessible online at <https://search.senckenberg.de/aquila-public-search/search>.

Resulting from the DFG project, we present here an illustrated catalogue of the type material from the VOIGT Collection lodged at the SGN. During the course of this work, it was discovered that some of the bryozoan material from the VOIGT Collection had remained at the GPI in Hamburg where it is now part of the *Geologisch-/Paläontologisches Museum* (GPM) of the GPI. This material includes all original specimens in the works of TOOTS (1952), WIESEMANN (1963), and SCHUBERT (1986), VOIGT's former students, that had previously been part of the VOIGT Collection. Furthermore, several specimens described by VOIGT (1957a, 1959a), including seven neotypes designated in these works, and from other publications are located in the GPM. Unfortunately, the holotype of *Arachnidium jurassicum* VOIGT, 1977, that should also be in the possession of the GPM could not be found.



The VOIGT Collection at the SGN should contain 256 holotypes and neotypes, 66 of which are also name-bearing types of the type species of nominal genera. The holotypes of 20 species (7.8 % of all holotypes and neotypes) could not be found and have to be considered lost (Fig. 1). Two species, *Amathia immurata* VOIGT, 1972, and *Harmetriella cretacea* VOIGT, 1957, are of questionable validity. Another three species – *Foraripora pesavis* VOIGT & SOULE, 1973, *Iramena gosaviensis* (VOIGT & SOULE, 1973), and *Pinaceocladichnus echinicola* (VOIGT & SOULE, 1973) – are considered to be ichnospecies, and the genus *Foraripora* VOIGT & SOULE, 1973, is an ichnogenus.

Initially, we had intended to include in this type catalogue information and images for all VOIGT holotypes and neotypes in the collections of other institutions. We received images from VOIGT types lodged at the following institutions:

- Bundesanstalt für Geowissenschaften und Rohstoffe Berlin, Germany (types imaged by BGR Berlin and Silviu O. MARTHA)
- Bundesanstalt für Geowissenschaften und Rohstoffe Hannover, Germany (types imaged by BGR Hannover)
- Central Scientific Research Geological Survey Museum named after the Academician F.N. CHERNYSHEV (TsNIGR Museum), Saint Petersburg, Russian Federation (types imaged by Anna V. KOROMYSLOVA)
- Earth Science Museum at Lomonosov Moscow State University, Moscow, Russian Federation (types imaged by Anna V. KOROMYSLOVA)
- Geologisch-/Paläontologisches Museum of the University of Hamburg, Germany (types imaged by Kei MATSUYAMA and Silviu O. MARTHA)
- Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium (types imaged by Kamil ZÁGORŠEK)
- Museum für Naturkunde, Berlin, Germany (types imaged by Kei MATSUYAMA and Silviu O. MARTHA)
- Natural History Museum, London (types imaged by Paul D. TAYLOR)
- Polish Academy of Sciences, Warszawa, Poland (types imaged by Urszula HARA)
- Smithsonian Institution, Washington, D.C., USA (types imaged by JoAnn SANNER)

Unfortunately, as we could not obtain information and images of VOIGT types from all collections, our survey remained incomplete. As a consequence, this type catalogue focuses only on the holotypes and neotypes from the VOIGT Collection at the Senckenberg Institute in Frankfurt am Main, Germany.

It was found during the work on this type catalogue that many of the species described by VOIGT in his earlier publications required revision, beyond the scope of this type catalogue, and we

have avoided erecting new genera. Furthermore, since no proper revision of the species is provided, we have avoided the designation of neotypes for the 20 species for which the holotypes could not be found. This is in accordance with Article 75 of the International Code on Zoological Nomenclature (ICZN, 1999).

On the citation of volume 5 of the *Paléontologie française*

The *Paléontologie française* by Alcide d'ORBIGNY (1802–1857) was published in several releases of a few text pages that were often accompanied by a number of plates (*e.g.*, FISCHER, 2002). The publication dates of the text and the plates had long been ambiguous until SHERBORN (1899) re-constructed the publication dates of the text livraisons of the *Paléontologie française* using information from *Neues Jahrbuch für Mineralogie, Geognosie, Geologie und Petrefaktenkunde* on new literature published. Unfortunately, SHERBORN (1899) did not indicate publication dates of the plates accompanying the text livraisons. The lists of new literature published included in *Neues Jahrbuch für Mineralogie, Geognosie, Geologie und Petrefaktenkunde*, however, included full information on the plates published along with the text livraisons.

Publication dates for the plates of volume 5 of the *Paléontologie française* containing the bryozoans appear to first have been indicated in GREGORY (1909) using the information from *Neues Jahrbuch für Mineralogie, Geognosie, Geologie und Petrefaktenkunde*. The publication dates have later been used and indicated in reference lists by many other bryozoologists throughout the 20th century (*e.g.*, WALTER, 1970; HILLMER, 1971; BROOD, 1972). Ehrhard VOIGT appears to have not been aware of the publication dates of the *Paléontologie française* in his very first publications (*e.g.*, VOIGT, 1924a, 1924b), but he evidently knew both the publication dates of the text livraisons and the plates as early as 1930, which is evident by comparing the publication dates for ORBIGNY taxa indicated in VOIGT (1930) with the actual publication dates of the text livraisons and the plates. However, he usually cited the fifth volume of the *Paléontologie française* simply as 'd'ORBIGNY (1851-1854)' but indicated the publication dates for the plates and text only once in VOIGT and EISERHARDT (1995).

The publication dates of at least the plates seem to recently have passed into oblivion, which led to mis-citations of ORBIGNY's taxa. However, knowledge of the publication dates of the text and the plates of the *Paléontologie française* has a big effect on dates of publication of the taxa proposed by ORBIGNY and the first valid name used for a taxon. Article 12.2.7 of the International Code on Zoological Nomenclature considers genus- and species-group names in association

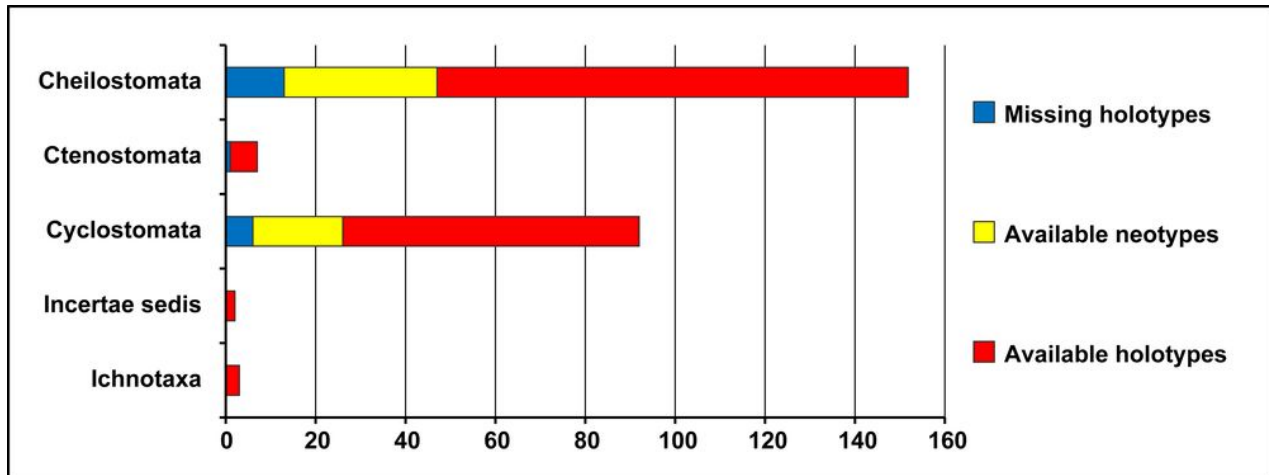


Figure 1: Bar graph showing the number of missing and available holotypes and neotypes from the VOIGT Collection lodged at the Senckenberg Institute, Frankfurt.

with an illustration valid for works published before 1931 (ICZN, 1999). For example, the type species of the cheilostome genus *Escharifora* ORBIGNY, 1852, is *Escharella argus* ORBIGNY, 1851, and not *Escharifora argus* ORBIGNY, 1852, as Pl. 666 of the atlas had already been published one year before publication of p. 209 of the text volume.

The known publication dates of the fifth volume of the *Paléontologie française* used herein and previously reported by GREGORY (1909), WALTER (1970), and others are as follows:

- 1851: p. 1–188, Pls. 600–683;
- 1852: p. 189–472; Pls. 684–761;
- 1853: p. 473–984, Pls. 762–800;
- 1854: p. 985–1192.

2. Material and methods

All material studied and imaged herein is type material (holotypes and neotypes) belonging to the bryozoan collection of Ehrhard VOIGT, now lodged at the *Senckenberg Forschungsinstitute und Naturmuseen* (SGN) in Frankfurt am Main, Germany. All specimens were collected by Ehrhard VOIGT in the 1940s to 1990s unless indicated otherwise in the remarks for each species. The neotypes chosen by VOIGT (1959a) from material collected by Friedrich von HAGENOW (1797–1865) in the middle of the 19th century are now kept together with the VOIGT Collection at the SGN.

Macro photographs were taken using a Keyence 2000D optical microscope at the *Senckenberg am Meer*, Wilhelmshaven, Germany (SMW). Backscattered electron images of uncoated samples were produced using a Tescan Vega 3 scanning electron microscope equipped with a low-vacuum chamber at the SMW. Material that had already been coated was imaged at the SGN using a Camscan CS 24 scanning electron microscope producing secondary electron images. This

material was re-coated (gold/palladium 20:80) before analysis.

For the synonymy lists, the recommendations of MATTHEWS (1972) are partly used. The following signs and abbreviations are used here:

* in front of the year: First valid mentioning of a species name under Article 11 of the *International Code on Zoological Nomenclature* (ICZN, 1999);

non in front of the year: all material published in this publication is excluded from the species;

p in front of the year: *partim*, part of the material published in this publication is excluded from the species;

v in front of the year: *vidimus*, the material used in this publication has been checked by the authors;

? in front of the year: the allocation of this material to the species is questionable because of the way it was presented in that publication.

3. Systematic palaeontology

Phylum Bryozoa EHRENBURG, 1831

Class Stenolaemata BORG, 1926

Order Cyclostomata BUSK, 1852

Suborder Articulina BUSK, 1859

Family Crisiidae JOHNSTON, 1838

Genus *Crisidia* MILNE EDWARDS, 1838

Crisidia lagaaiji VOIGT, 1987

(Fig. 2a–b)

*# 1987a *Crisidia lagaaiji* n.sp. – VOIGT, p. 13, Pl. 1, figs. 1–10.

Holotype: SMF 25533 (VOIGT, 1987a, Pl. 1, fig. 1).

Original label: VOIGT collection number 7728 I.

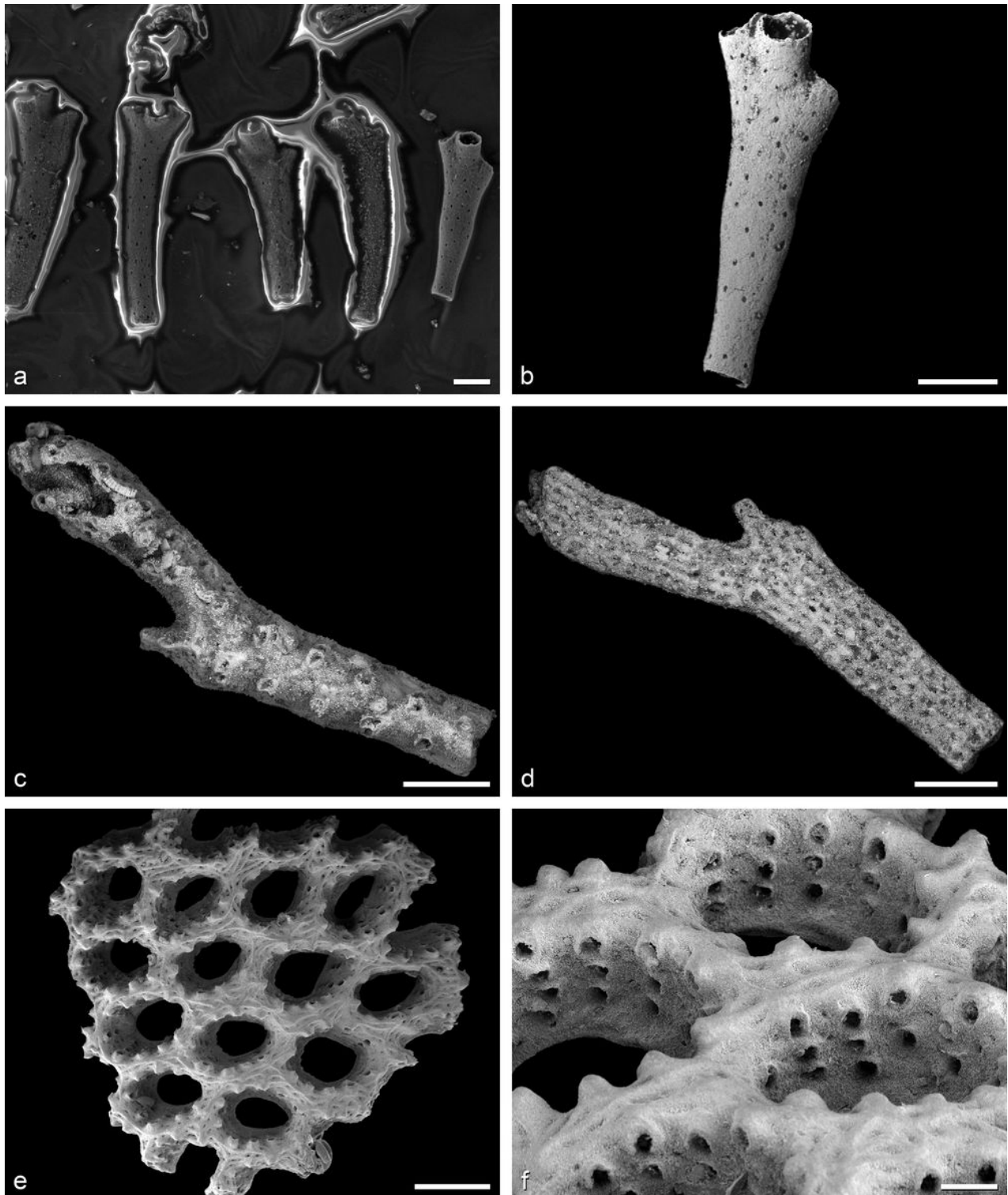


Figure 2: a-b *Crisidia lagaaiji* VOIGT, 1987, holotype, SMF 25533, Danian, Ciplly in the municipality Mons, Wallonia, Belgium. c-d *Polyascosoezia pseudolichenoides* VOIGT, 1987, SMF 25553, Danian, Ciplly in the municipality Mons, Wallonia. e-f *Reteporidaea georgiknetschi* VOIGT, 1984, holotype, SMF 25297, early Maastrichtian (*Belemnitella junior* belemnite Zone), Blom Quarry near Terblijt in the municipality Valkenburg aan de Geul, Limburg, Netherlands. Scale bars: e 1 mm; c-d 500 µm; f 250 µm; a-b 100 µm.

Locus typicus: Caillaud quarry near Ciplly, Mons municipality, Wallonia, Belgium.

Stratum typicum: Pockets in the hardground in the basal beds (Tuffeau de la Malogne) of the Tuffeau de Ciplly.

Stratigraphical range: Danian.

Further distribution: Danian, Mons borehole, Mons, Wallonia, Belgium; Albert Canal near Riemst-Vroenhoven, Flanders, Belgium; Curfs Quarry near Berg, Valkenburg aan de Geul muni-



cipality, Limburg, Netherlands; Sophia Jacoba shaft near Hückelhoven, North Rhine-Westphalia, Germany.

Remarks: The holotype of *Crisidia lagaaiji* is a single autozoid that is placed together with over 30 other autozooids on a gold foil, coated, and covered by a protective foil. We did not remove the protective foil in order not to damage or lose the holotype. The figures of the colony segments are flipped horizontally in VOIGT (1987a).

Suborder Cancellata GREGORY, 1896

Family Crisinidae ORBIGNY, 1853

Genus *Polyascosoecia* CANU, 1920

Polyascosoecia pseudolichenoides VOIGT, 1987

(Fig. 2c–d)

- # 1941 *Crisidia* sp. – HILTERMANN, Pl. 8, fig. 13.
 p# 1972 *Crisina lichenoides* (GOLDFUSS), 1827 – BROOD, p. 379, Pl. LIV, figs. 2–4, 7, 11, Pl. LXI, figs. 9, 13.
 # 1984 *Polyascosoecia pseudolichenoides* n.sp. (nom. nud.) – VOIGT, Pl. 5, figs. 6–9.
 *# 1987a *Reteporidaea pseudolichenoides* n.sp. – VOIGT, p. 32, Pl. 20, figs. 5–15.
 # 2005 *Polyascosoecia pseudolichenoides* VOIGT, 1984 – HINZ-SCHALLREUTER & SCHALLREUTER, p. 548.

Holotype: Not found (VOIGT, 1987a, Pl. 3, figs. 6–8).

Original label: VOIGT collection number 7101 or 7751.

Locus typicus: Glacial drift deposit near Neu Wulmstorf-Daerstorf, Lower Saxony, Germany.

Stratum typicum: Glacial drift deposits.

Further distribution: Danian, Mons borehole and Ciplu, Mons municipality, Wallonia, Belgium; Albert Canal near Riemst-Vroenhoven, Waterschei borehole in Genk and Eisden shaft near Maasmechelen, Flanders, Belgium; Curfs Quarry near Berg, Valkenburg aan de Geul municipality; Beatrix and Neer boreholes near Neer, Leudal municipality (all Limburg, Netherlands); Baltic Danian in Denmark and southern Sweden and several glacial drift deposits of Danian age in northern Germany.

Stratigraphical range: Danian.

Remarks: In the species description (VOIGT, 1987a), 7101 is indicated as the number of the holotype, while the figure caption gives 7751 as the holotype. The species had been previously mentioned and figured as "*Polyascosoecia pseudolichenoides* n.sp. (nom. nud.)" by VOIGT (1984, p. 398). Although HINZ-SCHALLREUTER and SCHALLREUTER (2005) ascribed the authorship of the species to VOIGT (1984) as it fulfilled the provisions of the International Code on Zoological Nomenclature, it is evident that VOIGT (1984) did not intend to erect a new species and explicitly considered *Polyascosoecia pseudolichenoides* as a *nomen*

dubium at that time. The species was formally erected by VOIGT (1987a) as *Reteporidaea pseudolichenoides*. However, it was transferred to the genus *Polyascosoecia* CANU, 1920, by VOIGT in a footnote during the printing phase. The holotype was listed by EISERHARDT (1998) as VOIGT collection number 7751.

Genus *Reteporidaea* ORBIGNY, 1849

Reteporidaea georgiknetschi VOIGT, 1984

(Fig. 2e–f)

- ?p# 1881 *Retepora lichenoides* GOLDF. – QUENSTEDT, p. 347, Pl. 155, fig. 31 (non Pl. 155, fig. 30).
 *# 1984 *Reteporidaea georgiknetschi* n.sp. – VOIGT, p. 398, Pl. 3, figs. 1–6, Pl. 4, figs. 1–10, Pl. 5, figs. 1–3.

Holotype: SMF 25297 (VOIGT, 1984, Pl. 3, fig. 4).

Original label: VOIGT collection number 9796.

Locus typicus: Blom Quarry near Terblijt, Valkenburg aan de Geul municipality, Limburg, Netherlands.

Stratum typicum: *Belemnitella junior* belemnite Zone, Tuffeau de Maastricht.

Stratigraphical range: Late Maastrichtian.

Further distribution: Late Maastrichtian, Tuffeau de Maastricht, Limburg, Netherlands.

Remarks: In the species description, VOIGT (1984, p. 398) mistakenly indicated that the holotype was depicted in Pl. 4, fig. 4. However, the holotype is depicted in Pl. 3, fig. 4, while Pl. 4, fig. 4 shows the gonozoid of SMF 25285 (VOIGT collection number 9797).

Family Cytididae ORBIGNY, 1854

Genus *Bicavea* ORBIGNY, 1853

'*Bicavea*' *fungiformis* (HAGENOW, 1846)

(Fig. 3a–b)

- *p# 1846 *Ceriopora fungiformis* v. HAG. – HAGENOW, p. 595 (non Pl. XXIII.b, fig. 9).
 # 1909 *Ceriopora fungiformis* (von HAGENOW), 1846 – GREGORY, p. 259
 # 1959a *Bicavea?* *fungiformis* (v. HAGENOW), 1846 – VOIGT, p. 51, Pl. III, figs. 2–3.
 p# 1972 *Discocytis infundibuliformis* (HENNIG) – BROOD, p. 345 (non Pl. XXXIV, figs. 6–7, Pl. XXXV, figs. 3, 4, 6).
 # 2000 *Bicavea fungiformis* (HAGENOW, 1846) – VISKOVA, p. 29, Pl. III, figs. 2–7.

Holotype: The originals of the HAGENOW collection in the Stettiner Museum were lost during World War II.

Locus typicus: Island of Rügen, Mecklenburg-Vorpommern, Germany; Balsberg north of Kristianstad, Skåne län, Sweden.

Stratum typicum: Early Campanian and early Maastrichtian.

Neotype: SMF 26394 (VOIGT, 1959a, Pl. III, figs. 2–3).

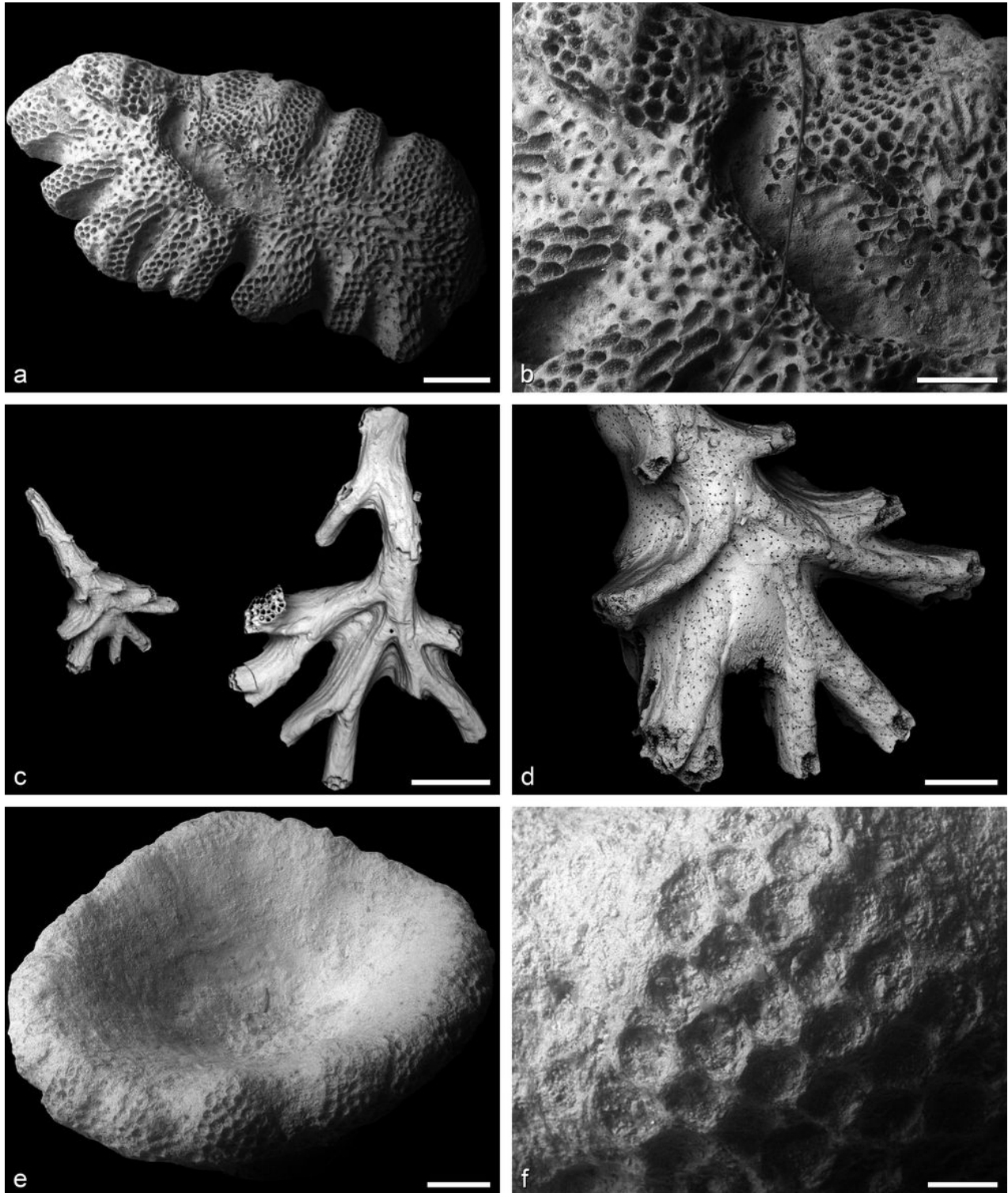


Figure 3: a-b '*Bicavea*' *fungiformis* (HAGENOW, 1846), neotype, SMF 26394, early Maastrichtian, Island of Rügen, Mecklenburg-Vorpommern, Germany. c-d *Cytidmonea kaeveri* VOIGT, 1989, SMF 25783, early Cenomanian (*Neostlingoceras carcitanense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. e-f *Discocyttis bettenstaedti* VOIGT, 1951, holotype, SMF 26304, late Maastrichtian (*Belemnitella junior* belemnite Zone), Sehnde-Ilten, Lower Saxony, Germany. Scale bars: a, c 1 mm; b, d-e 500 µm; f 100 µm.

Original label: VOIGT collection number 391.

Locus neotypicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum neotypicum: White chalk of early

Maastrichtian age.

Further distribution: Middle Campanian, quarry near Hrodna/Grodno (Гродна/Гродно), Grodno Region, Belarus.



Stratigraphical range: Middle Campanian to early Maastrichtian.

Remarks: The original imaged by HAGENOW (1846), which probably came from Scania in Sweden and not from Rügen in Germany, could be conspecific with *Lichenopora infundibuliformis* HENNIG, 1894, in which case '*Bicavea*' *fungiformis* would be a senior synonym of *L. infundibuliformis*. VOIGT (1959a) therefore suggested keeping the name *L. infundibuliformis* for specimens from Scania and restricting '*B.*' *fungiformis* to specimens from Rügen.

Genus *Cytidmonea* VOIGT, 1989

Cytidmonea kaeveri VOIGT, 1989

(Fig. 3c–d)

*# 1989a *Cytidmonea kaeveri* n.g. n.sp. – VOIGT, p. 93, Pl. 3, figs. 1–9, Pl. 4, figs. 1–6.

Holotype: Not found (VOIGT, 1989a, Pl. 3, fig. 1).

Original label: VOIGT collection number 11921.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: Earliest Cenomanian.

Remarks: *Cytidmonea kaeveri* is the type species of *Cytidmonea* VOIGT, 1989. The holotype was listed by EISERHARDT (1998).

Genus *Discocyttis* ORBIGNY, 1854

Discocyttis bettenstaedti VOIGT, 1951

(Fig. 3e–f)

?# 1894 *Lichenopora infundibuliformis* n.sp. – HENNIG, p. 35, Pl. 2, figs. 31–32.

?# 1909 *Lichenopora infundibuliformis* HENNIG, 1894 – GREGORY, p. 259.

*# 1951 *Discocyttis bettenstaedti* n.sp. – VOIGT, p. 41, Pl. 3, figs. 6–9.

?# 1972 *Discocyttis infundibuliformis* (HENNIG) – BROOD, p. 345, Pl. XXXIV, figs. 6–7, Pl. XXXV, figs. 3, 4, 6.

Holotype: SMF 26304 (VOIGT, 1951, Pl. 3, fig. 6).

Original label: VOIGT collection number 255.

Locus typicus: Sehnde-Iltten, Lower Saxony, Germany.

Stratum typicum: Bryozoan-rich rubbly limestone in the *Belemnitella junior* belemnite Zone.

Further distribution: Late Maastrichtian, Saint-Symphorien and borehole near Jemappes (both Mons municipality, Wallonia, Belgium); Voerendaal-Kunrade, Limburg, Netherlands.

Stratigraphical range: Late Maastrichtian.

Remarks: *Discocyttis bettenstaedti* was reported in the late Maastrichtian chalk tuff of Belgium

and the Netherlands by VOIGT (1957a). It is possibly a junior synonym of *D. infundibuliformis* (HENNIG, 1894) from the late Campanian of Scania, Sweden, according to BROOD (1972).

Genus *Discotruncatulipora* FLOR, 1975

Discotruncatulipora corbis FLOR, 1975

(Fig. 4a–b)

*# 1975 *Discotruncatulipora corbis* n.sp. – FLOR, p. 103, Pl. 7, figs. 1–6, Pl. 8, figs. 1–5.

Holotype: SMF 26460 (FLOR, 1975, Pl. 8, fig. 1).

Original label: VOIGT collection number 7653.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Further distribution: Cenomanian, Kaňk near Kutná Hora and further localities, Central Bohemian Region, Czech Republic. Late Cenomanian, Saint-Calais, Sarthe, Pays de la Loire, France. Early Turonian, quarry north of Předboj, Central Bohemian Region, Czech Republic; Hoher Stein in Dresden-Plauen, Saxony, Germany. Late Maastrichtian, Voerendaal-Kunrade, Limburg, Netherlands.

Stratigraphical range: Early Cenomanian to Late Maastrichtian.

Remarks: *Discotruncatulipora corbis* is the type species of *Discotruncatulipora* FLOR, 1975. FLOR (1975, p. 101) cited the VOIGT collection number 7651 (SMF 26461), which is depicted in Pl. 7, figs. 4–6, as the "generotype" of *Discotruncatulipora*, but a different specimen – VOIGT collection number 7653 (SMF 26460), which is depicted in Pl. 8, fig. 1 – as the holotype of *D. corbis*. Such a selection of a specimen as the "generotype" but of another specimen as the holotype of the type species is not considered in the International Code of Zoological Nomenclature (ICZN, 1964). Hence, the holotype of *D. corbis* is deemed to be SMF 26460 and the "generotype" SMF 26461 is considered to have no nomenclatural significance.

Heterocrisina candelabrum VOIGT, 1987

(Fig. 4c–d)

*# 1987b *Heterocrisina candelabrum* n.sp. – VOIGT, p. 42, Fig. 1A–H.

Holotype: SMF 25495 (VOIGT, 1987b, Fig. 1A–B).

Original label: VOIGT collection number 8610.

Locus typicus: Sint-Pietersberg near Maastricht, Limburg, Netherlands.

Stratum typicum: Meerssen Limestone IVf (*Belemnitella junior* belemnite Zone).

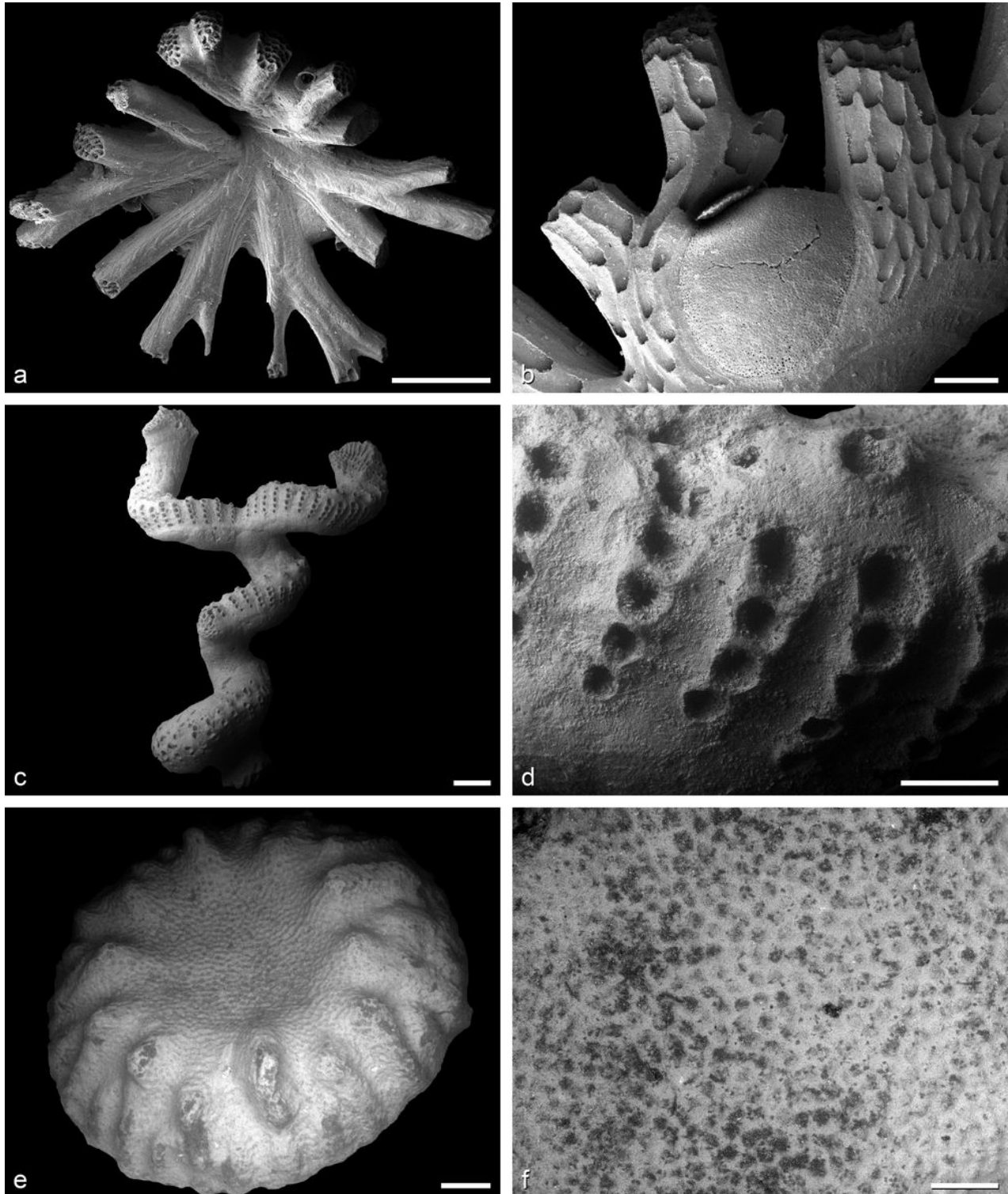


Figure 4: a-b *Discotruncatulipora corbis* FLOR, 1975, holotype, SMF 26460, early Cenomanian (*Neostlingoceras carcitanense* ammonite Zone), Kassenberg, Rauhen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. c-d *Heterocrisina candelabrum* VOIGT, 1987, holotype, SMF 25495, late Maastrichtian (*Belemnitella junior* belemnite Zone), Sint-Pietersberg near Maastricht, Limburg, Netherlands. e-f *Infundibulipora huckriedei* VOIGT, 1977, holotype, SMF 24033, Campanian or Maastrichtian, southern side of the valley of "Kischk" and "Kemunu" northwest of the village Kemunu in the Darmanu Mountains northwest of Kerman, Kerman Province, Iran. Scale bars: a, c, e 1 mm; f 500 μ m; b, d 250 μ m.

Further distribution: Late Maastrichtian, Curfs Quarry near Berg and Blom Quarry near Terblijt (both Valkenburg aan de Geul municipality); ENCI (*Eerste Nederlandse Cement Industrie*) pit on the

hill Sint-Pietersberg (all Limburg, Netherlands).

Stratigraphical range: Late Maastrichtian.

Remarks: In the original description, the speci-



men labelled VOIGT collection number 4564 (SMF 25490) is indicated as the holotype. However, the figure captions and the original label prove that VOIGT collection number 8610 (SMF 25495) is the holotype of *Heterocrisina candelabrum*. SMF 25490 is depicted as Fig. 1D in VOIGT (1987b).

Genus *Infundibulipora* BROOD, 1972

Infundibulipora huckriedei VOIGT, 1977

(Fig. 4e–f)

*# 1977b *Infundibulipora huckriedei* n.sp. – VOIGT, p. 231, Pl. I, figs. 1–6, Pl. II, figs. 1–7, Pl. III, figs. 1–4.

Holotype: SMF 24033 (VOIGT, 1977b, Pl. I, figs. 1–2).

Original label: VOIGT collection number 7387.

Stratum typicum: Green marl clays between limestone of Campanian or Maastrichtian age.

Locus typicus: Southern side of the valley of "Kischk" and "Kemunu", northwest of Kemunu, Darmanu Mountains, northwest of Kerman, Kerman Province, Iran.

Further distribution: Late Campanian (*Belemnitella mucronata* belemnite Zone), Hemmingslycke near Kristianstad; Staversvad near Kristianstad-Arkelstorp (both Skåne län, Sweden). Late Maastrichtian, Curfs Quarry near Berg, Valkenburg aan de Geul municipality, Limburg, Netherlands. Late Maastrichtian (*Belemnitella junior* belemnite Zone), Voerendaal-Kunrade, Limburg, Netherlands.

Stratigraphical range: Late Campanian to late Maastrichtian.

Remarks: Prof. Dr R. HUCKRIEDE collected the holotype and donated it to VOIGT.

Genus *Osculipora* ORBIGNY, 1849

Osculipora iltenensis (VOIGT, 1951)

(Fig. 5a–b)

*# 1951 *Desmepora iltenensis* n.sp. – VOIGT, p. 41, Pl. 5, figs. 1–7.

?# 1972 *Osculipora iltenensis* (VOIGT), 1951 – BROOD, p. 344, Pl. XXXIV, figs. 1–5, Pl. XXXV, fig. 1

Holotype: SMF 26385 (VOIGT, 1951, Pl. 5, figs. 1–3).

Original label: VOIGT collection number 275.

Locus typicus: Sehnde-Ilten, Lower Saxony, Germany.

Stratum typicum: Bryozoan-rich Rubbly limestone in the *Belemnitella junior* belemnite Zone.

Further distribution: According to BROOD (1972, p. 344f): Santonian, several localities in southern Sweden. Early Campanian, Balsberg north of Kristianstad, Skåne län, Sweden. Late Campanian, Malen, Båstad Municipality, Skåne län, Sweden.

Stratigraphical range: Campanian to Maastrichtian.

Remarks: BROOD (1972) reported more than 25 specimens of *Osculipora iltenensis* from Campanian and Santonian sediments in Sweden but left open the possibility that the Campanian species could represent a new species because the autozooids are arranged irregularly between the alternating fascicles or in bundles.

Osculipora prescheri VOIGT, 1998

(Fig. 5c–d)

1886 *Truncatula truncata*, GOLDFUSS – PERGENS & MEUNIER, p. 222.

1890 *Osculipora truncata* GOLDFUSS sp. – OSSWALD, p. 105.

p# 1925 *Osculipora truncata* GOLDF. – LEVINSEN, p. 439.

p# 1972 *Osculipora truncata* (GOLDFUSS), 1827 – BROOD, p. 340, Pl. XLVIII, figs. 1–4 (non Pl. XLIV, figs. 11–12, Pl. XLVIII, figs. 5–7, Pl. LII, fig. 1).

*# 1998 *Osculipora prescheri* n.sp. – VOIGT, p. 294, Fig. 2, Pl. 1, figs. 1–3, Pl. 2, figs. 1–4.

Holotype: SMF 26204 (VOIGT, 1998, Pl. 1, figs. 1–3).

Original label: VOIGT collection number 14481.

Locus typicus: Klintholm, island of Funen, South Denmark Region, Denmark.

Stratum typicum: Bryozoan limestone of late Danian age.

Further distribution: Late Danian, Faxø quarries, Zealand Region, Denmark; locality called "Ny/Klostergård/Jütland" in Denmark; glacial drift deposits on the island of Fehmarn, Schleswig-Holstein, Germany; Limhamn, Skåne län, Sweden.

Stratigraphical range: Danian.

Remarks: All specimens described in the literature as *Osculipora truncata* (GOLDFUSS, 1826) from the Danian were considered by VOIGT (1998) to belong to *O. prescheri*.

Osculipora subhercynica (VOIGT, 1924)

(Fig. 5e–f)

non# 1840 *Idmonea semicylindrica* N. – ROEMER, Pl. V, fig. 21.

1841 *Idmonea semicylindrica* N. – ROEMER, p. 20.

*# 1924a *Desmepora subhercynica* n.sp. – VOIGT, p. 150, Pl. III, figs. 10–12.

1973a *Desmepora subhercynica* VOIGT, 1924 – VOIGT, p. 124, p. 9, Figs. 1–2.

Lectotype (defined in VOIGT, 1973a): the specimen he had depicted in 1924 (VOIGT, 1924a, Pl. III, figs. 10–11). This material belonged to the first VOIGT Collection that was destroyed in a fire at the *Geologisches Staatsinstitut Hamburg* in 1943.

Locus typicus: Abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten, Lower Saxony, Germany.

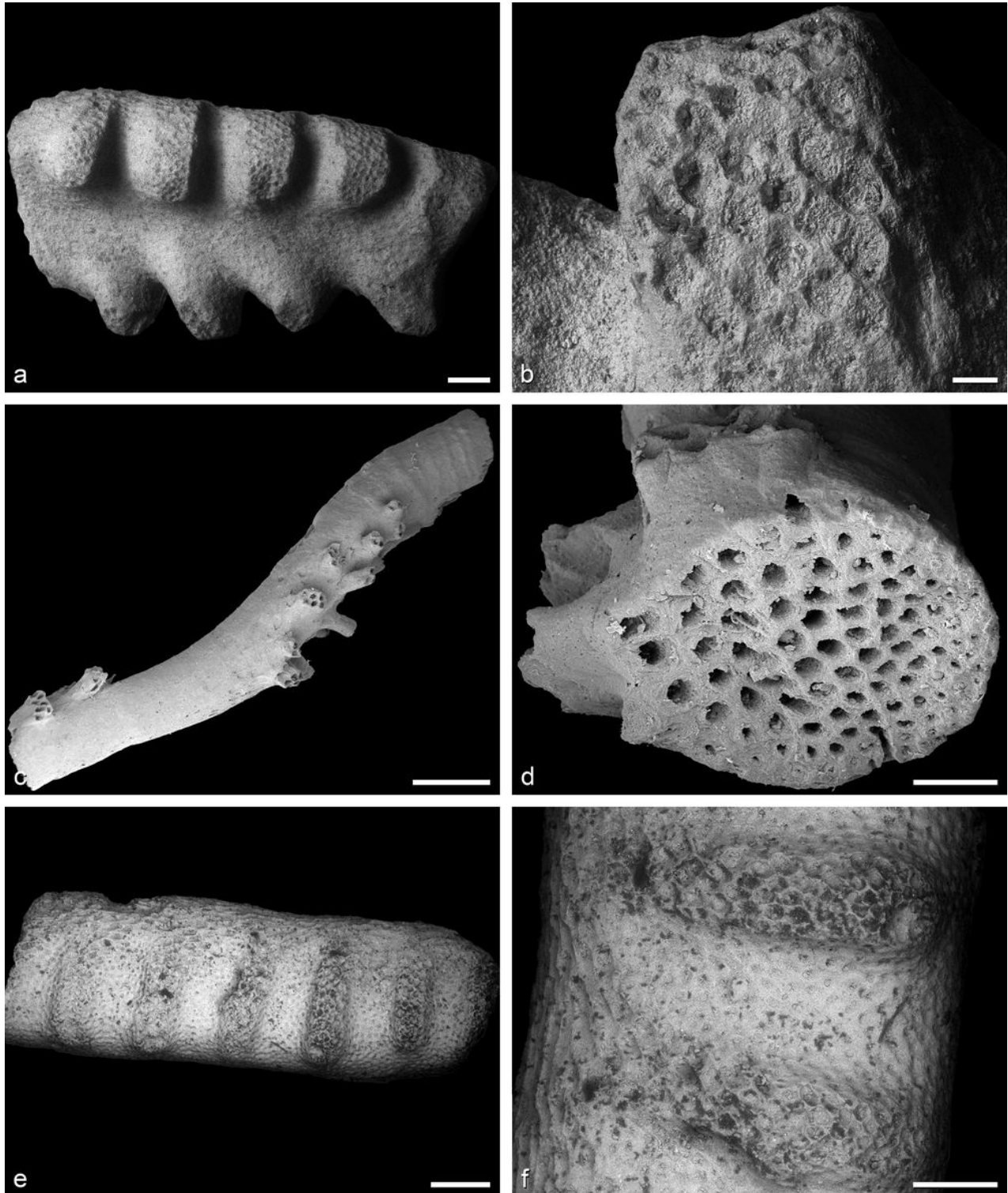


Figure 5: a-b *Osculipora iltenensis* (VOIGT, 1951), holotype, SMF 26385, late Maastrichtian (*Belemnitella junior* belemnite Zone), Sehnde-Ilten, Lower Saxony, Germany. c-d *Osculipora prescheri* VOIGT, 1998, holotype, SMF 26204, late Danian, Klintholm on the island of Funen, South Denmark Region, Denmark. e-f *Osculipora subhercynica* (VOIGT, 1924), neotype, SMF 24445, late Santonian, Burgberg west of Gehrden, Lower Saxony, Germany. Scale bars: c, e 1 mm; a, f 500 µm; d 250 µm; b 100 µm.

Stratum typicum: Glauconitic arenaceous limestone of the Gehrden Formation, *Goniotoothis westfalica* belemnite Zone, middle Santonian.

Neotype: SMF 24445 (VOIGT, 1973a, Pl. 9, figs. 1-2).

Original label: VOIGT collection number 6710.

Locus neotypicus: Burgberg west of Gehrden, Lower Saxony, Germany.

Stratum neotypicum: Late Santonian.



Further distribution: Santonian, abandoned iron-ore mine near Vechelde-Vallstedt; Barbara pit near Lengede-Barbecke; Lengede-Broistedt; Söhlde-Hoheneggelsen; (Ober-)Emscher Formation near Goslar-Oker; Sudmerberg near Goslar; Ilse-de-Groß Bülten (all Lower Saxony, Germany). Early Campanian (*Goniotoothis quadrata* belemnite Zone), Blankenburg (Harz); Wernigerode-Benzingerode (both Saxony-Anhalt, Germany).

Stratigraphical range: Middle Santonian to early Campanian.

Remarks: W. POCKRANDT collected the neotype and gave it to Prof. Dr E. VOIGT. The specimens of *Idmonea semicylindrica* ROEMER, 1840, from Gehrden were referred to *O. subhercynica* (VOIGT, 1924) and differ from the specimens from Rügen described in VOIGT (1973a). The genus *Desmepora* LONSDALE, 1850, has been regarded as a junior synonym *Osculipora* ORBIGNY, 1849, by BROOD (1972) and TAYLOR and MCKINNEY (2006).

Family Petaloporidae GREGORY, 1899

Genus *Cavarinella* MARSSON, 1887

Cavarinella ramosa MARSSON, 1887

(Fig. 6a–b)

- non# 1851 *Cavaria ramosa*, HAG. – HAGENOW, p. 53, Pl. VI, fig. 1.
- non# 1881 *Cavaria ramosa* v. HAG. – HAMM, p. 25.
- non# 1881 *Cavaria ramosa* HAG. – QUENSTEDT, p. 276.
- *# 1887 *Cavarinella ramosa* v. HAGENOW sp. – MARSSON, p. 19, Pl. I, fig. 6.
- non# 1899 *Cavaria ramosa*, von HAGENOW, 1851 – GREGORY, p. 399, Fig. 54.
- # 1922 *Cavarinella ramosa* MARSSON, 1887 – CANU & BASSLER, p. 135, Pl. 19, fig. 10.
- p# 1925 *Heteropora reticulata* MARSSON – LEVINSEN, p. 428.
- # 1935 *Cavarinella ramosa* HAGENOW, 1851 – BASSLER, p. 66.
- # 1953 *Cavarinella ramosa* HAG., 1851 – BASSLER, p. G63, Fig. 30.2.
- # 1972 *Reptomulticlausa ramosa* (HAGENOW), 1887 – BROOD, p. 207, Pl. XXI, figs. 5–8, Pl. LXII, fig. 9.
- # 1982a *Cavarinella ramosa* sensu MARSSON, 1887 (non v. HAGENOW, 1851) – VOIGT, p. 73, Pl. 14, fig. 11, Pl. 15, figs. 1–7, Pl. 20, figs. 5–7.

Holotype: The material of MARSSON (1887) belonged to the collections of the *Preußische Geologische Landesanstalt* (Prussian Geological Land Survey) that VOIGT (1982a) reported to have been destroyed during World War II. However, part of the collection has been recovered (MARTHA, 2014). Should the type material of *C. ramosa* exist among the recovered material, the neotype would have to be set aside.

Locus typicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum typicum: White chalk of early Maastrichtian age.

Neotype: SMF 24929 (VOIGT, 1982a, Pl. 14, figs. 8–10).

Original label: VOIGT collection number 9268.

Locus neotypicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum neotypicum: White chalk of early Maastrichtian age.

Further distribution: Campanian, Lägerdorf, Schleswig-Holstein, Germany. Early Maastrichtian, Island of Møn, Zealand Region, Denmark; Island of Rügen, Mecklenburg-Vorpommern, Germany. Late Maastrichtian, Stevns Klint in the Stevns Kommune, Zealand Region, Denmark; Hemmoor, Lower Saxony, Germany and very common in glacial drift deposits from northern Germany containing white chalk or flint; Kvarnby, city district Husie of Malmö, Skåne län, Sweden. Danian, very common in white chalk exposures and in glacial drift deposits containing white chalk of Danian age in Denmark, Germany and Sweden.

Stratigraphical range: Early Campanian to late Danian.

Remarks: *Cavarinella ramosa* MARSSON, 1887 is the type species of *Cavarinella* MARSSON, 1887. CANU and BASSLER (1922) recognized that when MARSSON (1887) chose *Cavaria ramosa* HAGENOW, 1851, as the type species of his new genus *Cavarinella*, he described a completely different species than the HAGENOW species. However, in his *Fossilium Catalogus* (BASSLER, 1935) and in the *Treatise* (BASSLER, 1953), BASSLER gave *C. ramosa* HAGENOW, 1851, as the type species of *Cavarinella*. The case was clarified by VOIGT (1982a). The true *Cavaria ramosa* HAGENOW, 1851, was regarded as a subjective synonym of *Lopholepis radians* HAGENOW, 1851. To maintain the genus *Cavarinella*, VOIGT (1982a) chose *C. ramosa* sensu MARSSON (1887) from the white chalk of Rügen as the type species.

Genus *Laterocavea* ORBIGNY, 1853

Laterocavea distorta VOIGT, 1989

(Fig. 6c–d)

- *# 1989a *Laterocavea distorta* n.sp. – VOIGT, p. 95, Pl. 5, figs. 1–8, Pl. 6, figs. 1–2.
- # 1995a *Laterocavea distorta* VOIGT – VOIGT, unnumbered figure, sample top left.

Holotype: SMF 25809 (VOIGT, 1989a, Pl. 5, figs. 3–6).

Original label: VOIGT collection number 11866.

Locus typicus: Kassenberg, Rauhen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation, in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: *Neostlingoceras carcitanense* ammonite Zone of the earliest Cenomanian.

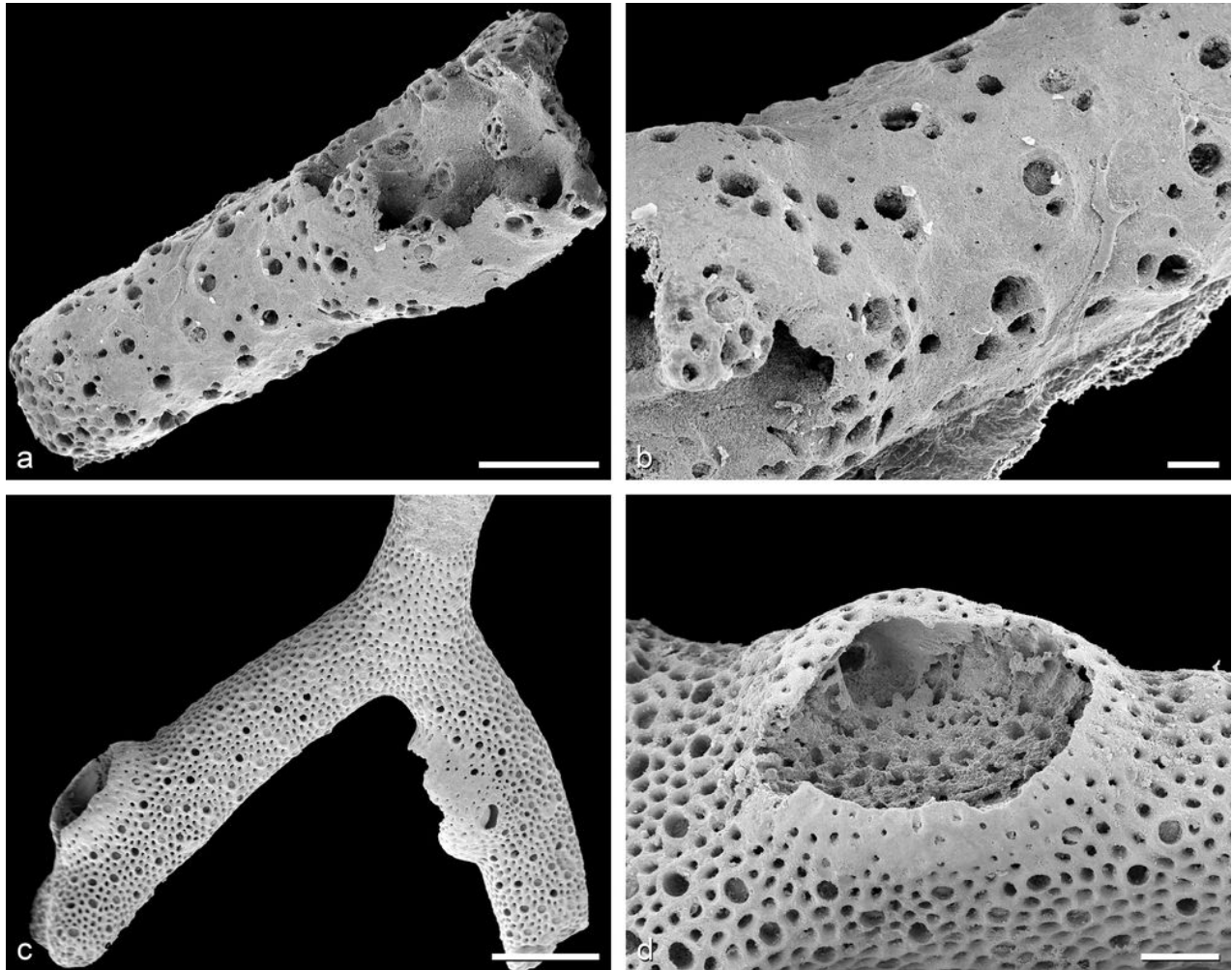


Figure 6: a-b *Cavarinella ramosa* MARSSON, 1887, neotype, SMF 24929, early Maastrichtian, Island of Rügen, Mecklenburg-Vorpommern, Germany. c-d *Laterocavea distorta* VOIGT, 1989, holotype, SMF 25809, early Cenomanian (*Neostlingoceras carcitanense* ammonite Zone), Kassenberg, Rauhen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Scale bars: c 1 mm; a, d 500 µm; b 100 µm.

Suborder Cerioporina HAGENOW, 1851

Family Cerioporidae BUSK, 1859

Genus *Cryptoglana* MARSSON, 1887

Cryptoglana adspersa MARSSON, 1887

(Fig. 7a–b)

- *# 1887 *Cryptoglana adspersa* n.sp. – MARSSON, p. 16, Pl. I, fig. 3.
- # 1899 *Cryptoglana adspersa*, MARSSON, 1887 – GREGORY, p. 405.
- # 1935 *Cryptoglana adspersa* MARSSON, 1887 – BASSLER, p. 85.
- # 1953 *Cryptoglana adspersa* MARSSON, 1887 – BASSLER, p. G75, Fig. 39.3.
- # 1982a *Cryptoglana adspersa* MARSSON 1887 – VOIGT, p. 78, Pl. 17, figs. 1–9, Pl. 19, fig. 5.

Holotype: The material of MARSSON (1887) belonged to the collections of the *Preußische Geologische Landesanstalt* (Prussian Geological Land Survey) that VOIGT (1982a) reported to have been destroyed during World War II. However, part of the collection has been recovered (MARTHA, 2014),

and if the type material for *C. adspersa* belongs to the recovered material, the neotype would have to be set aside.

Locus typicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum typicum: White chalk of early Maastrichtian age.

Neotype: SMF 24920 (VOIGT, 1982a, Pl. 17, fig. 1).

Original label: VOIGT collection number 9260.

Locus neotypicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum neotypicum: White chalk of early Maastrichtian age.

Further distribution: Late Campanian, Meudon, Île-de-France, France. Early Maastrichtian, Island of Møn, Zealand Region, Denmark; Island of Rügen, Mecklenburg-Vorpommern, Germany. Late Maastrichtian, Hemmoor, Lower Saxony, Germany; rare in glacial drifts containing white chalk in northern Germany; Tuffeau de Maastricht, Maastricht area, Limburg, Netherlands. Danian, glacial

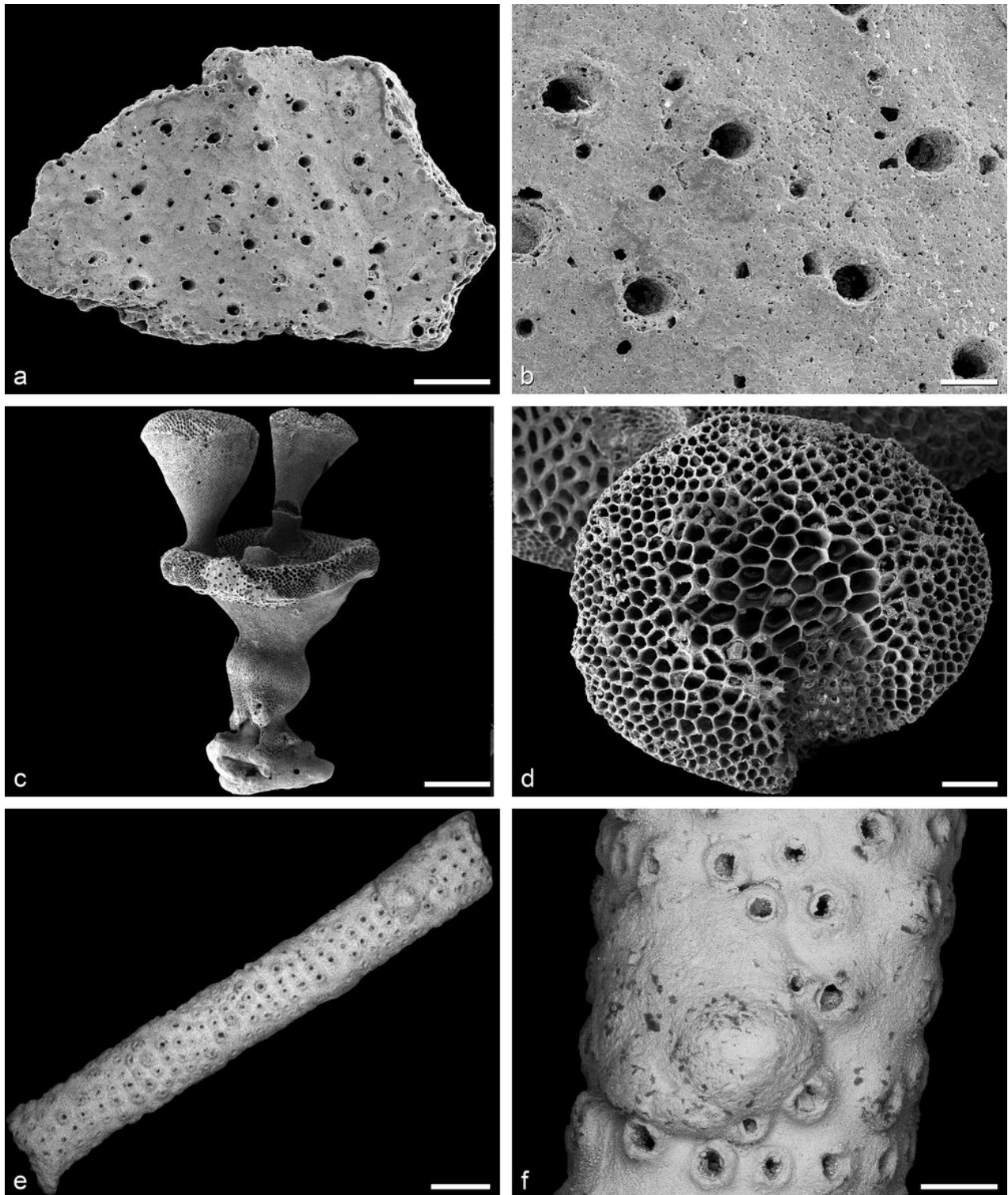


Figure 7: a-b *Cryptoglenga adspersa* (MARSSON, 1887), neotype, SMF 24920, early Maastrichtian, Island of Rügen, Mecklenburg-Vorpommern, Germany. c-d *Marssoniella cenomana* VOIGT, 1974, holotype, SMF 24549, early Cenomanian (*Neostlingoceras carcitanense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. e-f *Pachyteichopora bugei* VOIGT, 1978, holotype, SMF 24690, Coniacian, probably Tours, Centre-Val de Loire, France.
Scale bars: c 2.5 mm; e 1 mm; a, d 500 µm; f 250 µm; b 100 µm.

drifts near Neu Wulmstorf, Lower Saxony, Germany. Late Middle Danian, Voldum, Favrskov Kommune, Region Midtjylland, Denmark.

Stratigraphical range: Late Campanian to Danian.

Remarks: *Cryptoglenga adspersa* is the type species of *Cryptoglenga* MARSSON, 1887.

**Genus *Marssoniella* LEVINSEN, 1925*****Marssoniella cenomana* VOIGT, 1974**

(Fig. 7c–d)

- *# 1974 *Marssoniella cenomana* n.sp. – VOIGT, p. 202, Figs. 1–3, 5–8.
 # 1995a *Marssoniella cenomana* VOIGT – VOIGT, unnumbered figure, samples bottom left and bottom right.

Holotype: SMF 24549 (VOIGT, 1974, Figs. 1–2).

Original label: VOIGT collection number 6661.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation, in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: Earliest Cenomanian.

Remarks: B.A. ENGEL collected the holotype and gave it to VOIGT.

Genus *Pachyteichopora* LEVINSEN, 1925***Pachyteichopora bugei* VOIGT, 1978**

(Fig. 7e–f)

- *# 1978 *Pachyteichopora bugei* n.g. n.sp. – VOIGT, p. 265, Figs. 14–20.
 # 1984 *Pachyteichopora bugei* VOIGT, 1978 – BOARDMAN, Fig. 10D–F.
 # 1985a *Pachyteichopora bugei* VOIGT, 1978 – VOIGT, p. 629, Pl. 2, figs. 3–4.

Holotype: SMF 24690 (VOIGT, 1978, Fig. 20).

Original label: VOIGT collection number 8466.

Locus typicus: See remarks.

Stratum typicum: Coniacian.

Further distribution: Coniacian, Saint-Christophe-sur-le-Nais, Indre-et-Loire; Tours, Indre-et-Loire (both Centre-Val de Loire, France); Fécamp, Normandy, France. Coniacian to Santonian, Gorges du Nant near Cognin-les-Gorges, Isère, Auvergne-Rhône-Alpes, France; Saint-Paterne-Racan, Indre-et-Loire, Centre-Val de Loire, France.

Stratigraphical range: Coniacian to Campanian.

Remarks: Villedieu (Indre et Loire) is given as the provenance by VOIGT (1978) in his description. However, the original label indicates that the holotype comes from Tours (Indre-et-Loire). *Pachyteichopora bugei* was reported from the Coniacian (to Santonian) of Saint-Paterne-Racan and also occurs in the Campanian of the Aquitaine Basin according to VOIGT (1985a).***Pachyteichopora punctata* VOIGT, 1978**

(Fig. 8a–b)

- *# 1978 *Pachyteichopora punctata* n.g. n.sp. – VOIGT, p. 267, Figs. 22–28.

Holotype: SMF 24683 (VOIGT, 1978, Figs. 22–23).

Original label: VOIGT collection number 8467.

Locus typicus: Båstad, Skåne län, Sweden.

Stratum typicum: Rubbly limestone from the *Belemnitella mucronata* belemnite Zone.

Stratigraphical range: Late Campanian.

**Genus *Stylodefranciopora*
VOIGT & VÁVRA, 2006*****Stylodefranciopora turris*
VOIGT & VÁVRA, 2006**

(Fig. 8c–d)

- *# 2006 *Stylodefranciopora turris* nov. gen. nov. spec. – VOIGT & VÁVRA, p. 138, Pl. 1, figs. 1–8, Pl. 2, figs. 1–7, Pl. 3, figs. 1–4.

Holotype: SMF 26248 (VOIGT & VÁVRA, 2006, Pl. 1, fig. 1).

Original label: VOIGT collection number 10326 (SMF 3009).

Locus typicus: Saturn pit near Kronsmoor, Schleswig-Holstein, Germany.

Stratum typicum: White chalk of early Maastrichtian age.

Paratypes: SMF 26249–26256.

Further distribution: Santonian, Burgberg west of Gehrden, Lower Saxony, Germany. Campanian, chalk pit of the cement factory Alsen-Breitenburg near Lägerdorf, Schleswig-Holstein, Germany. Early Maastrichtian, Island of Møn, Zealand Region, Denmark.

Stratigraphical range: Santonian to early Maastrichtian.

Family Corymboporidae SMITT, 1867**Genus *Amphimarssoniella* VOIGT, 1974*****Amphimarssoniella klaumanni*
VOIGT, 1974**

(Fig. 8e–f)

- *# 1974 *Amphimarssoniella klaumanni* n.g. n.sp. – VOIGT, p. 209, Figs. 9–28.
 # 1981a *Amphimarssoniella klaumanni* VOIGT – VOIGT, Fig. 3a–c.
 # 1995a *Amphimarssoniella klaumanni* VOIGT – VOIGT, unnumbered figure, sample top right.
 # 1999 *Amphimarssoniella klaumanni* VOIGT, 1974 – TAYLOR & GRISCHENKO, Fig. 18.

Holotype: SMF 24533 (VOIGT, 1974, Fig. 11).

Original label: VOIGT collection number 6665.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation, in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

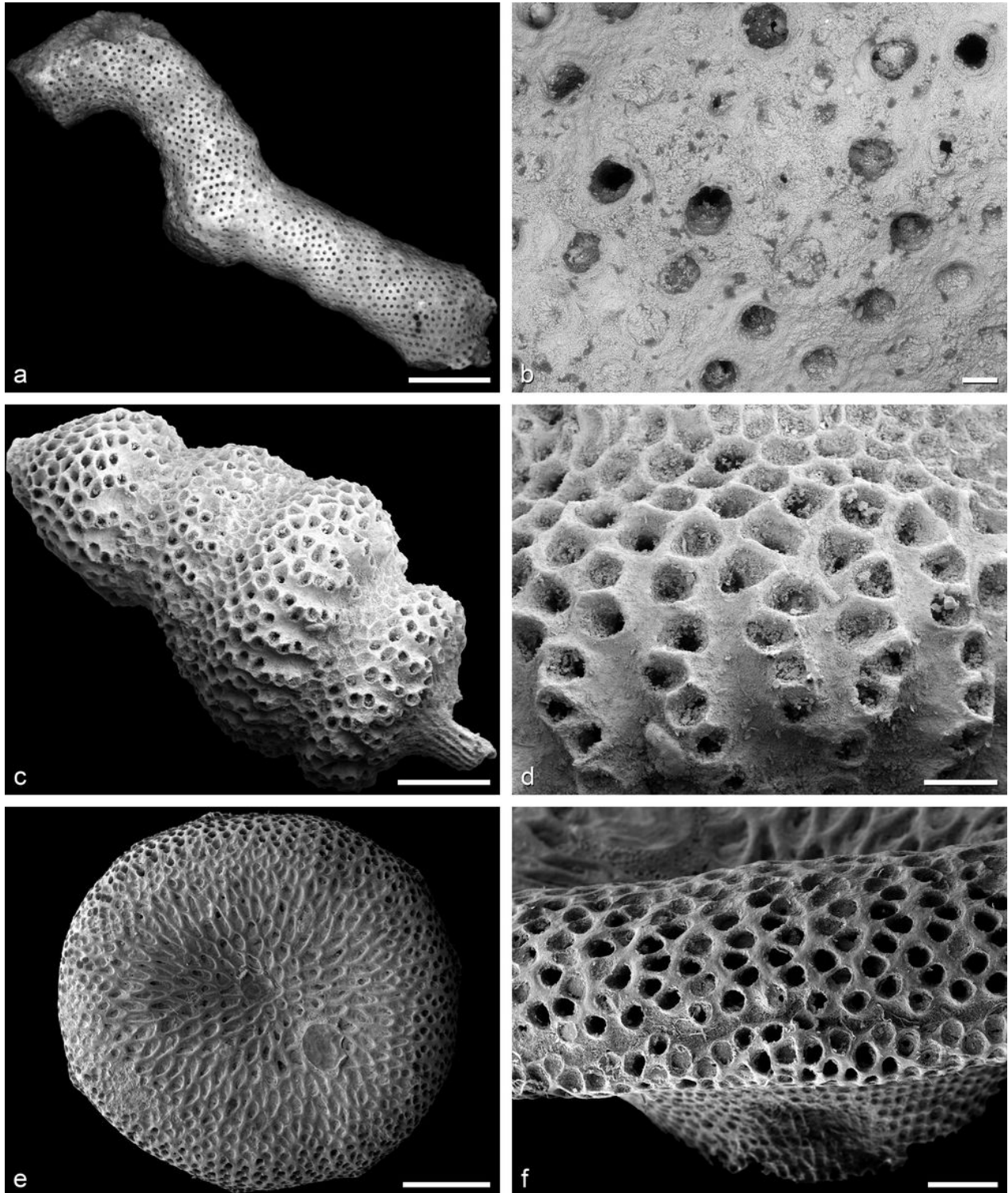


Figure 8: a-b *Pachyteichopora punctata* VOIGT, 1978, holotype, SMF 24683, late Campanian (*Belemnitella mucronata* belemnite Zone), Båstad, Skåne län, Sweden. c-d *Stylodefranciopora turris* VOIGT & VAVRA, 2006, holotype, SMF 26248, early Maastrichtian, Saturn pit near Kronsmoor, Schleswig-Holstein, Germany. e-f *Amphimarssoniella klaumanni* VOIGT, 1974, holotype, SMF 24533, early Cenomanian (*Neostlingoceras carcitense* ammonite Zone), Kasenberg, Rauhen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. Scale bars: a, e 2.5 mm; c 1 mm; f 500 µm; d 250 µm; b 100 µm.

Stratigraphical range: Earliest Cenomanian.

Remarks: *Amphimarssoniella klaumanni* is the type species of *Amphimarssoniella* VOIGT, 1974. H.

KLAUMANN collected the holotype and gave it to VOIGT.

**Suborder Melicerititida PERGENS, 1889****Family Eleidae ORBIGNY, 1853****Genus *Biforicula* VOIGT, 1989*****Biforicula acuminata* (VOIGT, 1973)**

(Fig. 9a–b)

p# 1924a *Elea nodulifera* n.sp. – VOIGT, p. 165, Pl. IV, fig. 8 (non figs. 7, 9).*# 1973a *Foricula acuminata* n.sp. – VOIGT, p. 139, Pl. 14, figs. 5–7.

Holotype: SMF 26436 (VOIGT, 1973a, Pl. 14, fig. 7).

Original label: VOIGT collection number 6674a.

Locus typicus: Abandoned Barbara pit near Lengede-Barbecke, Lower Saxony, Germany.

Stratum typicum: Glauconitic arenaceous limestone of the Gehrden Formation, *Goniot euthis westfalica* belemnite Zone, middle Santonian.

Further distribution: Santonian, hills Sudmerberg near Goslar; Burgberg west of Gehrden; abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten; abandoned iron-ore mine near Vechelde-Vallstedt; Lengede-Broistedt; Söhlde-Hoheneggelsen; Harzburg; Bad Harzburg-Harlingerode (all Lower Saxony, Germany).

Stratigraphical range: Middle Santonian.

Remarks: In both the German and the English versions of the the abstract of VOIGT (1973a), the name of this species is incorrectly given as "*Foricula acutimargo* n.sp.", which is a *nomen nudum*.***Biforicula? nodulifera* (VOIGT, 1924)**

(Fig. 9c–d)

p# 1924a *Elea nodulifera* n.sp. – VOIGT, p. 165, Pl. IV, figs. 7, 9 (non fig. 8).*# 1973a *Foricula nodulifera* (VOIGT, 1924) – VOIGT, p. 138, Pl. 14, figs. 1–4.Lectotype (defined in VOIGT, 1973a): the specimen figured by VOIGT (1924a, Pl. IV, fig. 7). This material belonged to the first VOIGT Collection that was destroyed in a fire at the *Geologisches Staatsinstitut Hamburg* in 1943.

Locus typicus: Sudmerberg near Goslar, Lower Saxony, Germany.

Stratum typicum: Sponge-rich marls of the Emscher Formation, early Santonian.

Neotype: SMF 26436 (VOIGT, 1973a, Pl. 14, fig. 1).

Original label: VOIGT collection number 6761 (= VOIGT collection number 6760).

Locus neotypicus: Burgberg west of Gehrden, Lower Saxony, Germany.

Stratum neotypicum: Late Santonian.

Further distribution: Middle Santonian, Salzberg near Quedlinburg; abandoned Barbara pit

near Lengede-Barbecke; abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten; Bad Harzburg; abandoned iron-ore mine near Vechelde-Vallstedt; Lengede-Broistedt; Söhlde-Hoheneggelsen (all Lower Saxony, Germany).

Stratigraphical range: Santonian.

Remarks: The label with the neotype has the VOIGT collection number 6760.

Genus *Elea* ORBIGNY, 1853***Elea elegantula* TAYLOR, 1994**

(Fig. 9e–f)

*# 1994 *Elea elegantula* sp. nov. – TAYLOR, p. 19, Figs. 29–43.

Holotype: SMF 26499 (TAYLOR, 1994, Figs. 29, 36, 39–42).

Original label: VOIGT collection number 10451.

Locus typicus: Kassenberg, Rauhen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Paratypes: SMF 26499 (in same cavity slide as holotype), 26500.

Stratigraphical range: Earliest Cenomanian.

Remarks: The paratypes with the VOIGT collection numbers 9847 and 9848 were not found.

***Elea flabellata* TAYLOR, 1994**

(Fig. 10a–b)

*# 1994 *Elea flabellata* sp. nov. – TAYLOR, p. 20, Figs. 44–48.

Holotype: SMF 26501 (TAYLOR, 1994, Figs. 44–48).

Original label: VOIGT collection number 10448.

Locus typicus: Abandoned iron ore pit Mathilde near Lengede-Broistedt, Lower Saxony, Germany.

Stratum typicum: Early Santonian.

Stratigraphical range: Early Santonian.

Remarks: The holotype is the only reported specimen of this species.

***Elea mackinneyi* TAYLOR, 1994**

(Fig. 10c–d)

*# 1994 *Elea mackinneyi* sp. nov. – TAYLOR, p. 26, Figs. 66–71.

Holotype: SMF 26503 (TAYLOR, 1994, Figs. 66–71).

Original label: VOIGT collection number 10474.

Locus typicus: Kassenberg, Rauhen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

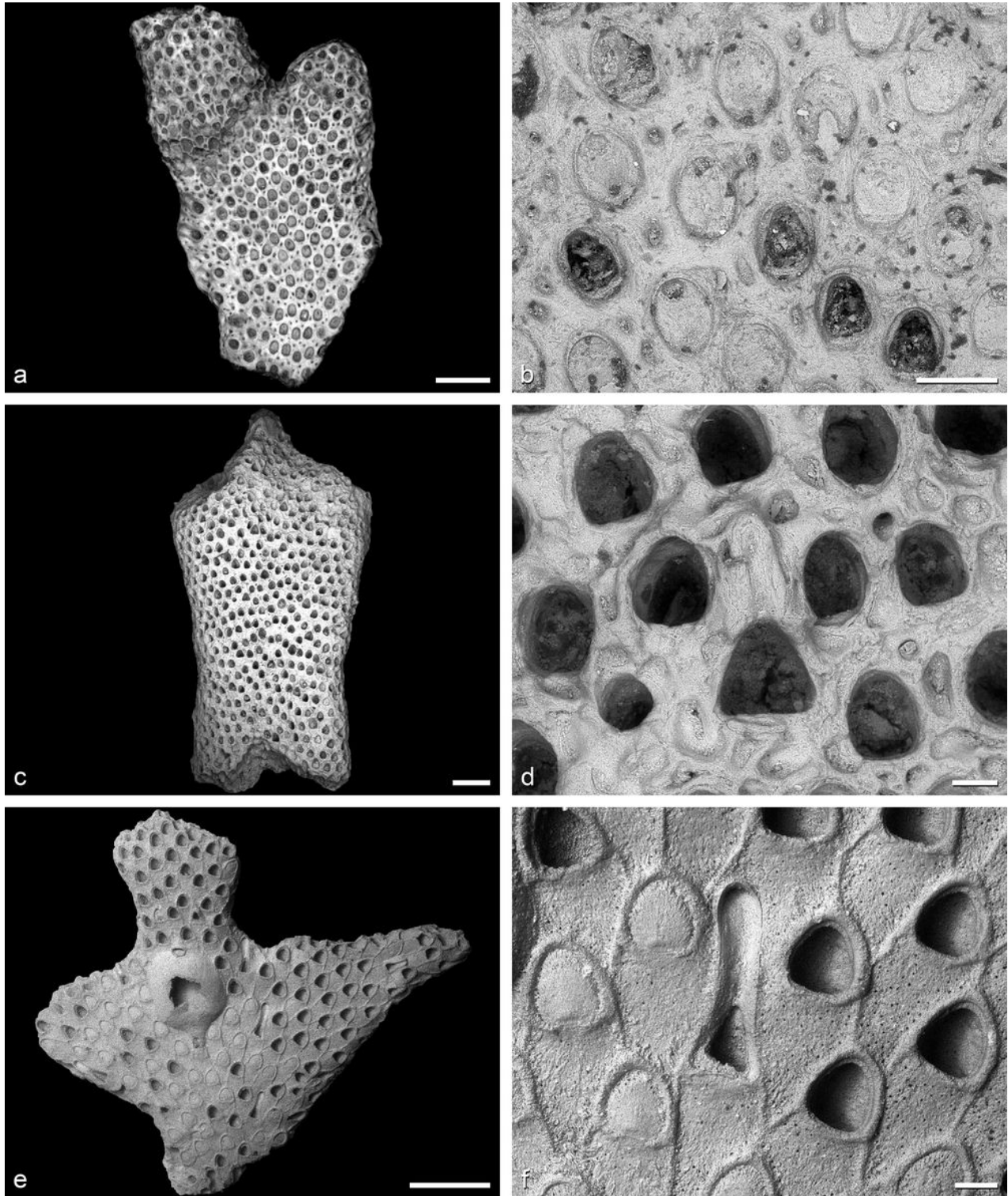


Figure 9: a-b *Biforicula acuminata* (VOIGT, 1973), holotype, SMF 26436, middle Santonian (*Goniotooth westfalica* belemnite Zone), abandoned Barbara pit near Lengede-Barbecke, Lower Saxony, Germany. c-d *Biforicula ? nodulifera* (VOIGT, 1924), neotype, SMF 26436, late Santonian, Burgberg west of Gehrden, Lower Saxony, Germany. e-f *Elea elegantula* TAYLOR, 1994, holotype, SMF 26499, early Cenomanian (*Neostlingoceras carcitanense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. Scale bars: a, c, e 1 mm; b 250 µm; d, f 100 µm.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Paratype: SMF 26504.

Stratigraphical range: Earliest Cenomanian.

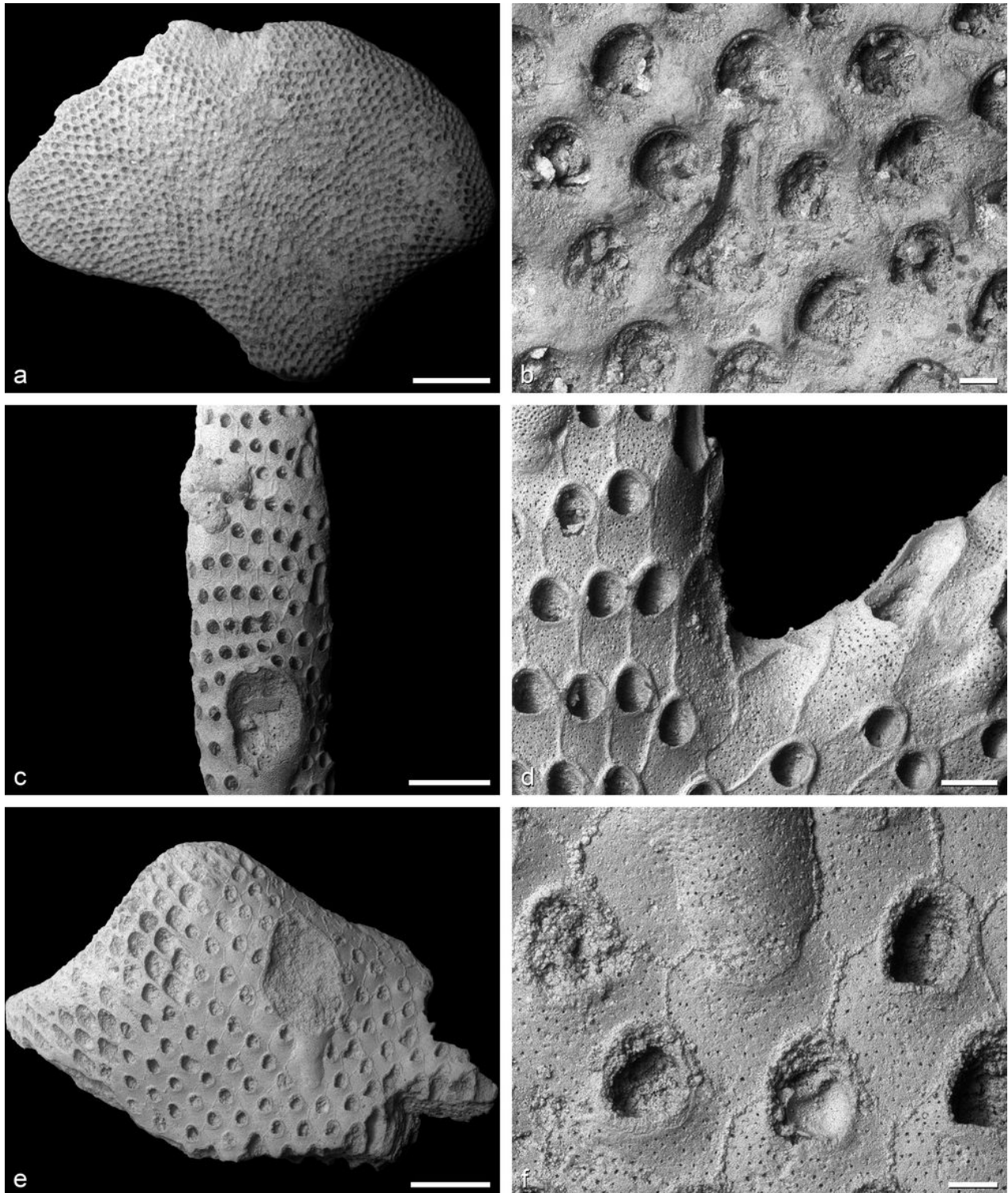


Figure 10: a-b *Elea flabellata* TAYLOR, 1994, holotype, SMF 26501, early Santonian, abandoned iron ore pit Mathilde near Lengede-Broistedt, Lower Saxony, Germany. c-d *Elea mackinneyi* TAYLOR, 1994, holotype, SMF 26503, early Cenomanian (*Neostlingoceras carcitense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. e-f *Elea pseudolamellosa* TAYLOR, 1994, holotype, SMF 26506, late Campanian, "St Severin d'Uzel" (?), Nouvelle-Aquitaine, France. Scale bars: a 2.5 mm; c 1 mm; e 500 μ m; d 250 μ m; b, f 100 μ m.

***Elea pseudolamellosa* TAYLOR, 1994**
(Fig. 10e–f)

*# 1994 *Elea pseudolamellosa* sp. nov. – TAYLOR, p. 30, Figs. 72–78.

Holotype: SMF 26506 (TAYLOR, 1994, Figs. 75, 78).

Original label: VOIGT collection number 10462.

Locus typicus: "St Severin d'Uzel", probably Chenac-Saint-Seurin-d'Uzet, Charente-Maritime,

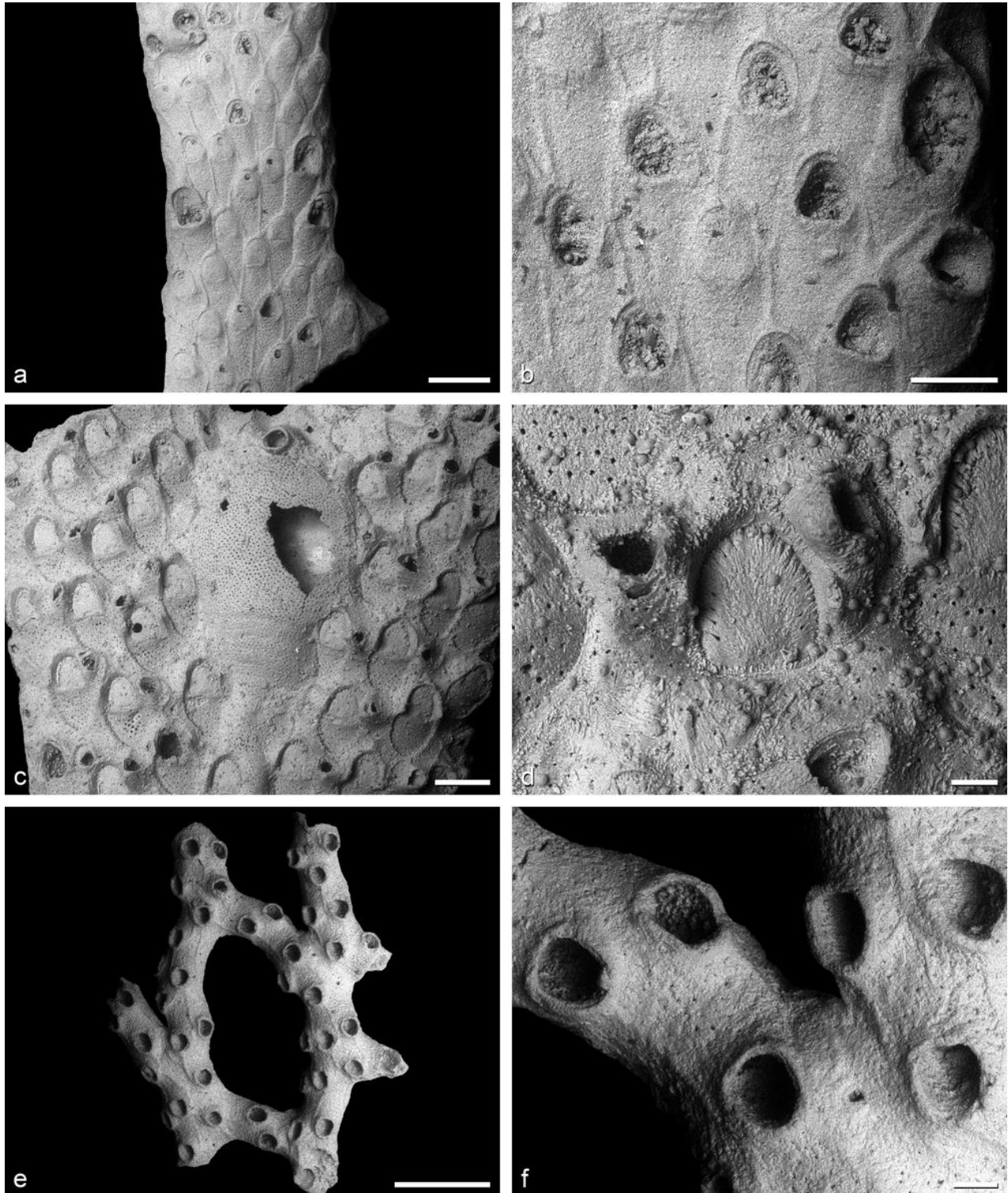


Figure 11: a-b *Elea viskova* TAYLOR, 1994, holotype, SMF 26508, Turonian, locality called "Kyzylsaj", ca. 180 km east of Fort-Shevchenko (Форт-Шевченко), Mengystau Province, Kazakhstan. c-d *Elea whiteleyi* TAYLOR, 1994, holotype, SMF 26511, middle Senomanian, Saint-Germain-la-Campagne, Normandy, France. e-f *Meliceritella schneemilchae* TAYLOR, 1987, holotype, SMF 26495, early Campanian (*Offaster pilula* echinoid Zone), Schinkel pit of the cement factory Alsen-Breitenburg near Lägerdorf, Schleswig-Holstein, Germany. Scale bars: e 1 mm; a 500 μ m; b-c 250 μ m; f 100 μ m; d 50 μ m.

Nouvelle-Aquitaine, France.

Stratum typicum: Late Campanian.

Paratypes SMF 26505, 26507.

Further distribution: Campanian, railway station in Soullans, Vendée, Pays de la Loire, France. Late Campanian, Le Cailleau near Talmont-sur-Gironde, Charente-Maritime, Nouvelle-Aquitaine, France.

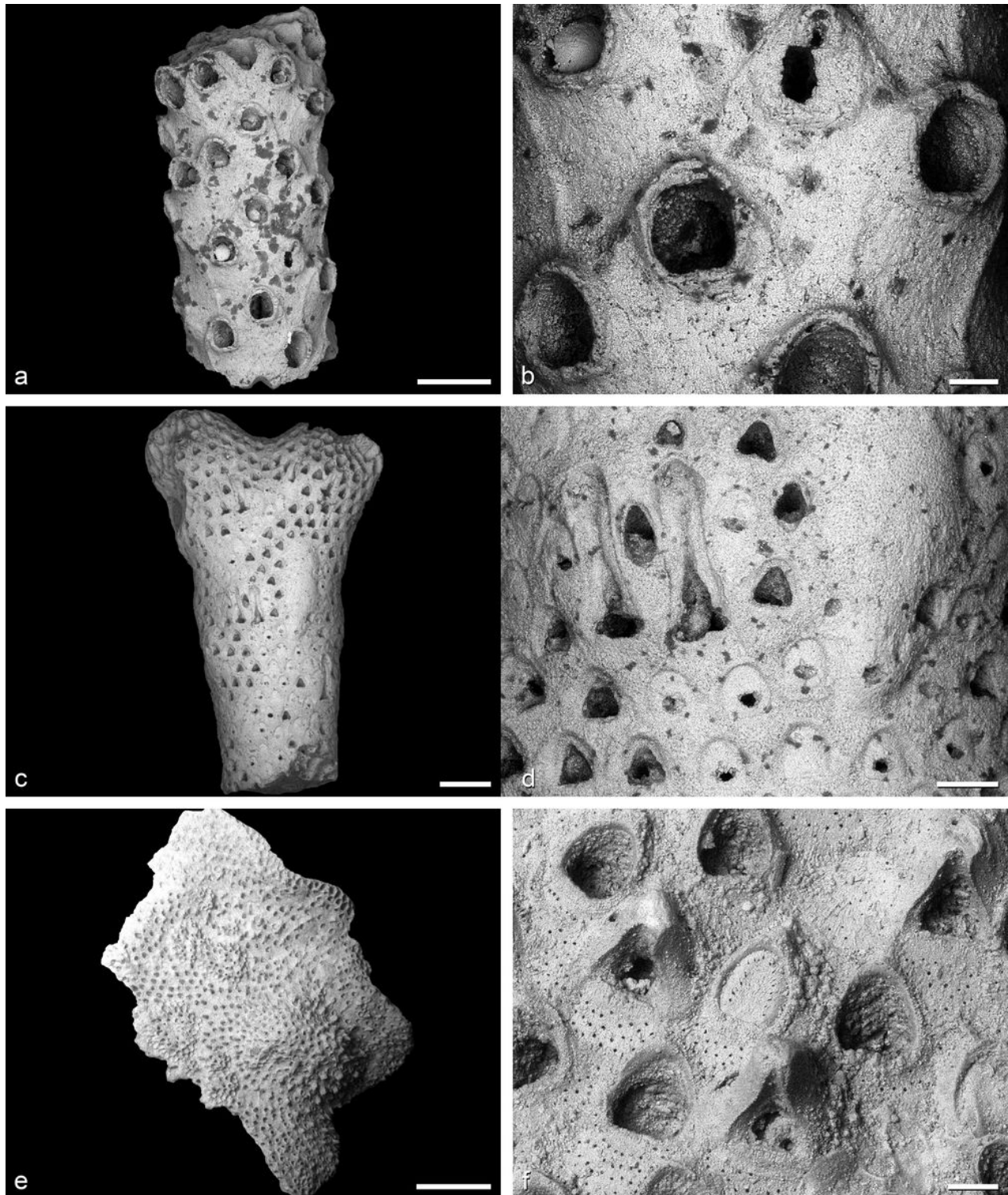


Figure 12: a-b *Meliceritites ? eleoides* VOIGT, 1975, holotype, SMF 24578, late Santonian (*Uintacrinus socialis* crinoid Zone), Schinkel-Breitenburg near Lägerdorf, Schleswig-Holstein, Germany. c-d *Meliceritites pseudoangulosa* VOIGT, 1973, holotype, SMF 26435, middle Santonian (*Goniot euthis westfalica* belemnite Zone), abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten, Lower Saxony, Germany. e-f *Reptomultealea acclivata* TAYLOR, 1994, holotype, SMF 26521, early Cenomanian (*Neostlingoceras carcitanense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. Scale bars: e 2.5 mm; c 1 mm; a 500 μ m; d 250 μ m, b, f 100 μ m.

Stratigraphical range: Campanian.

Remarks: TAYLOR (1994) indicated "St Severin d'Uzel" as the type locality. However, this probably represents an incorrect transcription of the

original handwritten label and the true locality is likely to be Saint-Seurin-d'Uzet, a part of the commune of Chenac-Saint-Seurin-d'Uzet.

***Elea viskova* TAYLOR, 1994**

(Fig. 11a–b)

*# 1994 *Elea viskova* sp. nov. – TAYLOR, p. 38, Figs. 95–99.

Holotype: SMF 26508 (TAYLOR, 1994, Figs. 95–99).

Original label: VOIGT collection number 10450.

Locus typicus: A locality called "Kyzylsaj", ca. 180 km east of Fort-Shevchenko (Форт-Шевченко), Mengystau Province, Kazakhstan.

Stratum typicum: Turonian.

Paratype: SMF 26509.

Stratigraphical range: Turonian.

***Elea whiteleyi* TAYLOR, 1994**

(Fig. 11c–d)

*# 1994 *Elea whiteleyi* sp. nov. – TAYLOR, p. 38, Figs. 100–109.

Holotype: SMF 26511 (TAYLOR, 1994, Figs. 102–103).

Original label: VOIGT collection number 10538.

Locus typicus: Saint-Germain-la-Campagne, Normandy, France.

Stratum typicum: Base of the middle Cenomanian.

Paratypes: SMF 26510, 26512, 26513

Further distribution: Early (?) Cenomanian, Saint-Jouin-Bruneval, Seine-Maritime, Normandy, France.

Stratigraphical range: Early to middle Cenomanian.

Genus *Meliceritella* LEVINSEN, 1925***Meliceritella schneemilchae*****TAYLOR, 1987**

(Fig. 11e–f)

*# 1987 *Meliceritella schneemilchae* sp. nov. – TAYLOR, p. 72, Pl. 1a–i.

Holotype: SMF 26495 (TAYLOR, 1987, Pl. 1c–e).

Original label: VOIGT collection number 10328.

Locus typicus: Schinkel pit of the cement factory Alsen-Breitenburg near Lägerdorf, Schleswig-Holstein, Germany.

Stratum typicum: *Offaster pilula* echinoid Zone in the early Campanian.

Paratypes: SMF 26493, 26494, 26496–26498.

Further distribution: Early Campanian, Alemannia quarry near Sehnde-Höver, Lower Saxony, Germany.

Stratigraphical range: Early Campanian.

Genus *Meliceritites* ROEMER, 1841***Meliceritites eleoides* VOIGT, 1975**

(Fig. 12a–b)

*# 1975a *Meliceritites eleoides* n.sp. – VOIGT, p. 243, Pl. 1, figs. 3–10.

Holotype: SMF 24578 (VOIGT, 1975a, Pl. 1, figs. 8–10).

Original label: VOIGT collection number 7428.

Locus typicus: Drilling in the chalk pit Schinkel-Breitenburg near Lägerdorf, Schleswig-Holstein, Germany.

Stratum typicum: White chalk of the *Uintacrinus socialis* crinoid Zone (late Santonian).

Further distribution: Early Campanian, Sehnde-Höver, Lower Saxony, Germany.

Stratigraphical range: Santonian to base of the late Campanian.

Remarks: The specimens assigned by VOIGT (1975a) to *Meliceritites eleoides* are all small fragments that lack primary eleozoids and opercula. However, the straight proximal edges of the autozooidal apertures, and the occurrence of a possible secondary nanozooid (Fig. 64 b, upper right) support the assignment of this species to *Meliceritites* ROEMER, 1841.***Meliceritites pseudoangulosa*****VOIGT, 1973**

(Fig. 12c–d)

1924a *Meliceritites angulosa* ORBIGNY – VOIGT, p. 168, Pl. IV, fig. 10.*# 1973a *Meliceritites pseudoangulosa* n.sp. – VOIGT, p. 135, Pl. 11, fig. 5, Pl. 12, figs. 5–9.

Holotype: SMF 26435 (VOIGT, 1973a, Pl. 11, fig. 5).

Original label: VOIGT collection number 6685.

Locus typicus: Abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten, Lower Saxony, Germany.

Stratum typicum: Glauconitic arenaceous limestone of the Gehrden Formation, *Goniot euthis westfalica* belemnite Zone, middle Santonian.

Further distribution: Santonian, Ilsede-Groß Bülten; Gehrden; Sudmerberg near Goslar; abandoned iron-ore mine near Vechelde-Vallstedt; Lengede-Broistedt; Söhlde-Hoheneggelsen; Harzburg; Bad Harzburg-Harlingerode (all Lower Saxony, Germany).

Stratigraphical range: Santonian.

Genus *Reptomultelea* ORBIGNY, 1853***Reptomultelea acclivata* TAYLOR, 1994**

(Fig. 12e–f)

*# 1994 *Reptomultelea acclivata* sp. nov. – TAYLOR, p. 54, Figs. 148–154.

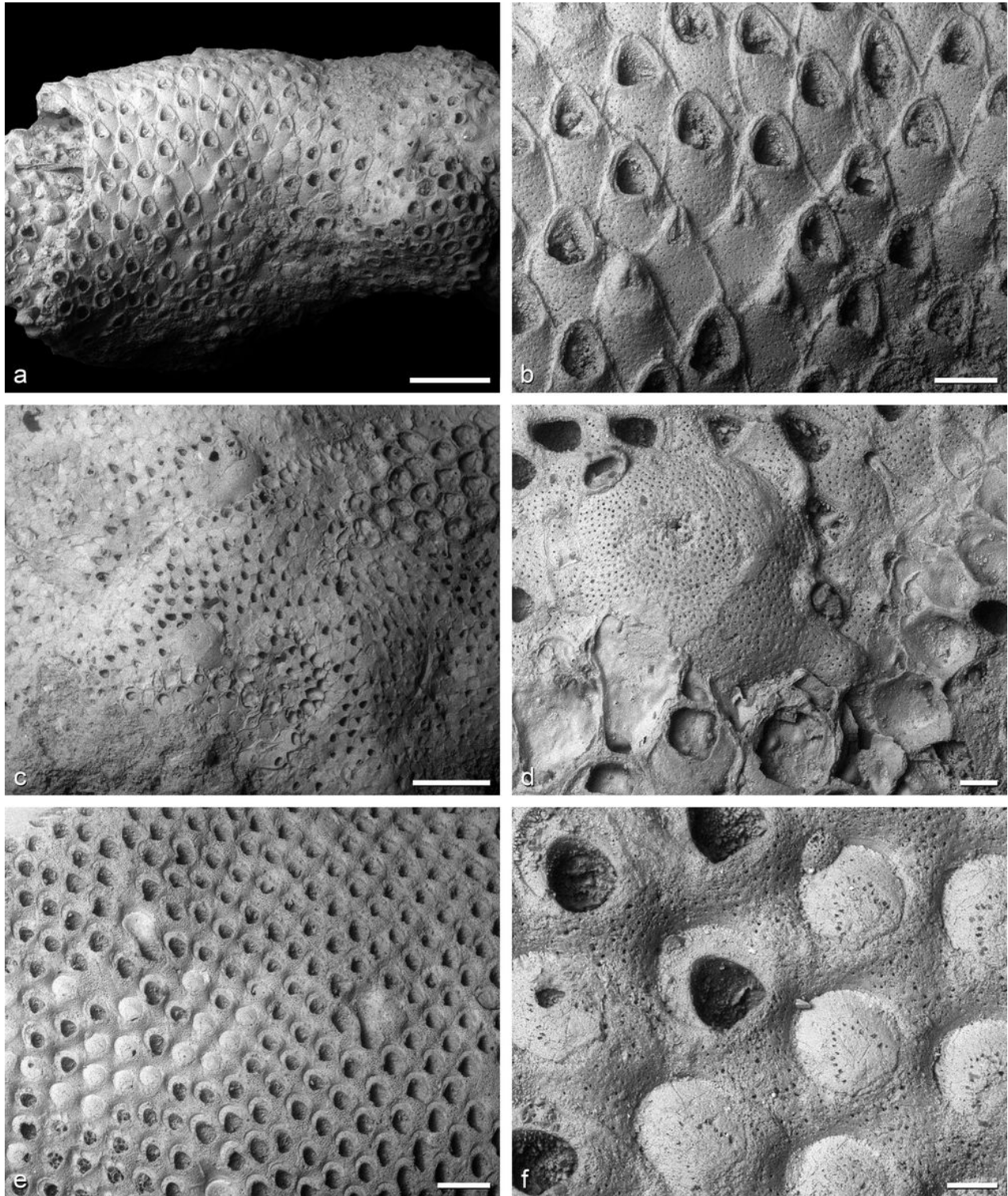


Figure 13: a-b *Reptomulitea convexa* TAYLOR, 1994, holotype, SMF 26524, probably Turonian, Chenu, Pays de la Loire, France. c-d *Reptomulitea parvula* TAYLOR, 1994, holotype, SMF 26531, early Cenomanian (*Neostlingoceras carcitanense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. e-f *Reptomulitea pegma* TAYLOR, 1994, holotype, SMF 26532, early Cenomanian (*Neostlingoceras carcitanense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Scale bars: a, c 1 mm; f 500 µm; b 250 µm; d-e 100 µm.

Holotype: SMF 26521 (TAYLOR, 1994, Figs. 148–151).

Original label: VOIGT collection number 10427.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.



Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: Earliest Cenomanian.

Remarks: The paratype bearing VOIGT collection number 10502 was not found.

***Reptomulitea convexa* TAYLOR, 1994**

(Fig. 13a–b)

*# 1994 *Reptomulitea convexa* sp. nov. – TAYLOR, p. 66, Figs. 191–196.

Holotype: SMF 26524 (TAYLOR, 1994, Figs. 191–193).

Original label: VOIGT collection number 10467.

Locus typicus: Chenu, Pays de la Loire, France.

Stratum typicum: Turonian (?).

Paratypes: SMF 26525, 26526.

Further distribution: Turonian, Bois de Gareau near Écommoy, Pays de la Loire, France.

Stratigraphical range: Turonian.

Remarks: G. BRETON collected the holotype and gave it to VOIGT.

***Reptomulitea parvula* TAYLOR, 1994**

(Fig. 13c–d)

*# 1994 *Reptomulitea parvula* sp. nov. – TAYLOR, p. 83, Figs. 243–248.

Holotype: SMF 26531 (TAYLOR, 1994, Figs. 243–248).

Original label: VOIGT collection number 10434.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: Earliest Cenomanian.

Remarks: H. KLAUMANN collected the holotype and gave it to VOIGT. The holotype is the only reported specimen of this species.

***Reptomulitea pegma* TAYLOR, 1994**

(Fig. 13e–f)

*# 1994 *Reptomulitea pegma* sp. nov. – TAYLOR, p. 85, Figs. 249–255.

Holotype: SMF 26532 (TAYLOR, 1994, Figs. 249–252, 255).

Original label: VOIGT collection number 10430.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Paratypes: SMF 26532 (same cavity slide as holotype), 26533.

Stratigraphical range: Earliest Cenomanian.

Reptomulitea pseudopalpebrosa

TAYLOR, 1994

*# 1994 *Reptomulitea pseudopalpebrosa* sp. nov. – TAYLOR, p. 89, Figs. 263–268.

Holotype: Not found (TAYLOR, 1994, Figs. 263–268).

Original label: VOIGT collection number 7057.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: Earliest Cenomanian.

Remarks: The holotype is the only reported specimen of this species.

***Reptomulitea reedi* TAYLOR, 1994**

(Fig. 14a–b)

*# 1994 *Reptomulitea reedi* sp. nov. – TAYLOR, p. 91, Figs. 269–274.

Holotype: SMF 26537 (TAYLOR, 1994, Figs. 269–274).

Original label: VOIGT collection number 10429.

Locus typicus: Saint-Calais, Sarthe, Pays de la Loire, France.

Stratum typicum: Late Cenomanian.

Stratigraphical range: Late Cenomanian.

Remarks: The holotype is the only reported specimen of this species.

***Reptomulitea scanica* TAYLOR, 1994**

(Fig. 14c–d)

*# 1994 *Reptomulitea scanica* sp. nov. – TAYLOR, p. 96, Figs. 287–296.

Holotype: SMF 26540 (TAYLOR, 1994, Figs. 287, 289–291, 295).

Original label: VOIGT collection number 10441.

Locus typicus: Karlshamn, Blekinge län, Sweden.

Stratum typicum: Early Campanian (*Belemnellocamax mammillatus* belemnite Zone).

Paratypes: SMF 26541, 26542.

Stratigraphical range: Early Campanian.

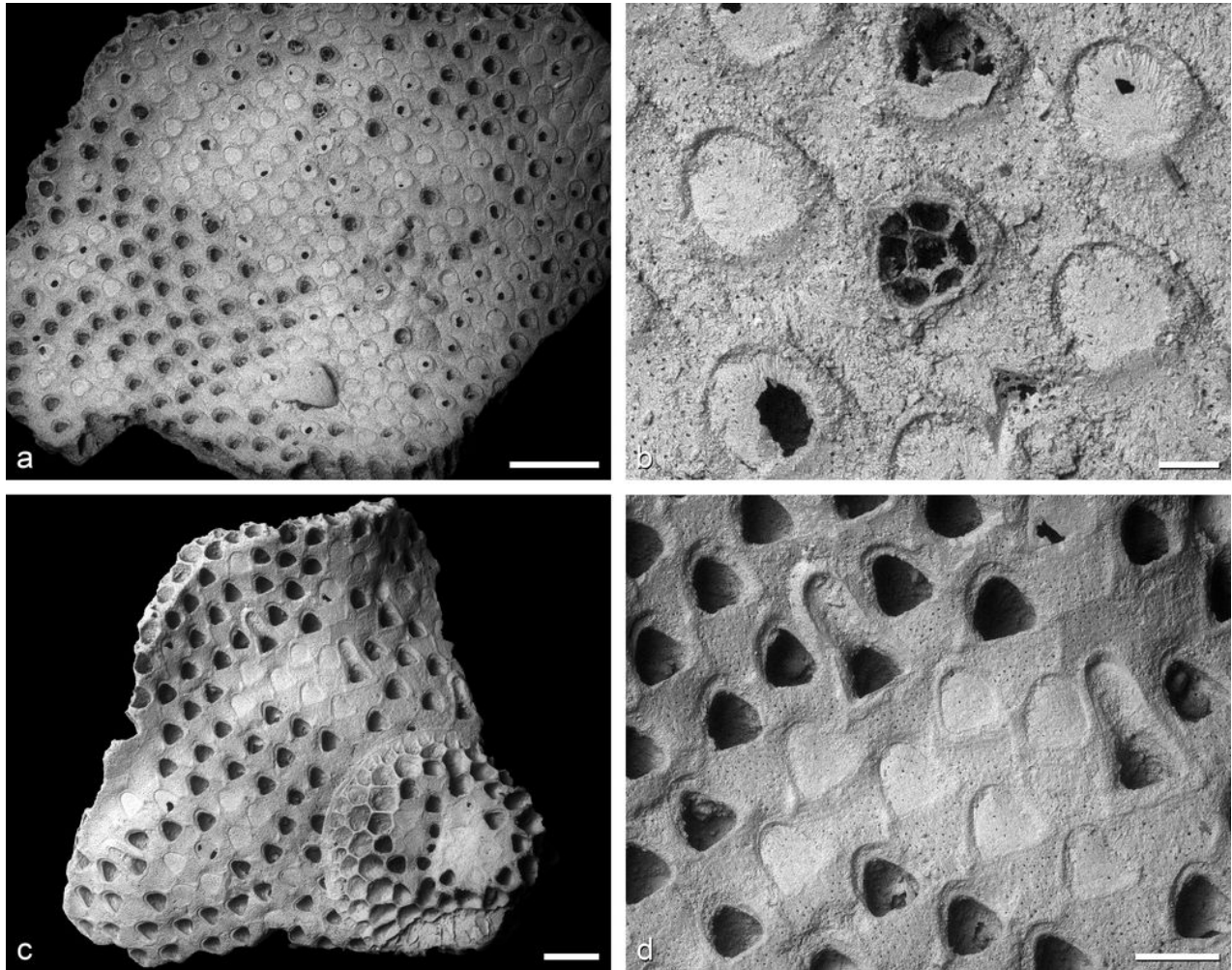


Figure 14: a-b *Reptomulteala reedi* TAYLOR, 1994, holotype, SMF 26537, late Cenomanian, Saint-Calais, Sarthe, Pays de la Loire, France. c-d *Reptomulteala scanica* TAYLOR, 1994, holotype, SMF 26540, early Campanian (*Belemnellocamax mammillatus* belemnite Zone), Karlshamn, Blekinge län, Sweden. Scale bars: a 1 mm; c 500 μ m; d 250 μ m; b 100 μ m.

Suborder Rectangulata WATERS, 1887

Family Lichenoporidae SMITT, 1867

Genus *Doliocoitis* BUGE & TILLIER, 1977

Doliocoitis atlantica BUGE & TILLIER, 1977 (Fig. 15a–b)

*# 1977 *Doliocoitis atlantica* n.sp. – BUGE & TILLIER, p. 4, Pl. I, figs. 1–6, Pl. II, figs. 1–5.

Holotype: SMF 26450 (BUGE & TILLIER, 1977, Pl. I, fig. 3).

Original label: N° 6, Holotype (VOIGT collection number 7498).

Locus typicus: Station 166 of the RV "Meteor" campaign 1973, southwest of the coast of Sierra Leone, 50 km west of Sherbro Island at 7°27'N, 13°37'W, depth 81 m.

Stratigraphical range: Recent.

Remarks: *Doliocoitis atlantica* is the type species of *Doliocoitis* BUGE & TILLIER, 1977.

Genus *Lichenopora* DEFRANCE, 1823

Lichenopora costata (HAGENOW, 1846) (Fig. 15c–d)

*# 1846 *Ceriopora costata* v. HAG. – HAGENOW, p. 594, Pl. XXIII.b, fig. 8.

1959a *Lichenopora costata* (v. HAGENOW), 1846 – VOIGT, p. 50, Pl. III, fig. 1.

Holotype: The originals of the HAGENOW collection in the Stettiner Museum were lost during World War II.

Locus typicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum typicum: White chalk of early Mastrichtian age.

Neotype: SMF 26393 (VOIGT, 1959a, Pl. III, fig. 1).

Original label: VOIGT collection number 390.

Locus neotypicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

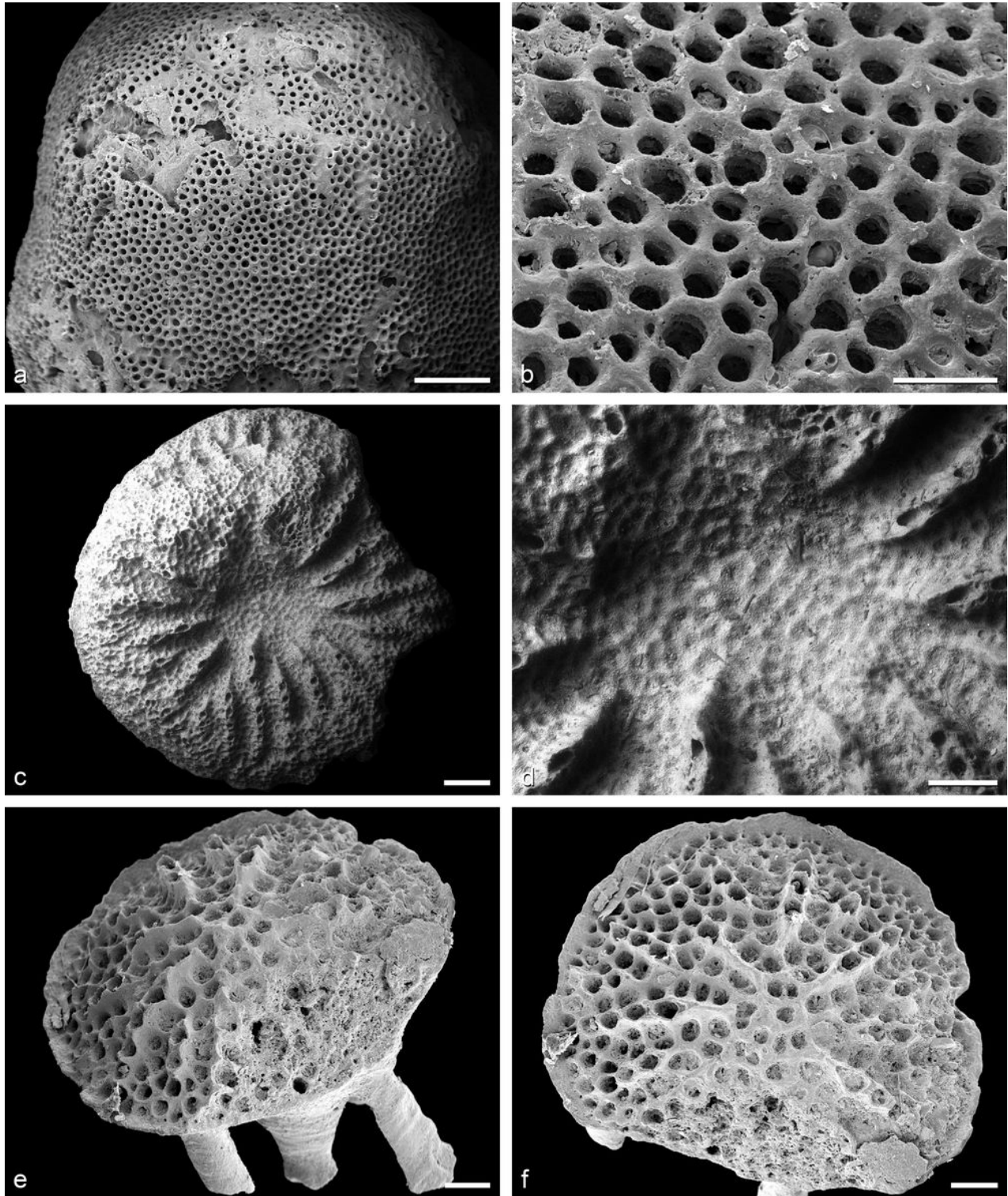


Figure 15: a-b *Doliocoitis atlantica* BUGÉ & TILLIER, 1977, holotype, SMF 26450, Recent, Station 166 of the RV "Meteor" campaign 1973 southwest of the coast of Sierra Leone, 50 km west of Sherbro Island at 7°27'N, 13°37'W at a depth of 81 m. c-d *Lichenopora costata* (HAGENOW, 1846), holotype, SMF 26393, early Maastrichtian, Island of Rügen, Mecklenburg-Vorpommern, Germany. e-f *Lichenopora pedunculata* VOIGT, 1989, holotype, SMF 25810, early Cenomanian (*Neostlingoceras carcitense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. Scale bars: a, c 1 mm; d 500 µm; b, e-f 250 µm.

Stratum neotypicum: White chalk of early Maastrichtian age.

Stratigraphical range: Early Maastrichtian.

***Lichenopora pedunculata* VOIGT, 1989**

(Fig. 15e–f)

- *# 1989a *Lichenopora pedunculata* n.sp. – VOIGT, p. 96, Pl. 6, figs. 3–6, Pl. 7, figs. 1–8.
 # 1992a *Lichenopora pedunculata* VOIGT – VOIGT, Pl. 5, figs. 3–4.
 # 1997 *Lichenopora pedunculata* VOIGT, 1989 – GORDON & TAYLOR, Fig. 16.

Holotype: SMF 25810 (VOIGT, 1989a, Pl. 7, fig. 3).

Original label: VOIGT collection number 6835.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation, in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: Earliest Cenomanian.

**Suborder Tubuliporina
MILNE EDWARDS, 1838**

Family Actinoporidae VIGNEAUX, 1949**Genus *Actinopora* ORBIGNY, 1853*****Actinopora auei* VOIGT, 1996**

(Fig. 16a–b)

- *# 1996a *Actinopora auei* n.sp. – VOIGT, p. 46, Pl. I, figs. 1–4, Pl. II, figs. 1–2, Pl. III, fig. 1.

Holotype: SMF 26144 (VOIGT, 1996a, Pl. I, figs. 1–4, Pl. II, figs. 1–2, Pl. III, fig. 1).

Original label: VOIGT collection number 14118.

Locus typicus: Scree on the beach near Ahrenshoop, Mecklenburg-Vorpommern, Germany.

Stratum typicum: Till of the Weichsel glaciation.

Stratigraphical range: Probably Campanian.

Remarks: J. AUE collected the holotype and gave it to. VOIGT. The holotype, which is the only known specimen of this species, was found in a glacial drift deposit. VOIGT (1996a) supposed the material to be derived from the Swedish rubbly limestone often found inside glacial drift deposits in northern Germany, and therefore probably of Campanian age.

Family Celluliporidae BUGE & VOIGT, 1972**Genus *Cellulipora* ORBIGNY, 1849*****Cellulipora westfalica*
BUGE & VOIGT, 1972**

(Fig. 16c–d)

- *# 1972 *Cellulipora westfalica* nov. sp. – VOIGT, p. 141, Pl. 13, figs. 1–7.
 # 1981a *Cellulipora westfalica* BUGE & VOIGT – VOIGT, Fig. 4a–c.

- # 2004 *Cellulipora westfalica* BUGE et VOIGT – VISKOVA, Fig. 2.
 # 2007 *Cellulipora westfalica* BUGE et VOIGT – VISKOVA, Pl. 8, figs. 3–4.

Holotype: SMF 24420 (BUGE & VOIGT, 1972, Pl. 13, fig. 1).

Original label: VOIGT collection number 6031.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation, in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: Earliest Cenomanian.

Family Diaperoeciidae CANU, 1918**Genus *Desmediaperoecia*
CANU & BASSLER, 1920*****Desmediaperoecia europaea* VOIGT, 1987**

(Fig. 16e–f)

- *# 1987b *Desmediaperoecia europaea* n.sp. – VOIGT, p. 52, Figs. 4A–D, 5A–D.

Holotype: SMF 25906 (VOIGT, 1987b, Figs. 4A–D).

Original label: VOIGT collection number 4609.

Locus typicus: Curfs Quarry near Berg, Valkenburg aan de Geul municipality, Limburg, Netherlands.

Stratum typicum: *Belemnitella junior* belemnite Zone, Tuffeau de Maastricht (Meerssen Limestone).

Further distribution: Late Maastrichtian, Sint-Pietersberg near Maastricht, Limburg, Netherlands.

Stratigraphical range: Late Maastrichtian.

Genus *Diaperoecia* CANU, 1918***Diaperoecia incrustata* (HAGENOW, 1840)**

(Fig. 17a–b)

- *# 1840 *Ceripora incrustata* GOLDF. – HAGENOW, p. 647.
 # 1909 *Reptomulticava ? incrustata* (von HAGENOW), 1840 – GREGORY, p. 148.
 # 1959a *Diaperoecia incrustata* (v. HAGENOW), 1840 – VOIGT, p. 48, Pl. II, figs. 2–4.

Holotype: The originals of the HAGENOW collection in the Stettiner Museum were lost during World War II.

Locus typicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum typicum: White chalk of early Maastrichtian age.

Neotype: SMF 26389 (VOIGT, 1959a, Pl. II, figs. 2–3).

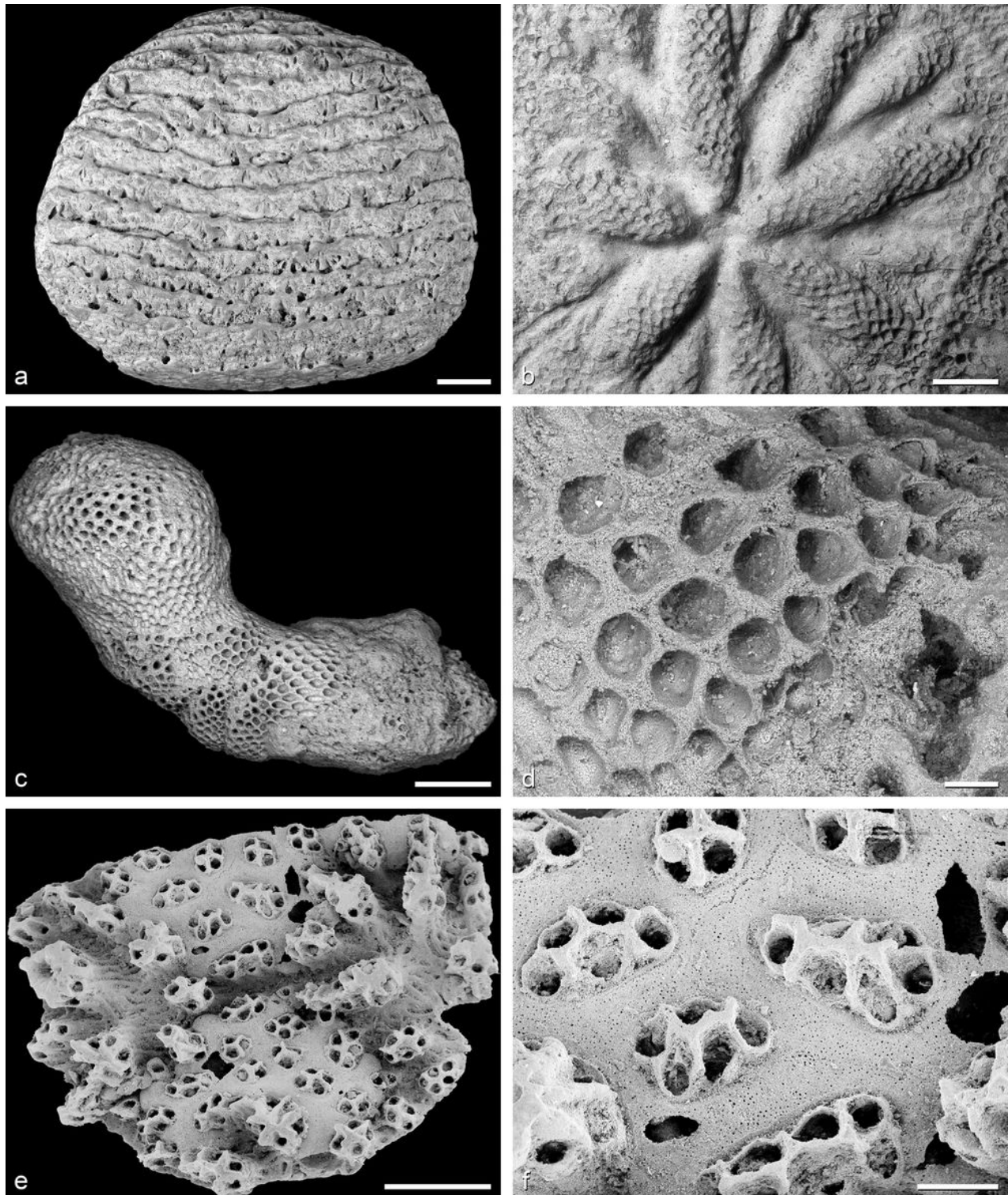


Figure 16: a-b *Actinopora auei* VOIGT, 1996, holotype, SMF 26144, probably Campanian, Ahrenshoop, Mecklenburg-Vorpommern, Germany. c-d *Cellulipora westfalica* BUGE & VOIGT, 1972, holotype, SMF 24420, early Cenomanian (*Neostlingoceras carcitanense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. e-f *Desmediaperoecia europaea* VOIGT, 1987, holotype, SMF 25906, late Maastrichtian (*Belemnitella junior* belemnite Zone), Curfs Quarry near Berg, Valkenburg aan de Geul municipality, Limburg, Netherlands.

Scale bars: a 10 mm; b-c, e 1 mm; 250 μ m; d 100 μ m.

Original label: VOIGT collection number 386.

Locus neotypicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum neotypicum: White chalk of early Maastrichtian age.

Stratigraphical range: Early Maastrichtian.

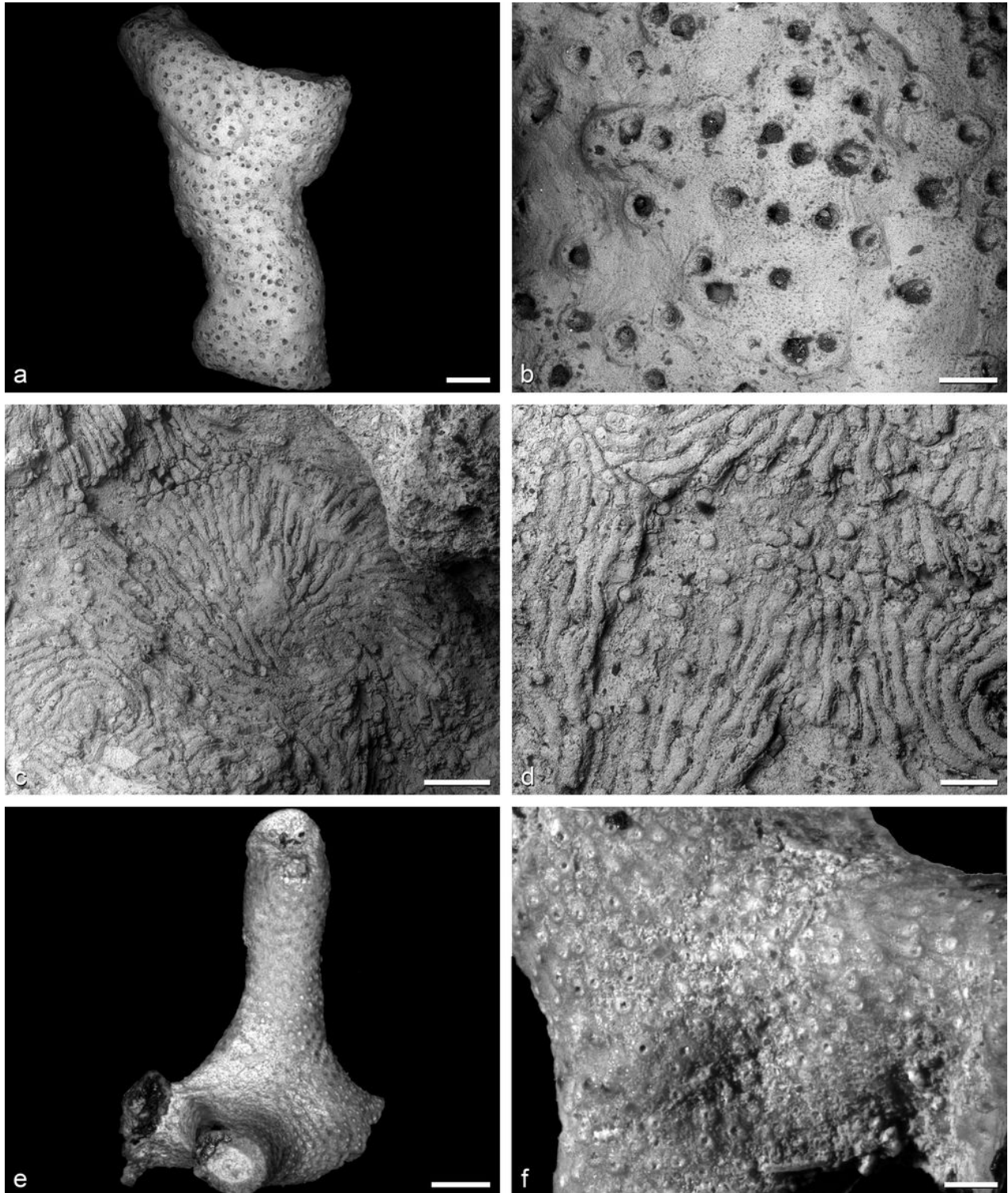


Figure 17: a-b *Diaperoecia incrustata* (HAGENOW, 1840), neotype, SMF 26389, early Maastrichtian, Island of Rügen, Mecklenburg-Vorpommern, Germany. c-d *Diaperoecia neumeieri* VOIGT, 1995, holotype, SMF 26050, late Turonian, Schierling-Zaitzkofen, Bavaria, Germany. e-f *Diaperoecia tubuliformis* VOIGT, 1973, holotype, SMF 24438, middle Santonian (*Goniotoothis westfalica* belemnite Zone), abandoned iron-ore mine near Vechelde-Vallstedt, Lower Saxony, Germany.
Scale bars: e 5 mm; a 1 mm; c, f 500 µm; b, d 250 µm.

Remarks: It is unclear why HAGENOW assigned the authorship of his new species *Ceriodora incrustata* to GOLDFUSS since GOLDFUSS did not describe

any species with this name. Subsequent authors have regarded HAGENOW as the author of the species.

***Diaperoecia neumeieri* VOIGT, 1995**

(Fig. 17c–d)

*# 1995b *Diaperoecia neumeieri* n.sp. – VOIGT, p. 11, Pl. 1, figs. 1–7, Pl. 2, figs. 1–4, Pl. 3, figs. 1–5, Pl. 4, figs. 1–4, Pl. 5, figs. 1–5.

Holotype: SMF 26050 (VOIGT, 1995b, Pl. 2, fig. 4, Pl. 4, figs. 1–2).

Original label: VOIGT collection number 13395.

Locus typicus: Schierling-Zaitzkofen, Bavaria, Germany.

Stratum typicum: Großberg Formation, in a field west of Zaitzkopf.

Stratigraphical range: Late Turonian.

***Diaperoecia tubuliformis* VOIGT, 1973**

(Fig. 17e–f)

1924a *Microecia tubulus* ORBIGNY – VOIGT, p. 136.

*# 1973a *Diaperoecia tubuliformis* (von HAGENOW), 1840 – VOIGT, p. 120, Pl. 8, figs. 4–7.

Holotype: SMF 24438 (VOIGT, 1973a, Pl. 8, fig. 4).

Original label: VOIGT collection number 6726.

Locus typicus: Abandoned iron-ore mine near Vechelde-Vallstedt, Lower Saxony, Germany.

Stratum typicum: Glauconitic arenaceous limestone of the Gehrden Formation, *Gonioteuthis westfalica* belemnite Zone, middle Santonian.

Further distribution: Santonian, Burgberg west of Gehrden; Sudmerberg near Goslar; Barbara pit near Lengede-Barbecke; Lengede-Broistedt; abandoned iron-ore mine Groß-Bülten near Ilsede-Groß Bülten; Söhld-Hoheneggelsen; Bad Harzburg (all Lower Saxony, Germany).

Stratigraphical range: Middle Santonian.

Remarks: *Diastopora tubuliformis* and *D. tubulus* ORBIGNY, 1851, differ only in the morphology of the gonozooid.

Family Entalophoridae REUSS, 1869**Genus *Clavisparsa* ORBIGNY, 1853*****Clavisparsa huckei* VOIGT, 1962**

(Fig. 18a–b)

*# 1962a *Clavisparsa huckei* n.sp.– VOIGT, p. 250, Pl. 28, figs. 9–12.

2005 *Clavisparsa huckei* VOIGT, 1962 – HINZ-SCHALLREUTER & SCHALLREUTER, p. 538.

Holotype: SMF 24141 (VOIGT, 1962a, Pl. 28, fig. 9).

Original label: VOIGT collection number 3542.

Locus typicus: Chalk in glacial drift deposit F near Neu Wulmstorf-Daerstorf, Lower Saxony, Germany.

Stratum typicum: Glacial drift deposit containing white chalk of late Maastrichtian age.

Further distribution: Late Maastrichtian, glacial drift F in a quarry near Tornesch, Schleswig-Holstein, Germany; glacial drift C containing flint near Neu Wulmstorf, Lower Saxony, Germany. Late Maastrichtian (*Belemnella junior* belemnite Zone), Hemmoor, Lower Saxony, Germany.

Stratigraphical range: Late Maastrichtian.

Genus *Mecynoecia* CANU, 1918***Mecynoecia* (?) *latedistans*
VOIGT & VIAUD, 1983**

(Fig. 18c–d)

*# 1983 *Mecynoecia* (?) *latedistans* n.sp. – VOIGT & VIAUD, p. 222, Pl. 1, figs. 11–12.

Holotype: SMF 25488 (VOIGT & VIAUD, 1983, Pl. 1, fig. 11).

Original label: VOIGT collection number 9823.

Locus typicus: Les Guignardières, Soullans, Vendée, Pays de la Loire, France.

Stratum typicum: Mid-late Santonian to early Campanian.

Further distribution: Coniacian, Joué-lès-Tours, Indre-et-Loire, Centre-Val de Loire, France. Santonian to Campanian, Le Glajou in Soullans, Vendée; Chemin de la Ruelle in Loissons, Saint-Hilaire-de-Riez, Vendée; Les Rosèliers in Notre-Dame-de-Riez, Vendée (all Pays de la Loire, France). Santonian, Vendôme, Loir-et-Cher, Centre-Val de Loire, France. Campanian, Railway station, Soullans, Vendée, Pays de la Loire, France.

Stratigraphical range: Coniacian to Campanian.

Remarks: The holotype is mounted on the same SEM stub as VOIGT collection number 9910 (Pl. 1, fig. 12). The assignment of the species to the genus *Mecynoecia* CANU, 1918, is somewhat unclear since no specimens with gonozooids have yet been found.

Family Frondiporidae BUSK, 1875**Genus *Frondipora* LINK, 1807*****Frondipora praecursor* VOIGT, 1951**

(Fig. 18e–f)

*# 1951 *Frondipora praecursor* n.sp. – VOIGT, p. 39, Pl. 4, figs. 18–20.

1972 *Frondipora praecursor* VOIGT, 1953 [sic] – BROOD, p. 250, Pl. XXVII, figs. 2–4.

Holotype: SMF 26323 (VOIGT, 1951, Pl. 4, figs. 18–19).

Original label: VOIGT collection number 273.

Locus typicus: Sehnde-Ilten, Lower Saxony, Germany.

Stratum typicum: Bryozoan-rich rubbly limestone in the *Belemnitella junior* belemnite Zone.

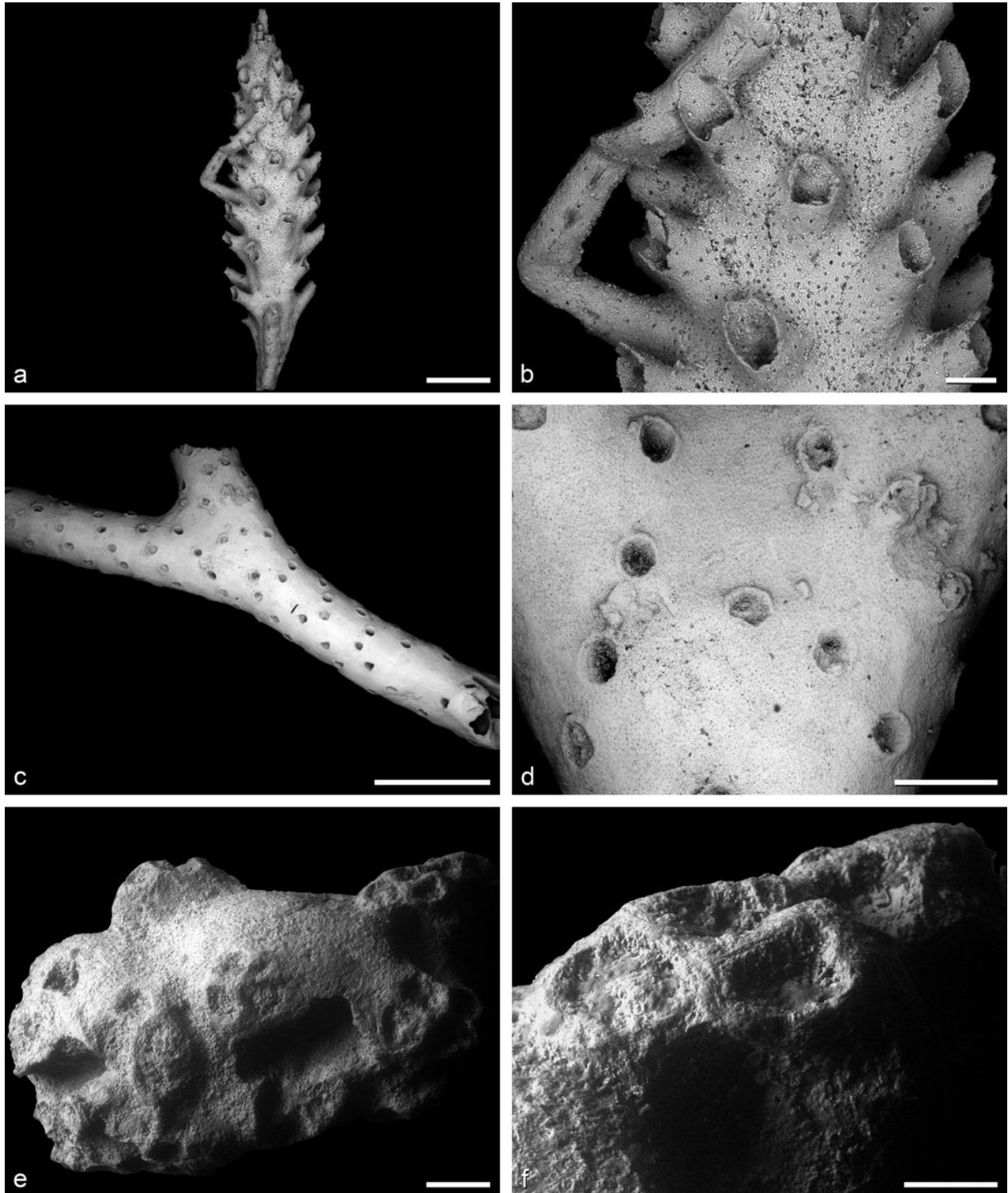


Figure 18: a-b *Clavisparsa huckei* VOIGT, 1962a, holotype, SMF 24141, late Maastrichtian, Neu Wulmstorf-Daerstorf, Lower Saxony, Germany. c-d *Mecynoecia* (?) *latedistans* VOIGT & VIAUD, 1983, holotype, SMF 25488, mid-late Santonian to early Campanian, Les Guignardières in Soullans, Pays de la Loire, France. e-f *Frondipora praecursor* VOIGT, 1951, holotype, SMF 26323, late Maastrichtian (*Belemnitella junior* belemnite Zone), Sehnde-Itten, Lower Saxony, Germany.
 Scale bars: c 2.5 mm; a, d 500 µm; e 250 µm; b, f 100 µm.

Further distribution: Danian, Limhamn, Skåne län, Sweden.

Stratigraphical range: Late Maastrichtian to Danian.

**Family Idmoneidae BUSK, 1859****Genus *Idmonea* LAMOUROUX, 1821*****Idmonea rugica* (VOIGT, 1924)**

(Fig. 19a–b)

- # 1839 *Ceriodora parasitica* nob. – HAGENOW, p. 286.
 # 1846 *Ceriodora parasitica* v. HAG. – HAGENOW, p. 594, Pl. XXIII.b, fig. 7.
 p# 1899 *Reptelea (?) parasitica* (von HAGENOW), 1839 – GREGORY, p. 294.
 *# 1924c *Reptotubigera rugica* n.sp. – VOIGT, p. 5, Pl. I, figs. 11–12.
 # 1959a *Idmonea parasitica* (v. HAGENOW), 1839 – VOIGT, p. 39, 50, Pl. IV, figs. 1–2.

Syntypes: The originals of the HAGENOW collection in the Stettiner Museum were lost during World War II.

Locus typicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum typicum: White chalk of early Maastrichtian age.

Neotype: SMF 24157 (VOIGT, 1959a, Pl. IV, figs. 1–2).

Original label: VOIGT collection number 2434.

Locus neotypicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum neotypicum: White chalk of early Maastrichtian age.

Stratigraphical range: Early Maastrichtian.

Remarks: VOIGT (1959a) regarded *Idmonea rugica* as a synonym of *Ceriodora parasitica* HAGENOW, 1839, based on a specimen found in the HAGENOW collection. However, the name *Idmonea parasitica* is preoccupied by a Recent species from South Australia proposed by BUSK (1875). Based on Articles 23.3.5 and 60.2 of the *International Code of Zoological Nomenclature* (ICZN, 1999), the next oldest available name among the synonyms of *I. parasitica* is the valid name of this species, which would be *Idmonea rugica*.

Genus *Lagonoecia* CANU & BASSLER, 1920***Lagonoecia daniensis*
(VOIGT & EISERHARDT, 1995)**

(Fig. 19c–d)

- *# 1995 *Tervidmonea daniensis* n.sp. – VOIGT & EISERHARDT, p. 419, Figs. 1–10, 25–26.

Holotype: SMF 26132 (VOIGT & EISERHARDT, 1995, Figs. 1–4).

Original label: VOIGT collection number 13618.

Locus typicus: Stevns Klint in the Stevns Kommune, Zealand Region, Denmark.

Stratum typicum: Hardgrounds of early Danian age.

Further distribution: Early Maastrichtian, chalk pit of the cement factory Alsen-Breitenburg near Lägerdorf, Schleswig-Holstein, Germany. Danian, Agathenburg, Lower Saxony, Germany; Oststeinbek-Havighorst, Schleswig-Holstein, Germany; Curfs Quarry near Berg, Valkenburg aan de Geul municipality, Limburg, Netherlands. Lutetian, Rollgraben near Teisendorf, Bavaria, Germany.

Stratigraphical range: Early Maastrichtian to Lutetian.

Remarks: *Tervidmonea daniensis* was described as the type species of the new genus *Tervidmonea* that was placed with reservation in the family Terviidae CANU & BASSLER, 1920. However, VISKOVA (2004b) regarded *Tervidmonea* as a junior synonym of *Lagonoecia* CANU & BASSLER, 1920.

Family Oncousoeciidae CANU, 1918**Genus *Filicisparsa* VOIGT, 1994*****Filicisparsa sommerae* VOIGT, 1994**

(Fig. 19e–f)

- # 1991a Genus und Spezies indet. – VOIGT, p. 118, Pl. I, figs. 1–2, Pl. II, figs. 1–3.
 *# 1994a *Filicisparsa sommerae* n.g. n.sp. – VOIGT, p. 9, Pl. 1, figs. 1–3, Pl. 2, figs. 1–4, Pl. 3, figs. 1–4, Pl. 4, figs. 1–5.

Holotype: SMF 26135 (VOIGT, 1994a, Pl. 3, figs. 1–2).

Original label: VOIGT collection number 12976.

Locus typicus: Schinkel pit of the cement factory Alsen-Breitenburg near Lägerdorf, Schleswig-Holstein, Germany.

Stratum typicum: *Micraster rogalae* echinoid Zone in the early Santonian.

Further distribution: Early Santonian to late Campanian, Beckum, North Rhine-Westphalia, Germany; Lägerdorf, Schleswig-Holstein, Germany. Campanian, Épernon, Centre-Val de Loire, France; Newhaven, East Sussex and several other localities in the London Basin, England, United Kingdom. Late Campanian, Haccourt pit near Liège, Wallonia, Belgium. Late Campanian to early Maastrichtian, Saturn pit near Kronsmoor, Schleswig-Holstein, Germany. Late Maastrichtian, Stevns Klint in the Stevns Kommune, Zealand Region, Denmark.

Stratigraphical range: Early Santonian to late Maastrichtian.

Remarks: *Filicisparsa sommerae* is the type species of *Filicisparsa* VOIGT, 1994. The species was described and figured in a preliminary note (VOIGT, 1991a) who recognized it as a representative of a new genus but deferred its introduction pending the finding of specimens with gonozooids.

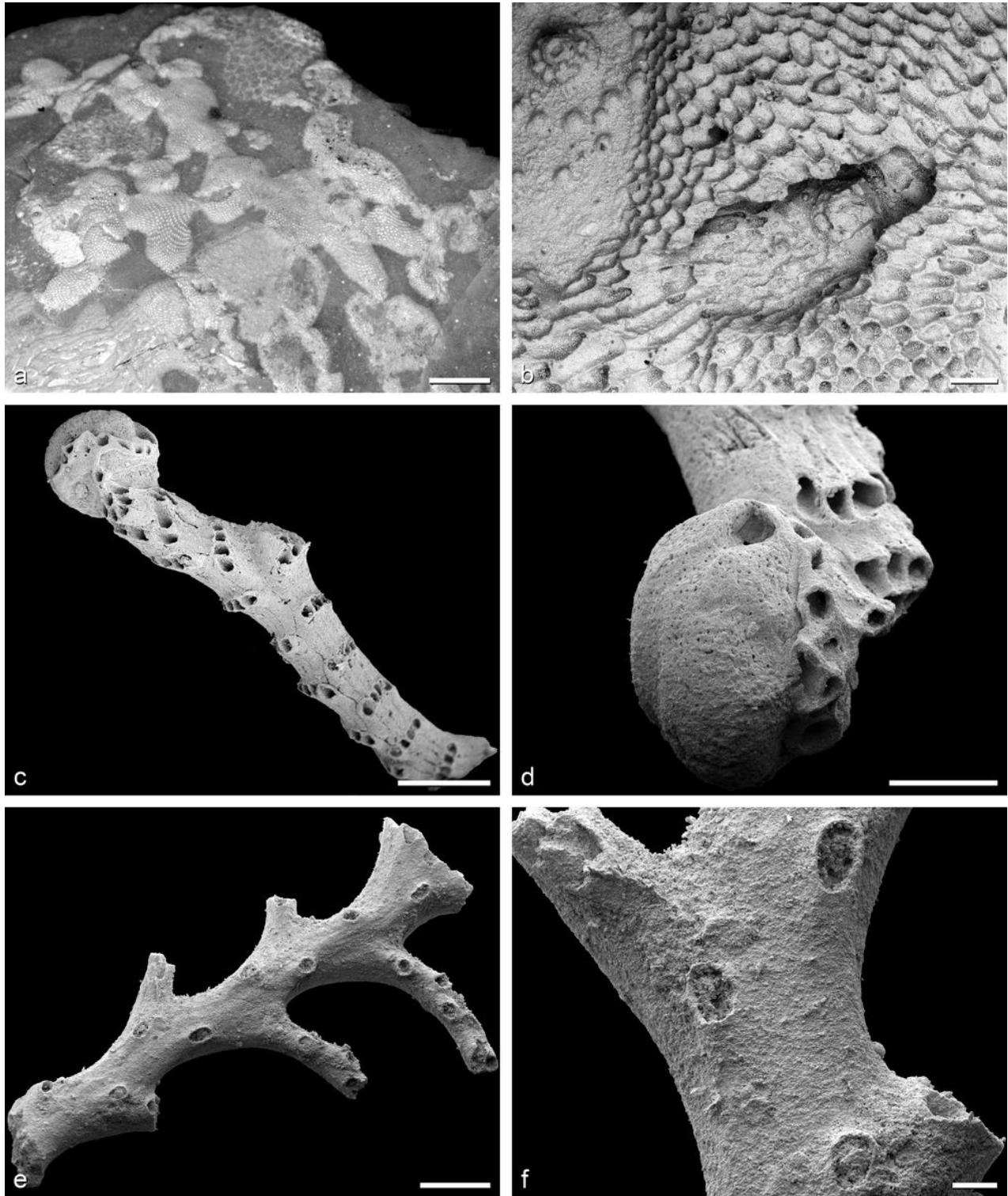


Figure 19: a-b *Idmonea rugica* (VOIGT, 1924), neotype, SMF 24157, early Maastrichtian, Island of Rügen, Mecklenburg-Vorpommern, Germany. c-d *Lagonoecia daniensis* (VOIGT & EISERHARDT, 1995), holotype, SMF 26132, early Danian, Stevns Klint in the Stevns Kommune, Zealand Region, Denmark. e-f *Filicisparsa sommerae* VOIGT, 1994, holotype, SMF 26135, early Santonian (*Micraster rogalae* echinoid Zone), Schinkel pit of the cement factory Alsen-Breitenburg near Lägerdorf, Schleswig-Holstein, Germany. Scale bars: a 2.5 mm; c, e 500 µm; b, d 250 µm; f 100 µm.

Genus *Proboscina* AUDOUIN, 1826

***Proboscina denticulata* VOIGT, 1982**

(Fig. 20a–b)

- # 1972 *Stomatopora bulbosa* LEVINSEN, 1925 – BROOD, p. 224, Pl. XXVIII, figs. 2–3.
- *# 1982b "*Proboscina*" *denticulata* n.sp. – VOIGT, p. 239, Pl. 7, figs. 1–4.
- # 1992a *Proboscina denticulata* VOIGT – VOIGT, Pl. 5, figs. 6–7.

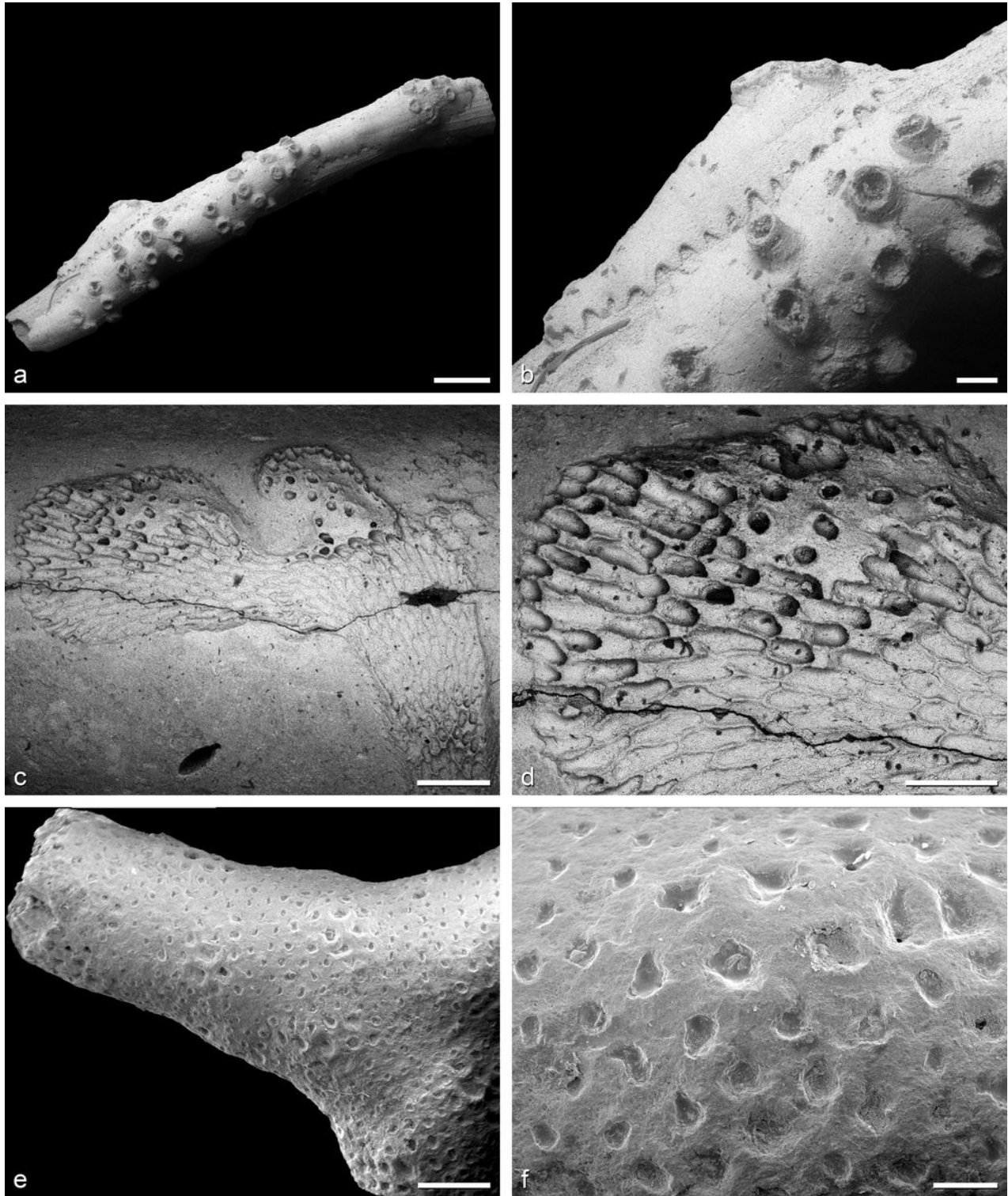


Figure 20: a-b *Proboscina denticulata* VOIGT, 1982, holotype, SMF 24888, Danian, Neu Wulmstorf-Daerstorf, Lower Saxony, Germany. c-d *Proboscina truncata* (HAGENOW, 1839), neotype, SMF 26387, early Maastrichtian, Island of Rügen, Mecklenburg-Vorpommern, Germany. e-f *Heterohaploecia monticulifera* VOIGT & VIAUD, 1983, holotype, SMF 25236, mid-late Santonian to early Campanian, Les Guignardières in Soullans, Pays de la Loire, France. Scale bars: c, e 1 mm; a, d 500 µm; f 250 µm; b 100 µm.

Holotype: SMF 24888 (VOIGT, 1982b, Pl. 7, figs. 1–2).

Original label: VOIGT collection number 8162.

Locus typicus: Neu Wulmstorf-Daerstorf, Lower Saxony, Germany.

Stratum typicum: Glacial drift deposit containing flint.

Further distribution: Danian, Faxe quarries, Zealand Region, Denmark and many other localities in Denmark; glacial drifts near Neu Wulm-



storf, Lower Saxony, Germany; Sophia Jacoba shaft near Hückelhoven, North Rhine-Westphalia, Germany; Island of Fehmarn, Schleswig-Holstein, Germany. Abundant throughout the Danian of Denmark and Sweden according to BROOD (1972).

Stratigraphical range: Danian.

Remarks: Two specimens are labelled with the VOIGT collection number 8444, but none with the VOIGT collection number 8162. One sample with the VOIGT collection number 8444 can be recognized as the holotype.

***Proboscina truncata* (HAGENOW, 1839)**

(Fig. 20c–d)

- *# 1839 *Cellepora truncata* nob. – HAGENOW, p. 279.
1959a *Proboscina truncata* (v. HAGENOW), 1839 – VOIGT, p. 32, Pl. I, fig. 4.

Holotype: The originals of the HAGENOW collection in the Stettiner Museum were lost during World War II.

Locus typicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum typicum: White chalk of early Maastrichtian age.

Neotype: SMF 26387 (VOIGT, 1959a, Pl. I, fig. 4).

Original label: VOIGT collection number 384.

Locus neotypicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum neotypicum: White chalk of early Maastrichtian age.

Stratigraphical range: Early Maastrichtian.

Family Multisparsidae BASSLER, 1935

Genus *Heterohaploecia* VOIGT & VIAUD, 1983

***Heterohaploecia monticulifera* VOIGT & VIAUD, 1983**

(Fig. 20e–f)

- *# 1983 *Heterohaploecia monticulifera* n.g. n.sp. – VOIGT & VIAUD, p. 223, Pl. 2, figs. 1–9.

Holotype: SMF 25236 (VOIGT & VIAUD, 1983, Pl. 2, figs. 1–3).

Original label: VOIGT collection number 9817.

Locus typicus: Les Guignardières, Soullans, Vendée, Pays de la Loire, France.

Stratum typicum: Mid-late Santonian to early Campanian.

Further distribution: Coniacian, Saint-Christophe-sur-le-Nais, Indre-et-Loire, Centre-Val de Loire, France. Santonian to Campanian, La Tonelle, Commequiers, Vendée, Pays de la Loire, France. Campanian, railway station, Soullans, Vendée, Pays de la Loire, France.

Stratigraphical range: Coniacian to Campanian.

Remarks: *Heterohaploecia monticulifera* is the type species of *Heterohaploecia* VOIGT & VIAUD, 1983.

Genus *Reptoclausa* ORBIGNY, 1853

***Reptoclausa wolffi* VOIGT, 1924**

(Fig. 21a–b)

- *# 1924a *Reptoclausa wolffi* n.sp. – VOIGT, p. 146, Pl. III, fig. 16.
1973a *Reptoclausa wolffi* VOIGT, 1924 – VOIGT, p. 141, Pl. 9, figs. 7–8.

Lectotype (defined in VOIGT, 1973a): VOIGT (1924a, Pl. III, figs. 1–2). This material belonged to the first VOIGT Collection that was destroyed in a fire at the *Geologisches Staatsinstitut Hamburg* in 1943.

Locus typicus: Burgberg west of Gehrden, Lower Saxony, Germany.

Stratum typicum: (Ober-)Emscher Formation.

Neotype: SMF 26433 (VOIGT, 1973a, Pl. 9, fig. 8).

Original label: VOIGT collection number 6716.

Locus neotypicus: Brick factory Metje, Burgberg west of Gehrden, Lower Saxony, Germany.

Stratum neotypicum: Late middle Santonian.

Further distribution: Early Cenomanian, Kasenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. Santonian, Sudmerberg near Goslar; abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten; Lengede-Broistedt; Söhlde-Hoheneggelsen (all Lower Saxony, Germany). Early Campanian, Karlshamn, Blekinge län, Sweden.

Stratigraphical range: Early Cenomanian to early Campanian.

Family Plagioeciidae CANU, 1918

Genus *Diplosolen* CANU, 1918

***Diplosolen pavonius* VOIGT, 1929**

(Fig. 21c–d)

- # 1839 *Cellepora flabelliformis* nob. – HAGENOW, p. 279.
*# 1929 *Diplosolen pavonius* n.sp. – VOIGT, p. 3, figs. 6–7.
1959a *Diplosolen pavonius* VOIGT, 1929 – VOIGT, p. 33, Pl. II, fig. 6.
1968a *Diplosolen pavonius* VOIGT – VOIGT, Pl. I, fig. 1.

Syntypes: This material belonged to the first VOIGT Collection that was destroyed in a fire at the *Geologisches Staatsinstitut Hamburg* in 1943.

Locus typicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum typicum: White chalk of early Maastrichtian age.

Neotype: SMF 26391 (VOIGT, 1959a, Pl. II, fig. 6).

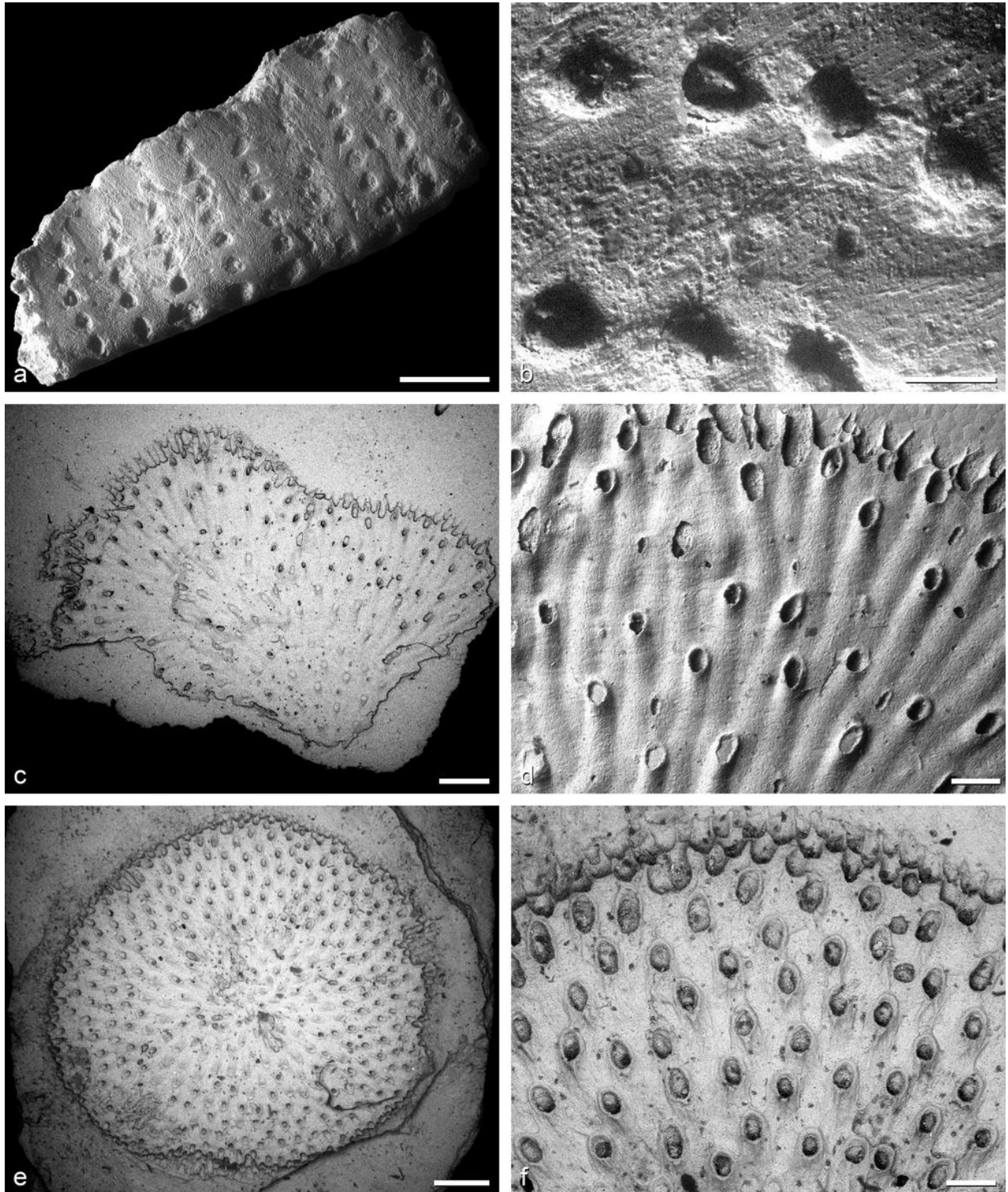


Figure 21: a-b *Reptoclausa wolffi* VOIGT, 1924, neotype, SMF 26433, Santonian, Burgberg west of Gehrden, Lower Saxony, Germany. c-d *Diplosolen pavonius* VOIGT, 1929, neotype, SMF 26391, early Maastrichtian, Island of Rügen, Mecklenburg-Vorpommern, Germany. e-f *Plagioecia disciformis* (HAGENOW, 1839), neotype, SMF 26388, early Maastrichtian, Island of Rügen, Mecklenburg-Vorpommern, Germany. Scale bars: c-d 1 mm; a 500 μ m; d, f 250 μ m; b 100 μ m.

Original label: VOIGT collection number 388.

Locus neotypicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum neotypicum: White chalk of early

Maastrichtian age.

Further distribution: Early Maastrichtian, Lüneburg-Zeltberg, Lower Saxony, Germany.

Stratigraphical range: Early Maastrichtian.



Remarks: *Diplosolen pavionus* was considered as a possible junior synonym of *Cellepora flabelliformis* HAGENOW, 1839, by VOIGT (1959a). However, the latter was declared as a *nomen nudum* since the species was not figured by HAGENOW and the description was inadequate for its recognition. Two samples labelled *Cellepora flabelliformis* from the HAGENOW collections in Hamburg and Hannover represent two different species, only the specimen from the Hamburg collection belonging to *D. pavionus*. The species was reported from Lüneburg-Zeltberg by VOIGT (1995c).

Genus *Plagioecia* CANU, 1918

'*Plagioecia*' *disciformis* (HAGENOW, 1839)

(Fig. 21e–f)

- *# 1839 *Cellepora disciformis* nob. – HAGENOW, p. 279.
 # 1851 *Diastopora disciformis*, HAG. – HAGENOW, p. 16, Pl. X, fig. 7.
 p# 1887 *Diastopora disciformis* v. HAGENOW – MARSSON, p. 15.
 ?# 1899 *Berenicea disciformis* (HAGENOW), 1839 – GREGORY, p. 97, Pl. 6, fig. 2.
 # 1959a *Berenicea disciformis* (v. HAGENOW), 1839 – VOIGT, p. 32, Pl. II, fig. 1.

Holotype: The originals of the HAGENOW collection in the Stettiner Museum were lost during World War II.

Locus typicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum typicum: White chalk of early Maastrichtian age.

Neotype: SMF 26388 (VOIGT, 1959a, Pl. II, fig. 1).

Original label: VOIGT collection number 385.

Locus neotypicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum neotypicum: White chalk of early Maastrichtian age.

Stratigraphical range: Early Maastrichtian.

Remarks: The generic assignment of *Cellepora disciformis* is hampered by the lack of a gonozoid.

'*Plagioecia*' *fistularis* (HAGENOW, 1846)

(Fig. 22a–b)

- *# 1846 *Cellepora fistularis* v. HAG. – HAGENOW, p. 612, Pl. XXIII.b, fig. 33.
 # 1959a *Berenicea fistularis* (v. HAGENOW), 1839 – VOIGT, p. 54, Pl. II, fig. 5.

Holotype: The originals of the HAGENOW collection in the Stettiner Museum were lost during World War II.

Locus typicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum typicum: White chalk of early Maastrichtian age.

Neotype: SMF 26390 (VOIGT 1959a, Pl. II, fig. 5).

Original label: VOIGT collection number 387.

Locus neotypicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum neotypicum: White chalk of early Maastrichtian age.

Further distribution: Early Maastrichtian, Hemmoor, Lower Saxony, Germany.

Stratigraphical range: Early Maastrichtian.

Remarks: The generic assignment of *Cellepora fistularis* is hampered by the lack of a gonozoid.

Genus *Poroplagioecia* WEITSCHAT & VOIGT, 1983

Poroplagioecia hartungi WEITSCHAT & VOIGT, 1983

(Fig. 22c–d)

- *# 1983 *Poroplagioecia hartungi* n.gen. n.sp. – WEITSCHAT & VOIGT, p. 43, Figs. 1–2, Pl. 1, figs. 1–6, Pl. 2, figs. 1–5.

Holotype: SMF 25247 (WEITSCHAT & VOIGT, 1983, Pl. 1, figs. 1–6, Pl. 2, figs. 1–5).

Original label: VOIGT collection number 7652.

Locus typicus: Brick factory and clay pit K. Gott, Sarstedt, Lower Saxony, Germany.

Stratum typicum: Barremian.

Stratigraphical range: Barremian.

Remarks: *Poroplagioecia hartungi* is the type species of *Poroplagioecia* WEITSCHAT & VOIGT, 1983. The holotype is the only reported specimen of this species.

Genus *Reticrisina* GREGORY, 1899

Reticrisina crispa VOIGT & VIAUD, 1983

(Fig. 22e–f)

- *# 1983 *Reticrisina crispa* n.sp. – VOIGT & VIAUD, p. 222, Pl. 1, figs. 1–6.

Holotype: SMF 25237 (VOIGT & VIAUD, 1983, Pl. 1, figs. 1–2).

Original label: VOIGT collection number 9849.

Locus typicus: Les Guignardières, Soullans, Vendée, Pays de la Loire, France.

Stratum typicum: Mid-late Santonian to early Campanian.

Stratigraphical range: Mid-late Santonian to early Campanian.

Remarks: In the description of the species, 9836 is indicated as the VOIGT collection number of the holotype and reference is made to Pl. 2, fig. 1, which depicts the holotype of *Heterohaploecia monticulifera* VOIGT & VIAUD, 1983, instead. According to the figure captions, VOIGT collection number 9912 (= SMF 25244), depicted in Pl. 1, fig. 1, should be the holotype. However, VOIGT collection number 9849 is depicted in this image, which is also depicted in Pl. 1, fig. 2. VOIGT collection number 9912, which is a specimen of

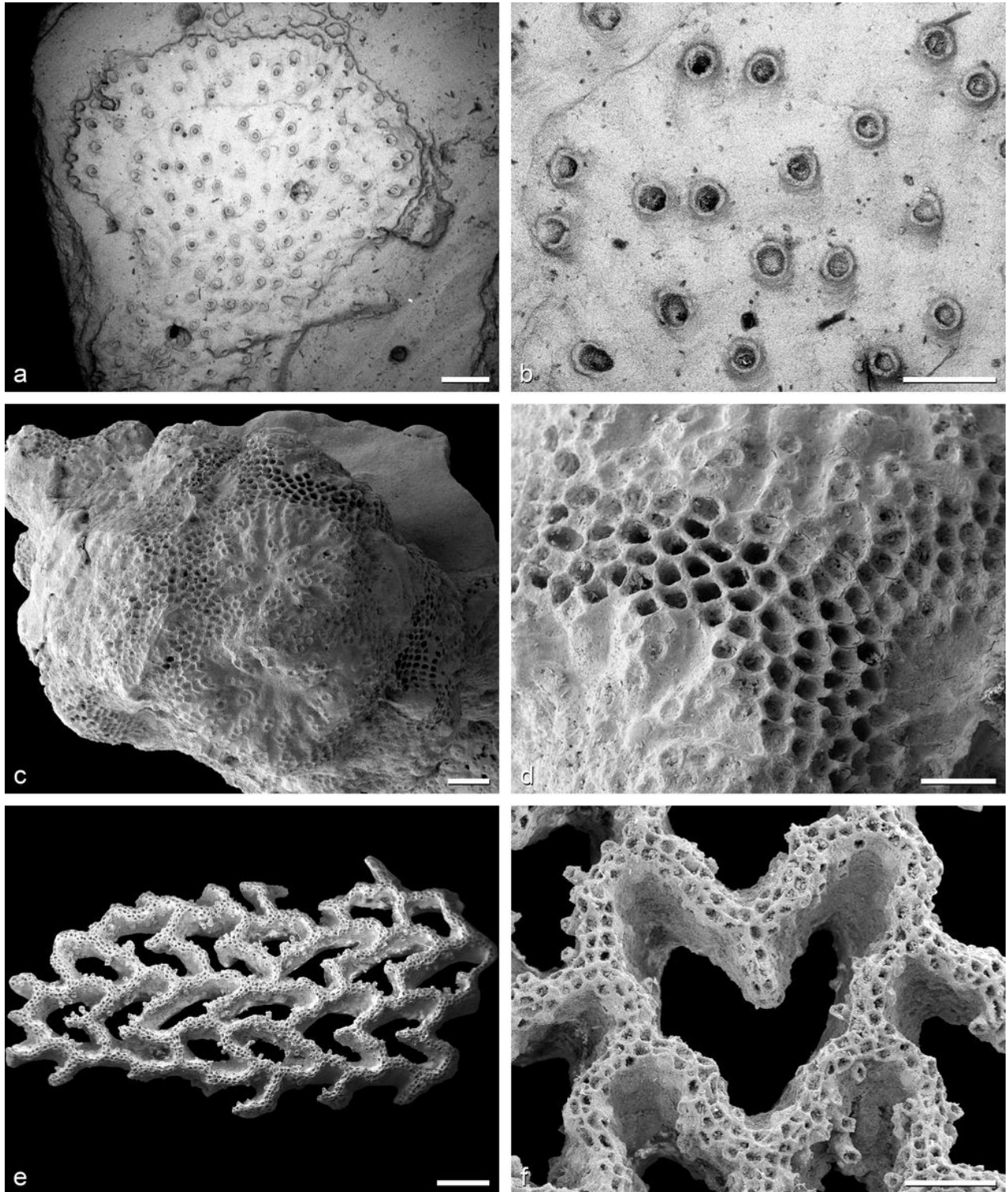


Figure 22: a-b *'Plagioecia' fistularis* (HAGENOW, 1846), neotype, SMF 26390, early Maastrichtian, Island of Rügen, Mecklenburg-Vorpommern, Germany. c-d *Poroplagioecia hartungi* WEITSCHAT & VOIGT, 1983, holotype, SMF 25247, Barremian, brick factory and clay pit K. Gott in Sarstedt, Lower Saxony, Germany. e-f *Retecrisina crispa* VOIGT & VIAUD, 1983, holotype, SMF 25237, mid-late Santonian to early Campanian, Les Guignardières in Soullans, Pays de la Loire, France.
Scale bars: a, c, e 1 mm; b, d, f 500 µm.

Retecrisina crispa, was not figured by VOIGT and VIAUD (1983), while a specimen labelled with the VOIGT collection number 9836 could not be found

in the VOIGT collection. We therefore consider the specimen with the VOIGT collection number 9849 as the holotype of *Retecrisina crispa*.

**Family Semiceidae BUGE, 1952****Genus *Filicea* ORBIGNY, 1854*****Filicea cincta* VOIGT, 1924**

(Fig. 23a–b)

- *# 1924a *Filicea cincta* n.sp. – VOIGT, p. 170, Pl. IV, figs. 3, 6.
 # 1973a *Filicea cincta* VOIGT, 1924 – VOIGT, p. 141, Pl. 13, figs. 1–4.

Syntypes: This material belonged to the first VOIGT Collection that was destroyed in a fire at the *Geologisches Staatsinstitut Hamburg* in 1943.

Locus typicus: Abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten, Sudmerberg near Goslar and Burgberg west of Gehrden (all Lower Saxony, Germany).

Stratum typicum: Middle Santonian.

Neotype: SMF 24449 (VOIGT, 1973a, Pl. 13, fig. 2).

Original label: VOIGT collection number 6690.

Locus neotypicus: Burgberg near Gehrden, Lower Saxony, Germany.

Stratum neotypicum: Late Santonian.

Further distribution: Santonian: Ilsede-Groß Bülten; Gehrden; Bad Harzburg; Sudmerberg near Goslar; Abandoned iron-ore mine near Ve-chelde-Vallstedt (all Lower Saxony, Germany).

Stratigraphical range: Santonian.

Remarks: W. POCKRANDT collected the neotype and gave it to VOIGT.

***Filicea velata* (HAGENOW, 1839)**

(Fig. 23c–d)

- # 1839 *Cerriopora rhombifera* nob. – HAGENOW, p. 284.
 *# 1839 *Cerriopora velata* nob. – HAGENOW, p. 285, Pl. V, figs. 6a–b.
 # 1846 *Vaginopora velata* v. HAG. – HAGENOW, p. 602, Pl. XXIII.b, fig. 19.
 # 1881 *Cerriopora velata* HAGENOW – QUENSTEDT, p. 280, Pl. 153, fig. 109.
 # 1887 *Filicea velata* v. HAGENOW sp. – MARSSON, p. 46, Pl. IV, fig. 7.
 p# 1889 *Filicea velata*, HAGENOW – PERGENS, p. 389.
 # 1899 *Meliceritites* (?) *rhombifera* (von HAGENOW), 1839 – GREGORY, p. 348.
 non# 1936 *Filicea velata* von HAGENOW, 1839 – ALLÈGRE, p. 96.
 non# 1958 *Filicea velata* von HAGENOW, 1839 – DUCASSE, p. 134, Pl. XX, fig. 4, Pl. XXVI, fig. 4.
 # 1959a *Filicea velata* (v. HAGENOW), 1839 – VOIGT, p. 38, Pl. III, figs. 4–6.
 # 1998 *Filicea velata* von HAGENOW – BOARDMAN, Figs. 118–120.

Holotype: The originals of the HAGENOW collection in the Stettiner Museum were lost during World War II.

Locus typicus: Island of Rügen, Mecklenburg-

Vorpommern, Germany.

Stratum typicum: White chalk of early Maastrichtian age.

Neotype: SMF 26395 (VOIGT, 1959a, Pl. III, fig. 4).

Original label: VOIGT collection number 392.

Locus neotypicus: Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum neotypicum: White chalk of early Maastrichtian age.

Stratigraphical range: Early Maastrichtian.

Remarks: VOIGT (1959a) regarded *Cerriopora rhombifera* HAGENOW, 1839, as a junior synonym of *F. velata* because intermediate stages between the two putative species exist.

Genus *Septocea* VOIGT, 1995***Septocea septifera* VOIGT, 1995**

(Fig. 23e–f)

- *# 1995c *Septocea septifera* n.g. n.sp. – VOIGT, p. 174, Figs. 1–10.

Holotype: SMF 26106 (VOIGT, 1995d, Figs. 1, 8).

Original label: VOIGT collection number 13476.

Locus typicus: Stubbenkammer, Island of Rügen, Mecklenburg-Vorpommern, Germany.

Stratum typicum: White chalk of early Maastrichtian age.

Further distribution: Late Maastrichtian, Tuffeau de Maastricht (Meerssen Limestone), abandoned van der Zwaan Quarry on the hill Sint-Pietersberg; Curfs Quarry near Berg, Valkenburg aan de Geul municipality (both Limburg, Netherlands).

Stratigraphical range: Maastrichtian.

Remarks: *Septocea septifera* is the type species of *Septocea* VOIGT, 1995.

Family Spiroporidae VOIGT, 1968**Genus *Spiropora* LAMOUROUX, 1821*****Spiropora* (?) *ingens* VOIGT, 1924**

(Fig. 24a–b)

- *# 1924a *Spiropora ingens* n.sp. – VOIGT, p. 136, Pl. IV, figs. 17–19.
 # 1970 *Spiropora* (?) *ingens* VOIGT, 1924 – VOIGT & FLOR, p. 60, Fig. 24.17, Pl. 15, figs. 6–7.
 # 1973a *Spiropora* (?) *ingens* VOIGT, 1924 – VOIGT, p. 118, Pl. 7, figs. 1–2.

Syntypes: This material belonged to the first VOIGT Collection that was destroyed in a fire at the *Geologisches Staatsinstitut Hamburg* in 1943.

Locus typicus: Abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten, Sudmerberg near Goslar and Burgberg west of Gehrden (all Lower Saxony, Germany).

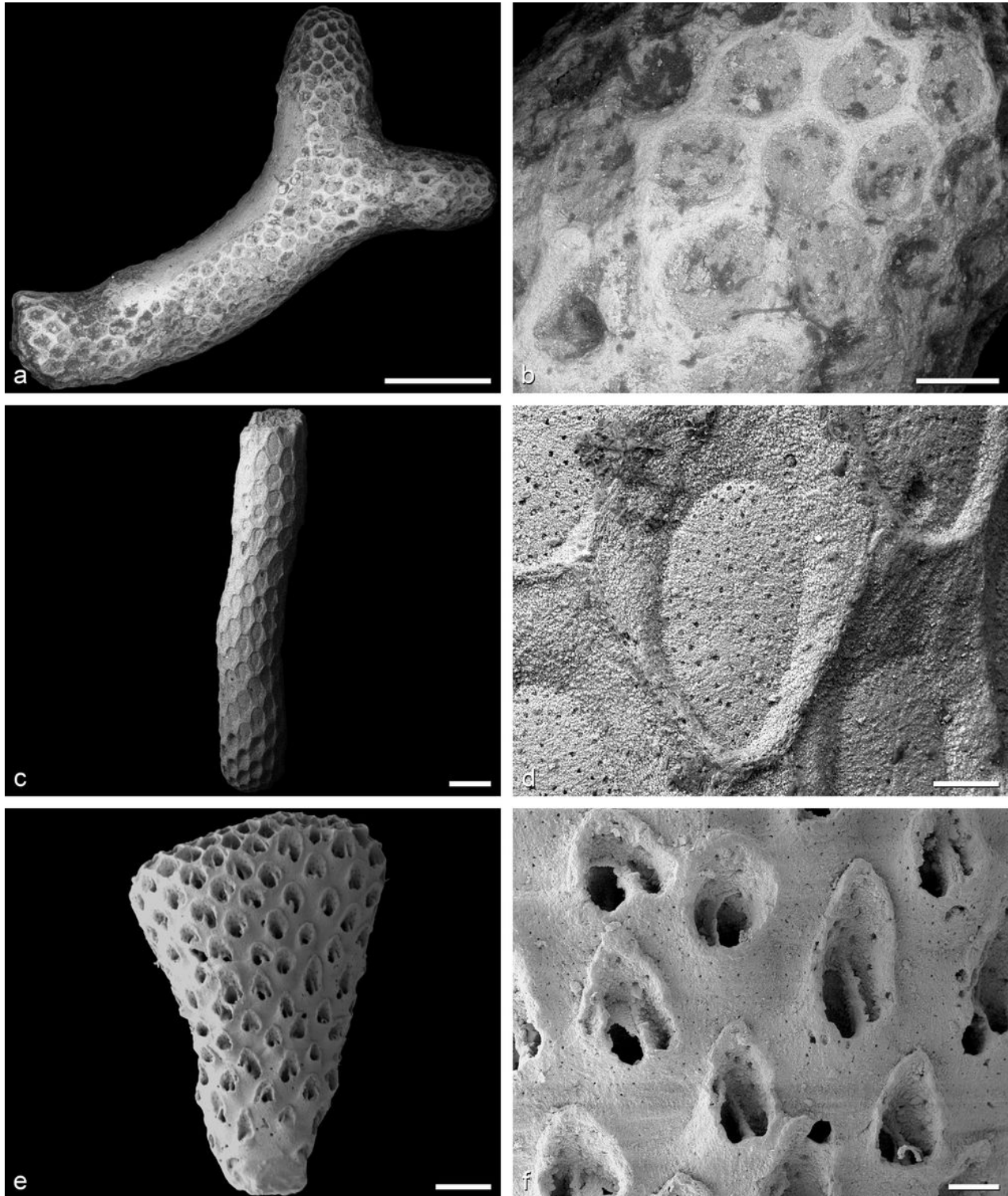


Figure 23: a-b *Fillicea cincta* VOIGT, 1924, neotype, SMF 24449, late Santonian, Burgberg near Gehrden, Lower Saxony, Germany. c-d *Fillicea velata* (HAGENOW, 1839), neotype, SMF 26395, early Maastrichtian, Island of Rügen, Mecklenburg-Vorpommern, Germany. e-f *Septocea septifera* VOIGT, 1995, holotype, SMF 26106, early Maastrichtian, Stubbenkammer on the Island of Rügen, Mecklenburg-Vorpommern, Germany. Scale bars: a 2.5 mm; c 1 mm; e 500 μ m; b 250 μ m; d, f 100 μ m.

Stratum typicum: Middle Santonian.

Neotype: SMF 24360 (VOIGT & FLOR, 1970, Pl. 15, fig. 6).

Original label: VOIGT collection number 5343.

Locus neotypicus: Abandoned quarry of the

former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten, Lower Saxony, Germany.

Stratum neotypicum: Glauconitic arenaceous limestone of the Gehrden Formation, *Goniot euthis westfalica* belemnite Zone, middle Santonian.

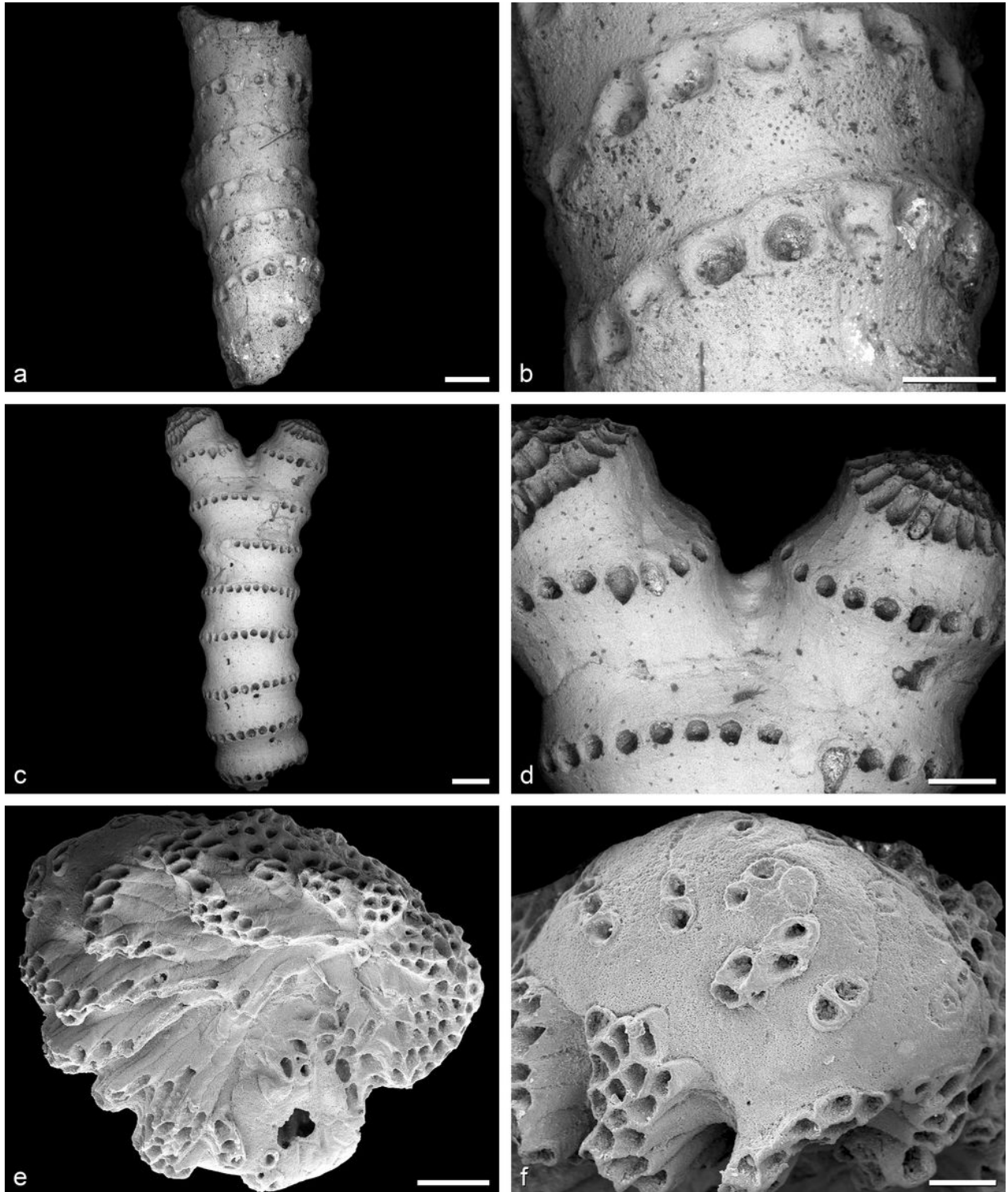


Figure 24: a-b *Spiropora* (?) *ingens* VOIGT, 1924, neotype, SMF 24360, middle Santonian (*Goniotoothis westfalica* belemnite Zone), abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten, Lower Saxony, Germany. c-d *Spiropora suecica* VOIGT & FLOR, 1970, holotype, SMF 24351, late Campanian, Hemmingslycke near Kristianstad, Skåne län, Sweden. e-f *Fascigera fasciculus* VOIGT, 1967, holotype, SMF 24214, late Maastrichtian, Hemmoor, Lower Saxony, Germany. Scale bars: a, c 1 mm; b, d-e 500 µm; f 250 µm.

Further distribution: Middle Santonian, Sudmerberg near Goslar; Butterberg near Bad Harzburg; Former building pit on the Ilsenburger Straße, Bad Harzburg; Burgberg west of Gehrden; Söhlde-Hoheneggelsen; Bad Harzburg-Harlingero-

de (all Lower Saxony, Germany).

Stratigraphical range: Middle Santonian.

Remarks: The neotype originally belonged to the BRANDES Collection.

***Spiropora suecica* VOIGT & FLOR, 1970**

(Fig. 24c–d)

- *# 1970 *Spiropora suecica* n.sp. – VOIGT & FLOR, p. 57, Figs. 22, 24.13–14, Pl. 8, fig. 6, Pl. 12, figs. 1–10, Pl. 13, figs. 1–2.
 non# 1972 *Spiropora verticellata* (GOLDFUSS), 1827 [sic] – BROOD, p. 309, Pl. XLIII, figs. 6, 12, Pl. LXII, fig. 7.
 # 1983 *Spiropora suecica* VOIGT & FLOR – VOIGT, Pl. 5, figs. 16–18.

Holotype: SMF 24351 (VOIGT & FLOR, 1970, Pl. 12, fig. 2).

Original label: VOIGT collection number 5338.

Locus typicus: Hemmingslycke near Kristianstad, Skåne län, Sweden.

Stratum typicum: Late Campanian.

Further distribution: Early Campanian (*Belemnellocomax mammillatus* belemnite Zone), Karlshamn and Blekinge, Blekinge län, Sweden; Balsberg north of Kristianstad, Skåne län, Sweden; "Ifö" (probably the island Ivön, formerly spelled Ifön near Bromölla, Skåne län, Sweden). Late Campanian, Staversvad near Kristianstad-Arkelstorp; Båstad (both Skåne län, Sweden).

Stratigraphical range: Campanian.

Remarks: Although this species was regarded as a junior synonym of *Spiropora verticellata* (GOLDFUSS, 1826) by BROOD (1972), VOIGT (1973a) confirmed that the two species differ, especially in the morphology of the gonozooids.

Family Theonoidae BUSK, 1859**Genus *Fascigera* VOIGT, 1967*****Fascigera fasciculus* VOIGT, 1967**

(Fig. 24e–f)

- *# 1967 *Fascigera fasciculus* n.sp. – VOIGT, p. 82, Pl. 31, figs. 1–5, Pl. 32, fig. 6.

Holotype: SMF 24214 (VOIGT, 1967, Pl. 31, fig. 4, Pl. 32, fig. 6).

Original label: VOIGT collection number 4633.

Locus typicus: Hemmoor, Lower Saxony, Germany.

Stratum typicum: White chalk of the late Maastrichtian.

Further distribution: Maastrichtian, unspecified locality along the Emba River (Kazakh: Ембі or Жем; Russian: Эмба) in the Aktobe or Mangystau Province, Kazakhstan.

Stratigraphical range: Maastrichtian.

Remarks: *Fascigera fasciculus* is the type species of *Fascigera* VOIGT, 1967. In the species description, 4630 is indicated as the VOIGT collection number of the holotype, while in the figure captions, both 4623 (Pl. 31, fig. 4) and 4633 (Pl. 32, fig. 6) are indicated as the VOIGT collection numbers of the holotype. According to the original label, VOIGT collection number 4633 has to be re-

garded as the holotype of *F. fasciculus*. VOIGT collection number 4630 could not be found and VOIGT collection number 4623 is an unimaged sample of *F. fasciculus*. Fascigeridae was not based on a type genus when ORBIGNY (1853, p. 665) created this family and all genera included by ORBIGNY (1853) in the family have since been placed in other families. Many authors have therefore considered the name Fascigeridae as invalid (*e.g.*, BASSLER, 1953). CANU (1916, p. 332) used the genus name *Fascigera* when he assigned *Defrancia dimidiata* REUSS, 1848 (now included in the genus *Tubulipora* LAMARCK, 1816), to it, but provided no description of the genus and no type species was selected. *Fascigera* was therefore not a valid generic name at this time. VOIGT (1967), who was aware of these problems, established a genus *Fascigera* to validate the family name Fascigeridae with ORBIGNY (1853) as its author, assigning *Defrancia pluma* REUSS, 1848, to it. The legitimacy of this subsequent validation of a previously invalid nominal family taxon was questioned by WALTER (1986, p. 82). The *International Code on Zoological Nomenclature* clearly states that a new family name cannot be based on a non-existent generic name (ICZN, 1999, Article 11.7.1.1.). Therefore, ORBIGNY (1853) cannot be considered as the author of Fascigeridae. Furthermore, the necessity for a family Fascigeridae is questionable and *Fascigera* is therefore transferred to Theonoidae BUSK, 1859, a family in which *F. fasciculus* readily fits.

Genus *Lopholepis* HAGENOW, 1851***Lopholepis irregularis* HAGENOW, 1851**

(Fig. 25a–b)

- *# 1851 *Lopholepis irregularis*, HAG. – HAGENOW, p. 39, Pl. III, figs. 11h–k.
 # 1853 *Lopholepis irregularis*, de HAGENOW, 1851–ORBIGNY, p. 687.
 # 1857 *Lopholepis irregularis*, d'ORB. – PICTET, Pl. XCI, fig. 6.
 p# 1881 *Lopholepis radians* v. HAG. – HAMM, p. 32.
 # 1885 *Lopholepis rapax*, sp. n. – MEUNIER & PERGENS, p. 33, Pl. II, fig. 6.
 p# 1909 *Lopholepis radians*, von HAGENOW, 1851 – GREGORY, p. 50.
 # 1982b *Lopholepis irregularis* v. HAGENOW, 1851 – VOIGT, p. 63, Pl. 10, figs. 1–3, Pl. 11, figs. 1–6, Pl. 12, figs. 1–5, Pl. 13, figs. 1–5.

Holotype: The originals of the HAGENOW collection in the Stettiner Museum were lost during World War II.

Locus typicus: Maastricht, Limburg, Netherlands.

Stratum typicum: Tuffeau de Maastricht.

Neotype: SMF 24914 (VOIGT, 1982a, Pl. 12, fig. 1).

Original label: VOIGT collection number 9314.

Locus neotypicus: Locality near Maastricht, Limburg, Netherlands (see Remarks for further information).

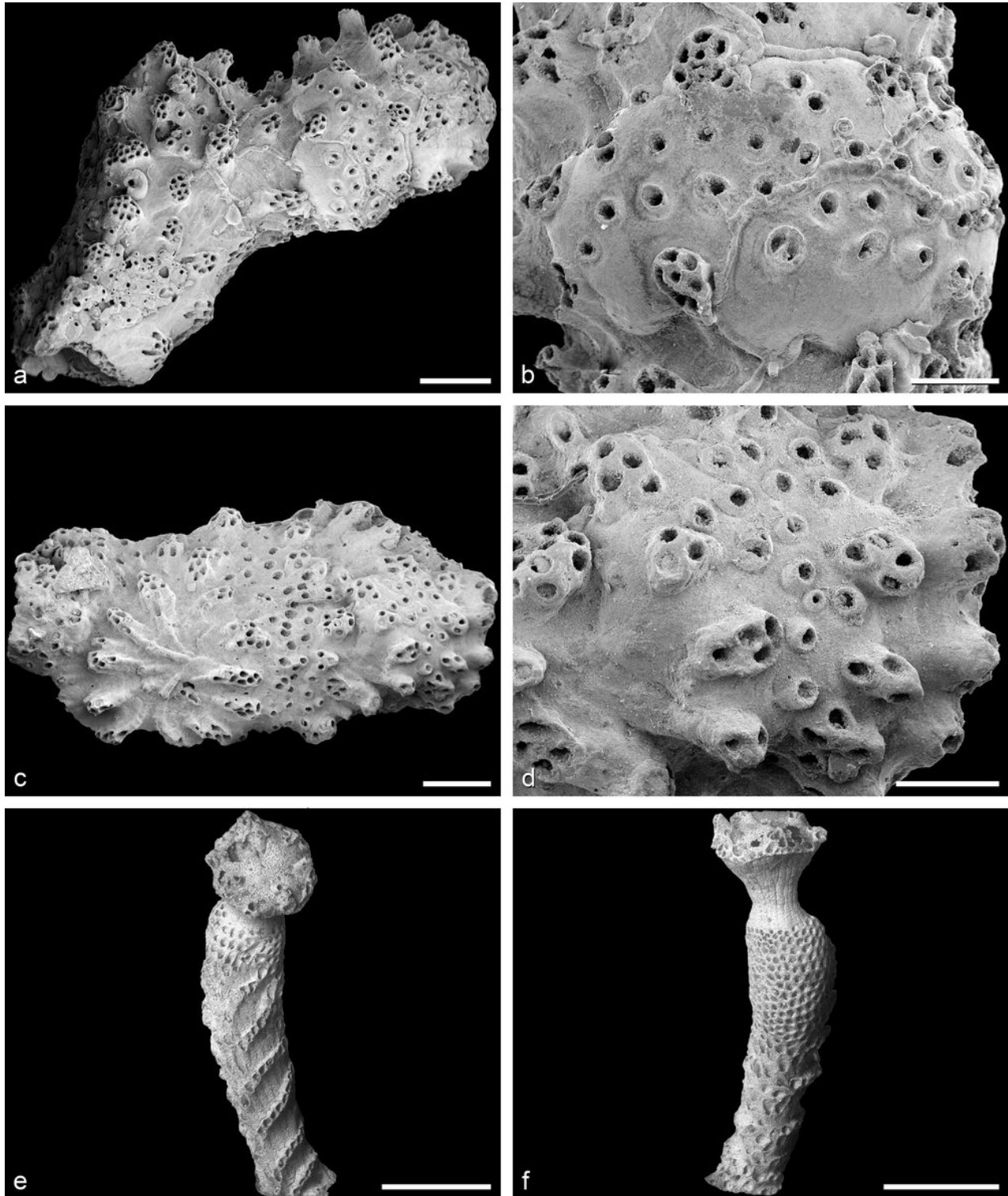


Figure 25: a-b *Lopholepis irregularis* HAGENOW, 1851, neotype, SMF 24914, late Maastrichtian, locality near Maastricht, Limburg, Netherlands. c-d *Lopholepis radians* HAGENOW, 1851, neotype, SMF 24944, Maastrichtian, Blom Quarry near Terblijt in the municipality Valkenburg aan de Geul, Limburg, Netherlands. e-f *Coronidmonea coronata* VOIGT, 1975, holotype, SMF 24606, Danian, Stevns Klint in the Stevns Kommune, Zealand Region, Denmark. Scale bars: a, c, e 1 mm; b, d, f 500 μ m.

Further distribution: Late Maastrichtian, Curfs Quarry near Berg and Blom Quarry near Terblijt (both in Valkenburg aan de Geul municipality); abandoned van der Zwaan Quarry and ENCI (Eerste Nederlandse Cement Industrie) pit on the hill Sint-Pietersberg (all Limburg, Netherlands);

Albert Canal near the Château Neercanne; Riemst-Kanne (both Flanders, Belgium).

Stratum neotypicum: Tuffeau de Maastricht.

Stratigraphical range: Late Maastrichtian.

Remarks: It is uncertain where the neotype



was collected because the specimen is unlabelled. Furthermore, the description of the neotype gives the Albert Canal near Neercanne as the provenance, whereas in the figure captions Blom Quarry is indicated and a note accompanying the neotype mentions the Curfs Quarry.

***Lopholepis radians* HAGENOW, 1851**

(Fig. 25c–d)

- *# 1851 *Lopholepis radians*, HAG. – HAGENOW, p. 39, Pl. III, figs. 11a–c.
- # 1851 *Cavaria ramosa*, HAG. – HAGENOW, p. 53, Pl. VI, fig. 1.
- # 1853 *Lopholepis radians*, de HAGENOW, 1851 – ORBIGNY, p. 687.
- # 1853 *Cavaria irregularis*, de HAGENOW, 1851 – ORBIGNY, p. 797.
- # 1881 *Cavaria ramosa* v. HAG. – HAMM, p. 25.
- p# 1881 *Lopholepis radians* v. HAG. – HAMM, p. 32.
- non# 1887 *Cavarinella ramosa* v. HAGENOW sp. – MARSSON, p. 19, Pl. I, fig. 6.
- # 1899 *Cavaria ramosa*, von HAGENOW, 1851 – GREGORY, p. 399, Fig. 54.
- p# 1909 *Lopholepis radians*, von HAGENOW, 1851 – GREGORY, p. 50.
- non# 1972 *Reptomulticlausa ramosa* (HAGENOW), 1887 – BROOD, p. 207, Pl. XXI, figs. 5–8, Pl. LXII, fig. 9.
- # 1975b *Cavarinella ramosa* (v. HAGENOW) – VOIGT, Pl. 7, figs. 1–6.
- # 1982b *Lopholepis radians* v. HAGENOW, 1851 – VOIGT, p. 56, Pl. 1, figs. 1–4, Pl. 2, figs. 1–5, Pl. 3, figs. 1–5, Pl. 4, figs. 1–5, Pl. 5, figs. 1–6, Pl. 6, figs. 1–7, Pl. 7, figs. 1–6, Pl. 8, figs. 1–8, Pl. 9, figs. 1–6.
- # 1987c *Lopholepis radians* v. HAGENOW – VOIGT, Fig. 6C.
- # 1991 *Lopholepis radians* v. HAGENOW, 1851 – SCHÄFER, Pl. 54, fig. 3.

Holotype: The originals of the HAGENOW collection in the Stettiner Museum were lost during World War II.

Locus typicus: Maastricht, Limburg, Netherlands.

Stratum typicum: Tuffeau de Maastricht.

Neotype: SMF 24944 (VOIGT, 1982a, Pl. 1, fig. 2).

Original label: VOIGT collection number 9250.

Locus neotypicus: Blom Quarry near Terblijt, Valkenburg aan de Geul municipality, Limburg, Netherlands.

Stratum neotypicum: Tuffeau de Maastricht.

Further distribution: Maastrichtian, Saint-Symphorien, Mons municipality, Wallonia, Belgium; Sehnde-Ilten, Lower Saxony, Germany; Tuffeau de Maastricht of the Maastricht area, Netherlands.

Stratigraphical range: Maastrichtian.

Remarks: *Lopholepis radians* is the type species of *Lopholepis* HAGENOW, 1851.

Family Tubuliporidae JOHNSTON, 1838

Genus *Coronidmonea* VOIGT, 1975

***Coronidmonea coronata* VOIGT, 1975**

(Fig. 25e–f)

- *# 1975b *Coronidmonea coronata* n.g. n.sp. – VOIGT, p. 88, Pl. 5, figs. 5–14.
- # 1994b *Coronidmonea coronata* VOIGT – VOIGT, Fig. 2G–M.

Holotype: SMF 24606 (VOIGT, 1975b, Pl. 5, figs. 5–7).

Original label: VOIGT collection number 3991.

Locus typicus: Stevns Klint in the Stevns Kommune, Zealand Region, Denmark.

Further distribution: Danian, Faxø quarries, Zealand Region and many other localities in Denmark; glacial drift deposits in northern Germany.

Stratum typicum: Bryozoan limestone.

Stratigraphical range: Danian.

Remarks: *Coronidmonea coronata* is the type species of *Coronidmonea* VOIGT, 1975. The holotype is mistakenly mentioned given in the figure captions as VOIGT collection number 3891 instead of 3991.

Genus *Crisisina* ORBIGNY, 1850

***Crisisina conjuncta* VOIGT, 1987**

(Fig. 26a–b)

- *# 1987b *Crisisina conjuncta* n.sp. – VOIGT, p. 47, Figs. 2A–C, 3A–H.

Holotype: SMF 25493 (VOIGT, 1987b, Fig. 2 A–B).

Original label: VOIGT collection number 6130.

Locus typicus: Curfs Quarry near Berg, Valkenburg aan de Geul municipality, Limburg, Netherlands.

Stratum typicum: *Belemnitella junior* belemnite Zone, Tuffeau de Maastricht (Meerssen Limestone).

Further distribution: Late Maastrichtian, Blom Quarry near Terblijt, Valkenburg aan de Geul municipality; Sint-Pietersberg near Maastricht (both Limburg, Netherlands).

Stratigraphical range: Late Maastrichtian.

Genus *Decurella*

MONGEREAU & BRAGA, 1967

***Decurella? arnaudae* VOIGT, 1985**

(Fig. 26c–d)

- *# 1985a *Decurella* (?) *arnaudae* nov. sp. – VOIGT, p. 625, Pl. 1, figs. 15–20.

Holotype: SMF 25362 (VOIGT, 1985a, Pl. 1, figs. 17–18).

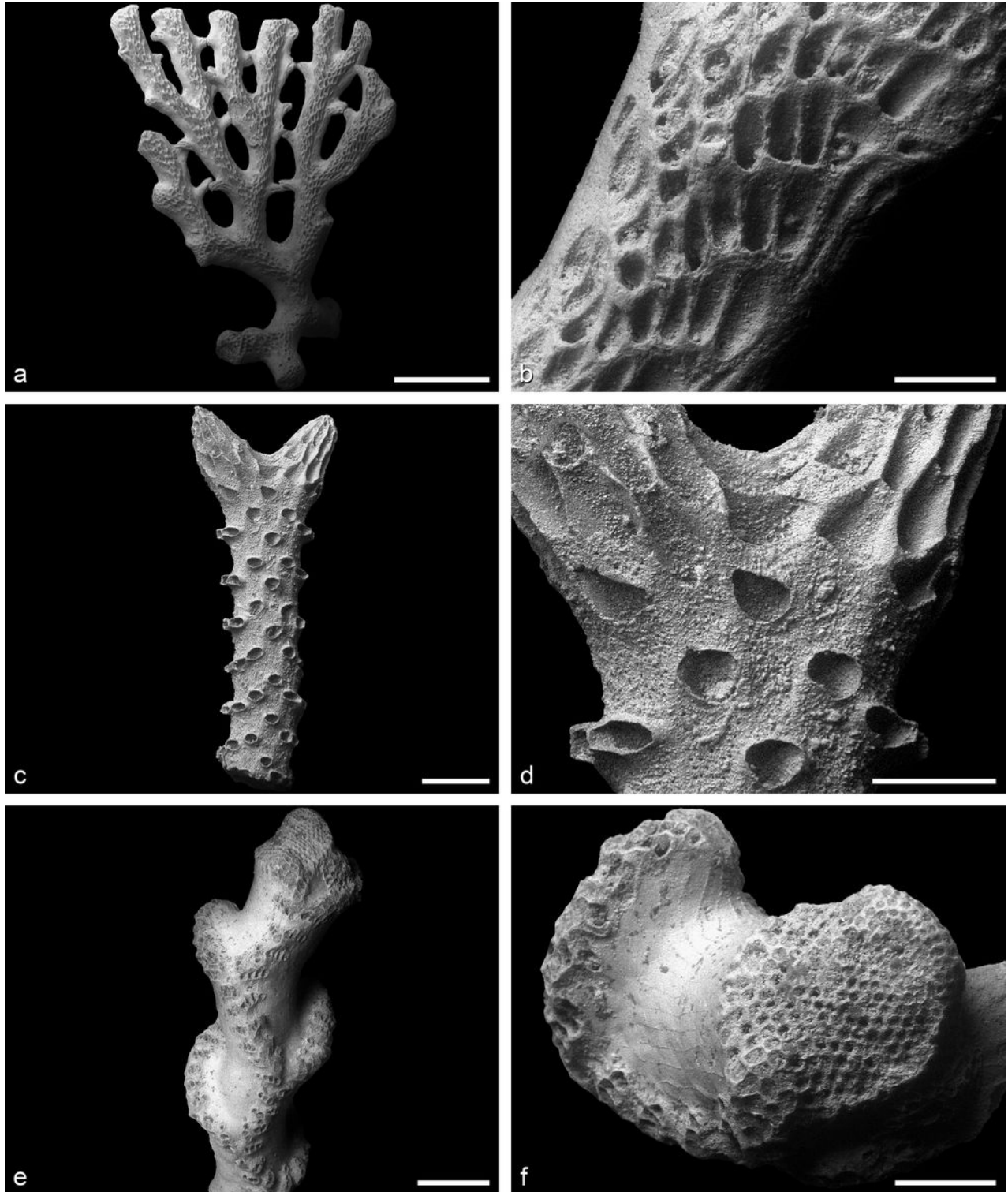


Figure 26: a-b *Crisisina conjuncta* VOIGT, 1987, holotype, SMF 25493, late Maastrichtian (*Belemnitella junior* belemnite Zone), Curfs Quarry near Berg, Valkenburg aan de Geul municipality, Limburg, Netherlands. c-d *Decurella* (?) *arnaudae* VOIGT, 1985, holotype, SMF 25362, late Turonian, Bois de Gareau near Écommoy, Pays de la Loire, France. e-f *Pergensella geniculata* (HAGENOW, 1851), neotype, SMF 26481, late Maastrichtian, ENCI (*Eerste Nederlandse Cement Industrie*) pit on the hill Sint-Pietersberg, Limburg, Netherlands. Scale bars: a 2.5 mm; e 1 mm; c, f 500 μ m; b, d 250 μ m.

Original label: VOIGT collection number 8982.

Locus typicus: Bois de Gareau near Écommoy, Pays de la Loire, France.

Stratum typicum: Late Turonian.

Paratypes: SMF 25359, 25360.

Further distribution: Coniacian to Santonian: Gorges du Nant near Cognin-les-Gorges, Auvergne-Rhône-Alpes, France.



Stratigraphical range: Turonian to Coniacian/Santonian.

Remarks: The assignment of this species to *Decurella* MONGEREAU & BRAGA, 1967, is very uncertain, especially because of the huge stratigraphical gap between the only two species assigned to the genus, with the type species, *D. toarensis* MONGEREAU & BRAGA, 1967, being known only from the Priabonian (Eocene) of Italy.

Genus *Pergensella* GREGORY, 1899

Pergensella geniculata (HAGENOW, 1851)

(Fig. 26e–f)

- p# 1826 *Retepora clathrata* nobis – GOLDFUSS, p. 27, Pl. 9, fig. 12e–f (non Pl. 9, fig. 12a–d).
 *# 1851 *Idmonea geniculata*, HAG. – HAGENOW, p. 33, Pl. III, fig. 5.
 # 1899 *Pergensella geniculata* (von HAGENOW), 1851 – GREGORY, p. 209.
 # 1909 *Pergensella geniculata* (HAG.) – GREGORY: Pl. IX, fig. 5.
 # 1951 *Pergensella geniculata* (v. HAGENOW, 1851) – VOIGT, p. 40, Fig. 6, Pl. 3, figs. 1–2.
 # 1953 *Pergensella geniculata* HAG., 1851 – BASSLER, p. G48, Fig. 16.11.
 # 1974 *Pergensella geniculata* (v. HAGENOW, 1851) – WEITSCHAT, p. 63, Fig. 2, Pl. 6, figs. 1–6, Pl. 7, figs. 1–5, Pl. 8, figs. 1–5.

Holotype: The originals of the HAGENOW collection in the Stettiner Museum were lost during World War II.

Locus typicus: Maastricht, Limburg, Netherlands.

Stratum typicum: Tuffeau de Maastricht.

Neotype: SMF 26481 (WEITSCHAT, 1974, Pl. 6, figs. 4–6).

Original label: VOIGT collection number 6618.

Locus neotypicus: ENCI (*Eerste Nederlandse Cement Industrie*) pit on the hill Sint-Pietersberg, Limburg, Netherlands.

Stratum neotypicum: Tuffeau de Maastricht (Md).

Further distribution: Early late Maastrichtian, Hemmoor, Lower Saxony, Germany. Late Maastrichtian, Albert Canal near the Château Neercanne, Riemst-Kanne, Flanders, Belgium; Sehnde-Iltén; Glacial drift deposits with flint near Neu Wulmstorf-Daerstorf (both Lower Saxony, Germany); glacial drift deposits on the Segrahner Berg near Gudow; glacial drift deposits on the island of Fehmarn (both Schleswig-Holstein, Germany); glacial drift deposits with white chalk near Hamburg-Hummelsbüttel, Hamburg, Germany; abandoned Schunk Quarry near Voerendaal-Kunrade; Curfs Quarry near Berg, Valkenburg aan de Geul municipality (both Limburg, Netherlands).

Stratigraphical range: Late Maastrichtian.

Remarks: *Pergensella geniculata* is the type species of *Pergensella* GREGORY, 1899.

Cyclostomata incertae sedis

Genus *Aggregopora* VOIGT, 1982

Aggregopora catena VOIGT, 1982

(Fig. 27a–b)

- *# 1982b *Aggregopora catena* n.g.n.sp. – VOIGT, p. 235, Pl. 5, figs. 1–2.

Holotype: SMF 24895 (VOIGT, 1982b, Pl. 5, fig. 1).

Original label: VOIGT collection number 6881.

Locus typicus: Båstad, Skåne län, Sweden.

Stratum typicum: Rubbly limestone from the *Belemnitella mucronata* belemnite Zone.

Stratigraphical range: Late Campanian.

Aggregopora catenoides VOIGT, 1982

(Fig. 27c–d)

- *# 1982b *Aggregopora catenoides* n.g.n.sp. – VOIGT, p. 236, Pl. 6, fig. 3.

Holotype: SMF 24894 (VOIGT, 1982b, Pl. 6, fig. 3).

Original label: VOIGT collection number 6879.

Locus typicus: Båstad, Skåne län, Sweden.

Stratum typicum: Rubbly limestone from the *Belemnitella mucronata* belemnite Zone.

Stratigraphical range: Late Campanian.

Remarks: The holotype is the only reported specimen of this species.

Aggregopora prescheri VOIGT, 1982

- *# 1982b *Aggregopora prescheri* n.g.n.sp. – VOIGT, p. 237, Pl. 6, figs. 4–8.

Holotype: Not found (VOIGT, 1982b, Pl. 6, figs. 7–8).

Locus typicus: Hoher Stein, Dresden-Plauen, Saxony, Germany.

Stratum typicum: Rocky shore facies of the Dölzchen Formation in the *Actinocamax plenus* ammonite Zone (latest Cenomanian).

Stratigraphical range: Latest Cenomanian.

Original label: VOIGT collection number 6940.

Remarks: The holotype was listed by EISERHARDT (1998).

Aggregopora verruca VOIGT, 1982

(Fig. 27e–f)

- *# 1982b *Aggregopora verruca* n.g.n.sp. – VOIGT, p. 236, Pl. 6, figs. 1–2.

Holotype: SMF 24896 (VOIGT, 1982b, Pl. 6, figs. 1–2).

Original label: VOIGT collection number 2951.

Locus typicus: Abandoned iron ore pit Mathilde near Lengede-Broistedt, Lower Saxony, Germany.

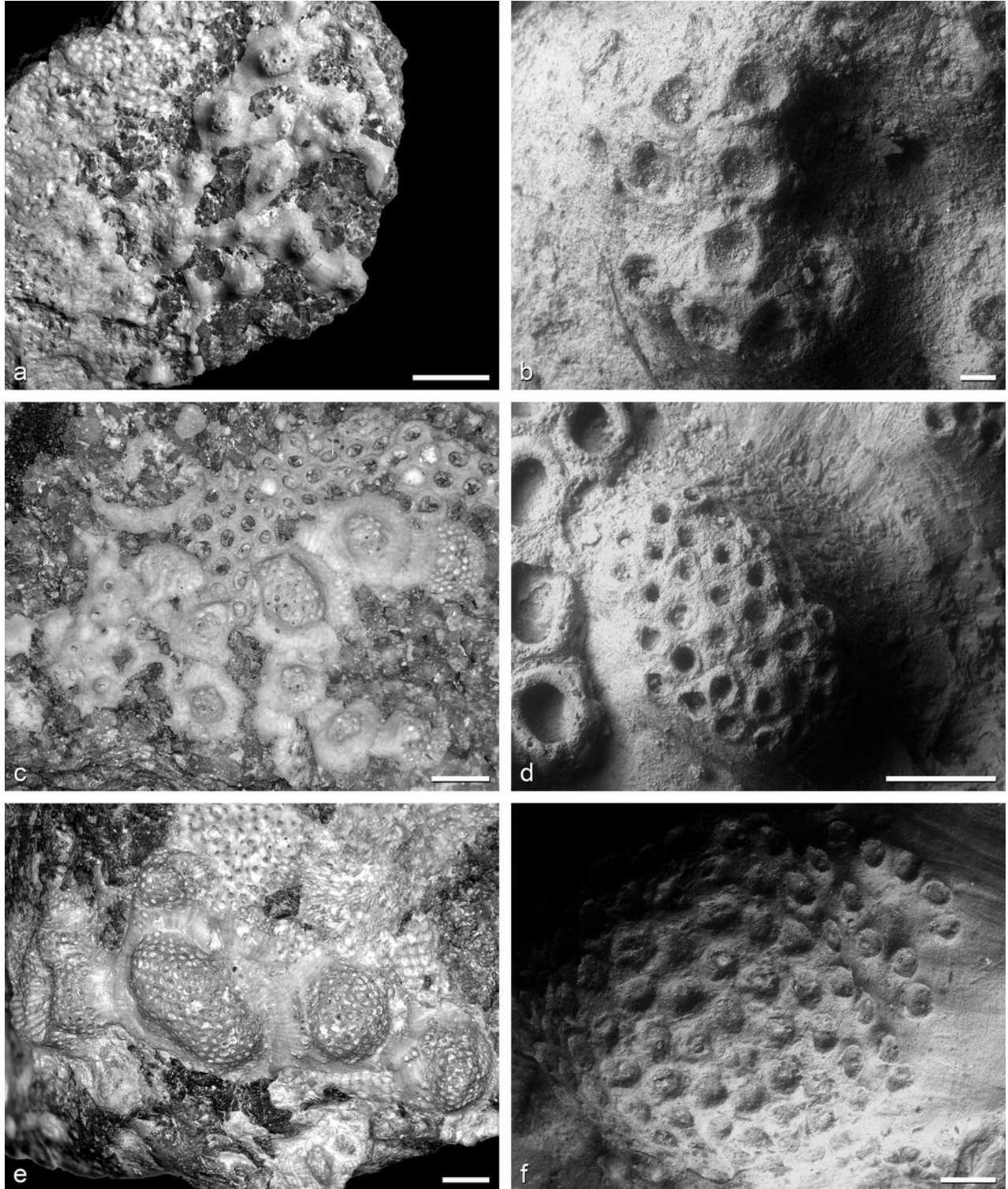


Figure 27: a-b *Aggregopora catena* VOIGT, 1982, holotype, SMF 24895, late Campanian (*Belemnitella mucronata* belemnite Zone), Båstad, Skåne län, Sweden. c-d *Aggregopora catenoides* VOIGT, 1982, holotype, SMF 24894, late Campanian (*Belemnitella mucronata* belemnite Zone), Båstad, Skåne län, Sweden. e-f *Aggregopora verruca* VOIGT, 1982, holotype, SMF 24896, middle Santonian (*Goniot euthis westfalica* belemnite Zone), abandoned iron ore pit Matilde near Lengede-Broistedt, Lower Saxony, Germany. Scale bars: a 2.5 mm; c, e 1 mm; d 500 µm; f 250 µm; b 100 µm.

Stratum typicum: Glauconitic arenaceous limestone of the Gehrden Formation, *Goniot euthis westfalica* belemnite Zone, middle Santonian.

Stratigraphical range: Middle Santonian.

Remarks: The holotype is the only reported specimen of this species.

**Genus *Apatotervia* VOIGT, 1975*****Apatotervia minuta* VOIGT, 1975**

(Fig. 28a–b)

- *# 1975a *Apatotervia minuta* n.g. n.sp. – VOIGT, p. 241, Fig. 1, Pl. 2, figs. 1–13.
 # 1991a *Apathotervia* [sic] *minuta* VOIGT – VOIGT, Pl. II, figs. 4–5.
 # 1994a *Apathotervia* [sic] *minuta* VOIGT – VOIGT, Pl. 2, fig. 5, Pl. 3, figs. 5–7.

Holotype: SMF 24580 (VOIGT, 1975a, Pl. 2, fig. 4).

Original label: VOIGT collection number 7432.

Stratum typicum: White chalk of early late Campanian age.

Locus typicus: Chalk pit of the cement factory Alsen-Breitenburg near Lägerdorf, Schleswig-Holstein, Germany.

Further distribution: Early to Middle Santonian, Shaft Staffhorst 1 of the Barbara-Erzbergbau GmbH near Staffhorst, Lower Saxony, Germany. Early Campanian, Sehnde-Höver, Lower Saxony, Germany. Late Campanian, Hannover-Misburg, Lower Saxony, Germany. Latest Campanian, Lüneburg-Zeltberg, Lower Saxony, Germany. Early Maastrichtian, Tornesch, Schleswig-Holstein, Germany; Trimmingham, Norfolk, England, United Kingdom.

Stratigraphical range: Early Santonian to early Maastrichtian.

Remarks: *Apatotervia minuta* is the type species of *Apatotervia* VOIGT, 1975. In later papers, VOIGT (1991a, 1994a) misspelled the generic name as *Apathotervia*.

Genus *Bueltenopora* HILLMER *et al.*, 1997***Bueltenopora hustedti* (VOIGT, 1924)**

(Fig. 28c–d)

- *# 1924a *Fasciculipora Hustedti* n.sp. – VOIGT, p. 122, Pl. III, figs. 1–5.
 # 1957b *Fasciculipora hustedti* VOIGT, 1924 – VOIGT, p. 4, Pl. 2, fig. 1.
 # 1972 *Fasciculipora hustedti* VOIGT – FLOR, Pl. 9, fig. 1.
 # 1983 "*Fasciculipora*" *hustedti* VOIGT – VOIGT, Pl. 5, figs. 8–11.
 # 1995 *Bueltenopora hustedti* (VOIGT) – SCHOLZ & HILLMER, Pl. 28, fig. 2.
 # 1997 *Bueltenopora hustedti* (VOIGT, 1924) – HILLMER *et al.*, p. 205, Pl. 1, figs. 1–10, Pl. 2, figs. 1–4.

Lectotype (defined in HILLMER *et al.*, 1997): VOIGT (1924a, Pl. III, figs. 1–2). This material belonged to the first VOIGT Collection that was destroyed in a fire at the *Geologisches Staatsinstitut Hamburg* in 1943.

Locus typicus: Abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-

Groß Bülten, Lower Saxony, Germany.

Stratum typicum: Glauconitic arenaceous limestone of the Gehrden Formation, *Goniot euthis westfalica* belemnite Zone, middle Santonian.

Neotype: SMF 26189 (HILLMER *et al.*, 1997, Pl. 1, figs. 1a–c).

Original label: VOIGT collection number 14833.

Locus neotypicus: Abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten, Lower Saxony, Germany.

Stratum neotypicum: Glauconitic arenaceous limestone of the Gehrden Formation, *Goniot euthis westfalica* belemnite Zone, middle Santonian.

Further distribution: Santonian, Lahstedt-Adenstedt; Lengede-Broistedt; Abandoned iron-ore mine near Vechelde-Vallstedt; abandoned Barbara pit near Lengede-Barbecke; Söhlde-Hohe-neggelsen; Sudmerberg near Goslar; Bad Harzburg-Harlingerode; Goslar-Oker (all Lower Saxony, Germany). Campanian, abandoned iron-ore mine near Damme (Dümmer), Lower Saxony, Germany. Late Maastrichtian, Saint-Symphorien, Mons municipality, Wallonia, Belgium.

Stratigraphical range: Santonian to late Maastrichtian.

Remarks: *Bueltenopora hustedti* is the type species of *Bueltenopora* HILLMER *et al.*, 1997.

Bueltenopora woerdemanni**HILLMER *et al.*, 1997**

(Fig. 28e–f)

- *# 1997 *Bueltenopora woerdemanni* n.g. n.sp. – HILLMER *et al.*, p. 207, Pl. 3, figs. 1–4.

Locus typicus: Ignaberga, Hässleholms kommun, Skåne län, Sweden.

Stratum typicum: Early Campanian.

Stratigraphical range: Early Campanian.

Original label: VOIGT collection number 14803.

Holotype: SMF 26194 (HILLMER *et al.*, 1997, Pl. 3, figs. 1–4).

Remarks: J. WÖRDEMANN collected the holotype and gave it to VOIGT.

Genus *Fasciculiporina* VOIGT, 1973***Fasciculiporina pockrandti* VOIGT, 1973**

(Fig. 29a–b)

- *# 1973a *Fasciculiporina pockrandti* n.g. n.sp. – VOIGT, p. 132, Pl. 10, figs. 1–6.

Holotype: SMF 24434 (VOIGT, 1973a, Pl. 10, figs. 1–2).

Original label: VOIGT collection number 6701.

Locus typicus: Burgberg west of Gehrden, Lower Saxony, Germany.

Stratum typicum: Late Santonian.

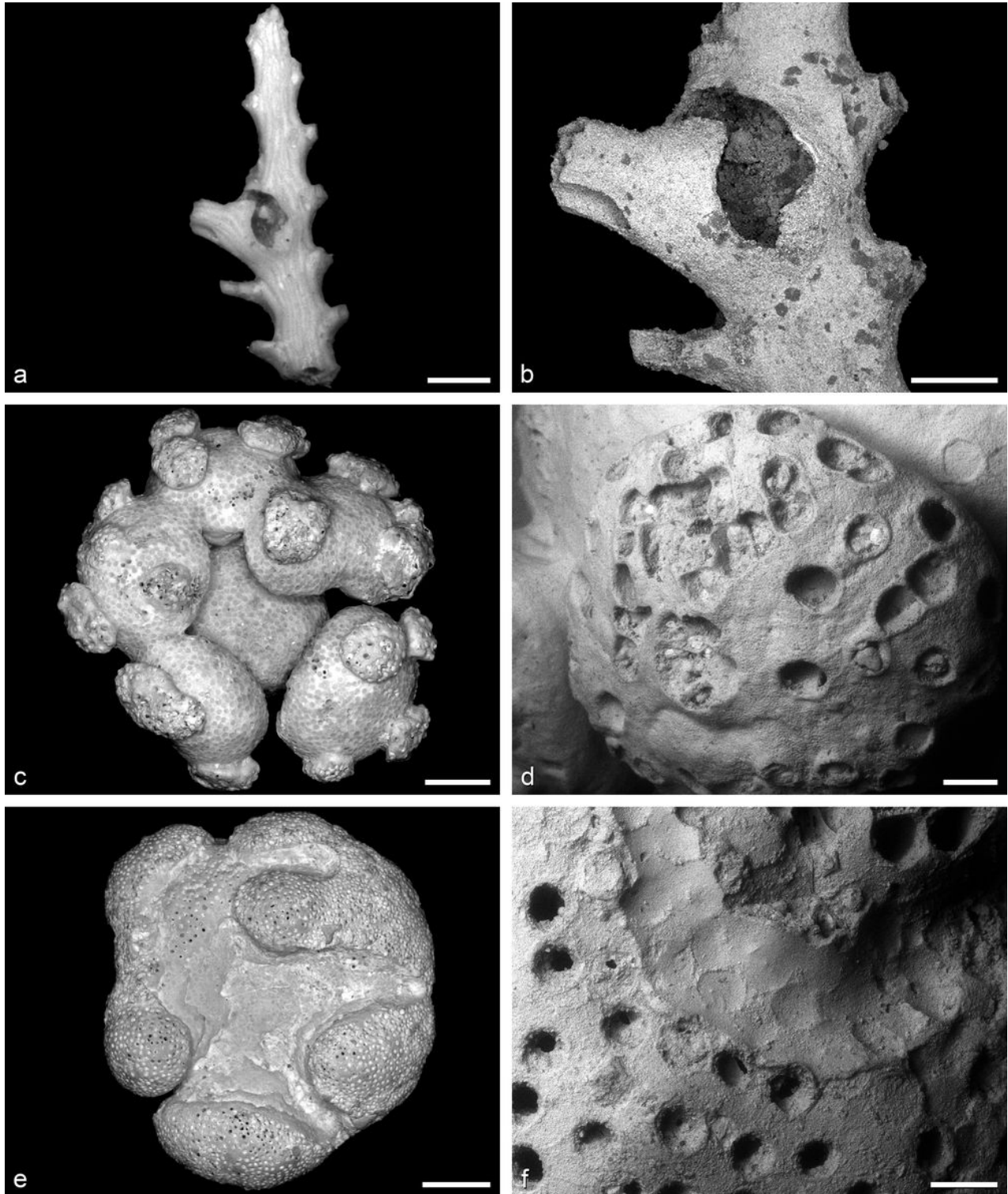


Figure 28: a-b *Apatotervia minuta* VOIGT, 1975, holotype, SMF 24580, early late Campanian, chalk pit of the cement factory Alsen-Breitenburg near Lägerdorf, Schleswig-Holstein, Germany. c-d *Bueltenopora hustedti* (VOIGT, 1924), neotype, SMF 26189, middle Santonian (*Goniot euthis westfalica* belemnite Zone), abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Isede-Groß Bülten, Lower Saxony, Germany. e-f *Bueltenopora woerdemanni* HILLMER *et al.*, 1997, holotype, SMF 26194, early Campanian, Ignaberga in the Hässleholms kommun, Skåne län, Sweden.

Scale bars: c, e 5 mm; a, d, f 500 μ m; b 250 μ m.

Further distribution: Santonian, Söhle-Hehennegelsen, Lower Saxony, Germany.

Stratigraphical range: Santonian.

Remark: *Fasciculiporina pockrandti* is the type species of *Fasciculiporina* VOIGT, 1973. W. Pockrandt collected the holotype and gave it to VOIGT.

**Genus *Hemiseptopora* VOIGT, 1993*****Hemiseptopora dentifera* VOIGT, 1993**

*# 1993a *Hemiseptopora dentifera* n. gen. n.sp. – VOIGT, p. 364, Pl. 1, figs. 9–12.

Holotype: Not found (VOIGT, 1993a, Pl. 1, figs. 9–12).

Original label: VOIGT collection number 11514.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: Earliest Cenomanian.

Remarks: VOIGT (1993a) reported three fragments of *Hemiseptopora dentifera*, none of which could be found. The holotype was listed by EISERHARDT (1998).

Genus *Lunariopsis* VOIGT, 1993***Lunariopsis cava* VOIGT, 1993**

(Fig. 29c–d)

*# 1993a *Lunariopsis cava* n. gen. n.sp. – VOIGT, p. 366, Pl. 2, figs. 1–8.

Holotype: SMF 25977 (VOIGT, 1993a, Pl. 2, figs. 1–5).

Original label: VOIGT collection number 10596.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: Earliest Cenomanian.

Remarks: *Lunariopsis cava* is the type species of *Lunariopsis* VOIGT, 1993.

Genus *Pseudokololophos*

MARTHA *et al.*, 2014

Pseudokololophos radioporides

MARTHA *et al.*, 2014

(Fig. 29e–f)

*# 2014 *Pseudokololophos radioporides* sp. nov. – MARTHA *et al.*, p. 174, Figs. 6A–F, 7A–C.

Holotype: SMF 30001 (MARTHA *et al.*, 2014, Figs. 6A–B, 7C).

Original label: KIOvi4.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: Earliest Cenomanian.

Paratypes: SMF 30002–30007.

Remarks: *Pseudokololophos radioporides* is the type species of *Pseudokololophos* MARTHA *et al.*, 2014.

Genus *Ramofilisparsa* VOIGT, 1989***Ramofilisparsa walteri* VOIGT, 1989**

(Fig. 30a–b)

*# 1989a *Ramofilisparsa walteri* n.g. n.sp. – VOIGT, p. 90, Pl. 1, figs. 1–6, Pl. 2, figs. 1–8.

Holotype: SMF 25807 (VOIGT, 1989a, Pl. 1, fig. 2, non Pl. 2, fig. 3).

Original label: VOIGT collection number 11610.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian).

Stratigraphical range: Earliest Cenomanian.

Remarks: *Ramofilisparsa walteri* is the type species of *Ramofilisparsa* VOIGT, 1989. In the figure captions, it is indicated that a lateral view of the holotype is depicted in Pl. 2, fig. 3. However, this figure is not the holotype and it remains unclear which specimen it is.

Genus *Retecavella* VOIGT, 1987***Retecavella broodi* VOIGT, 1987**

(Fig. 30c–d)

*# 1987a *Retecavella broodi* n.g. n.sp. – VOIGT, p. 34, Pl. 6, figs. 1–14, Pl. 8, fig. 11.

Holotype: SMF 25519 (VOIGT, 1987a, Pl. 6, figs. 1–2).

Original label: VOIGT collection number 2703.

Locus typicus: Curfs Quarry near Berg, Valkenburg aan de Geul municipality, Limburg, Netherlands.

Further distribution: Danian, Mons borehole and Ciplly, Mons municipality, Wallonia, Belgium; Albert Canal near Riemst-Vroenhoven, Flanders, Belgium; Neu Wulmstorf-Daerstorf, Lower Saxony, Germany; Beatrix borehole near Neer, Leudal municipality, Limburg, Netherlands; several localities in Denmark and southern Sweden.

Stratum typicum: Pockets in the hardground of the Houthem limestone above the Tuffeau de Maastricht.

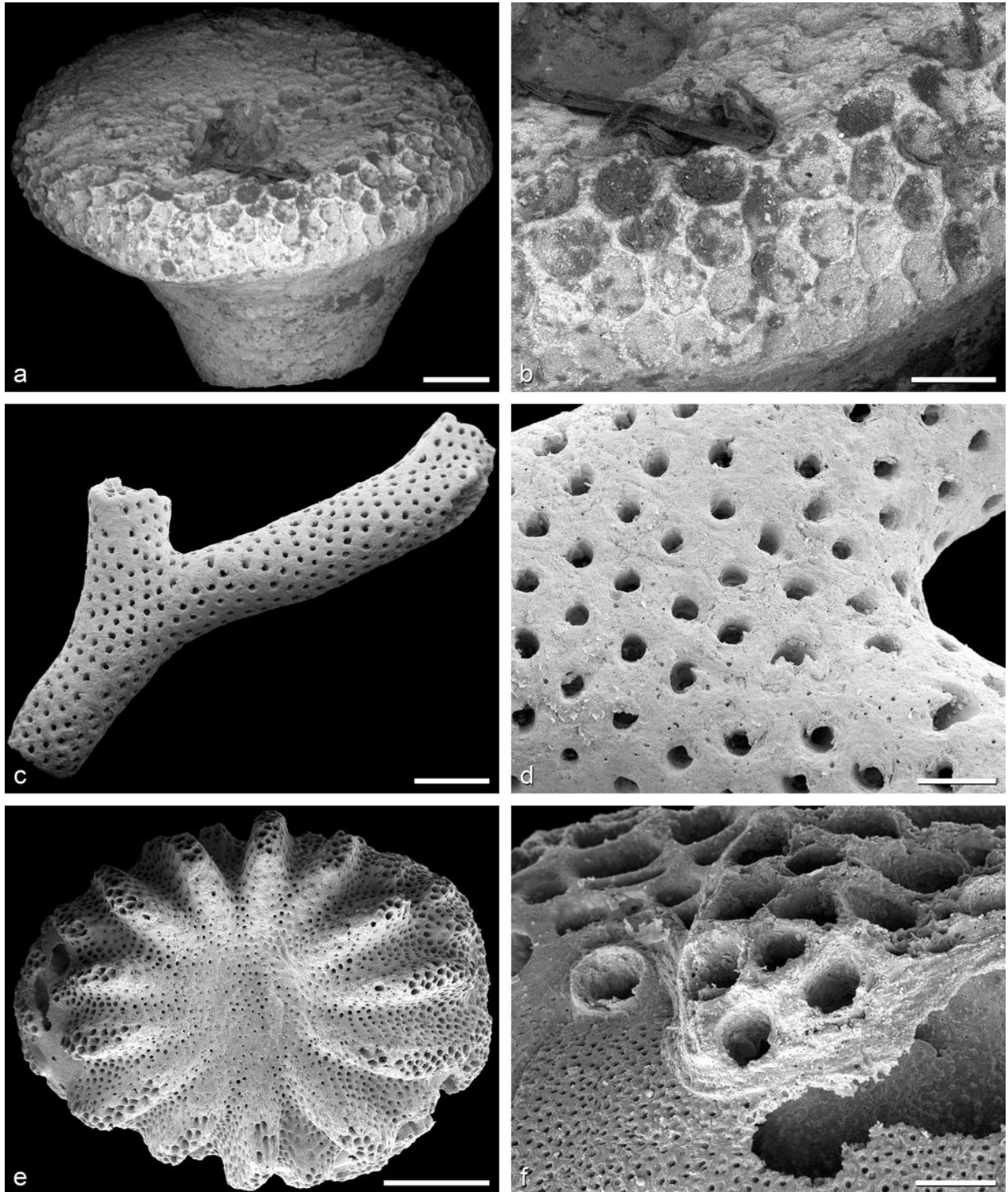


Figure 29: a-b *Fasciculiporina pockrandti* VOIGT, 1973, holotype, SMF 24434, late Santonian, Burgberg west of Gehrden, Lower Saxony, Germany. c-d *Lunariopsis cava* VOIGT, 1993, holotype, SMF 25977, early Cenomanian (*Neostlingoceras carcitanense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. e-f *Pseudokololophos radioporides* MARTHA *et al.*, 2014, holotype, SMF 30001, early Cenomanian (*Neostlingoceras carcitanense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Scale bars: c, e 1 mm; a 500 µm; b, d 250 µm; f 100 µm.

Stratigraphical range: Danian.

Remarks: *Retecavella broodi* is the type species of *Retecavella* VOIGT, 1987.

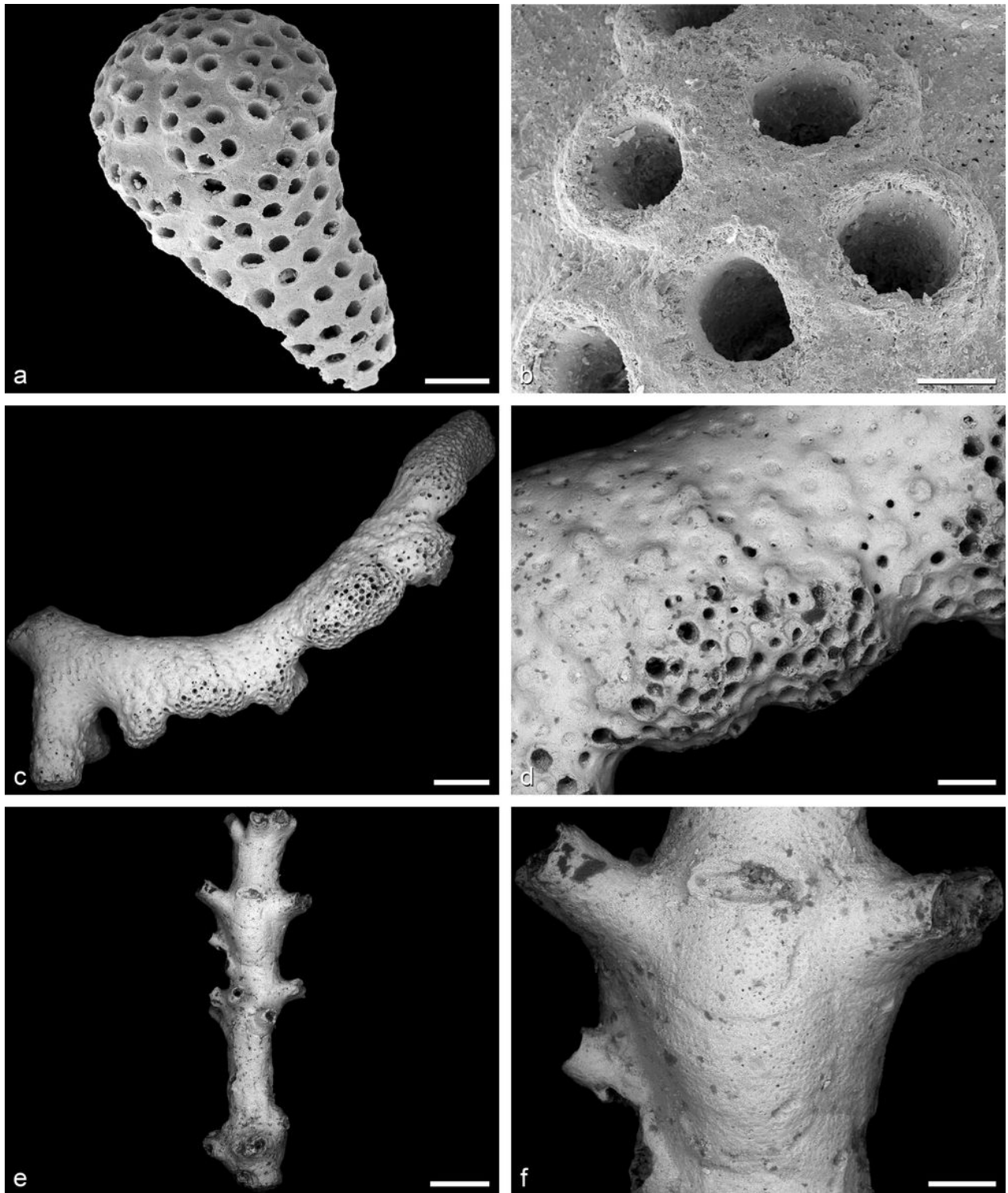


Figure 30: a-b *Ramofilisparsa walteri* VOIGT, 1989, holotype, SMF 25807, early Cenomanian (*Neostlingoceras carci-tanense* ammonite Zone), Kassenberg, Rauhen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. c-d *Retecavella broodi* VOIGT, 1987, holotype, SMF 25519, Danian, Curfs Quarry near Berg, Valkenburg aan de Geul, Limburg municipality, Netherlands. e-f *Spirentalophora brandesi* VOIGT & FLOR, 1970, holotype, SMF 24404, middle Santonian (*Gonioteuthis westfalica* belemnite Zone), abandoned quarry of the former iron-ore mine of Bünten-Adenstedt near Ilsede-Groß Bünten, Lower Saxony, Germany. Scale bars: c, e 1 mm; a 500 μ m; d, f 250 μ m; b 100 μ m.

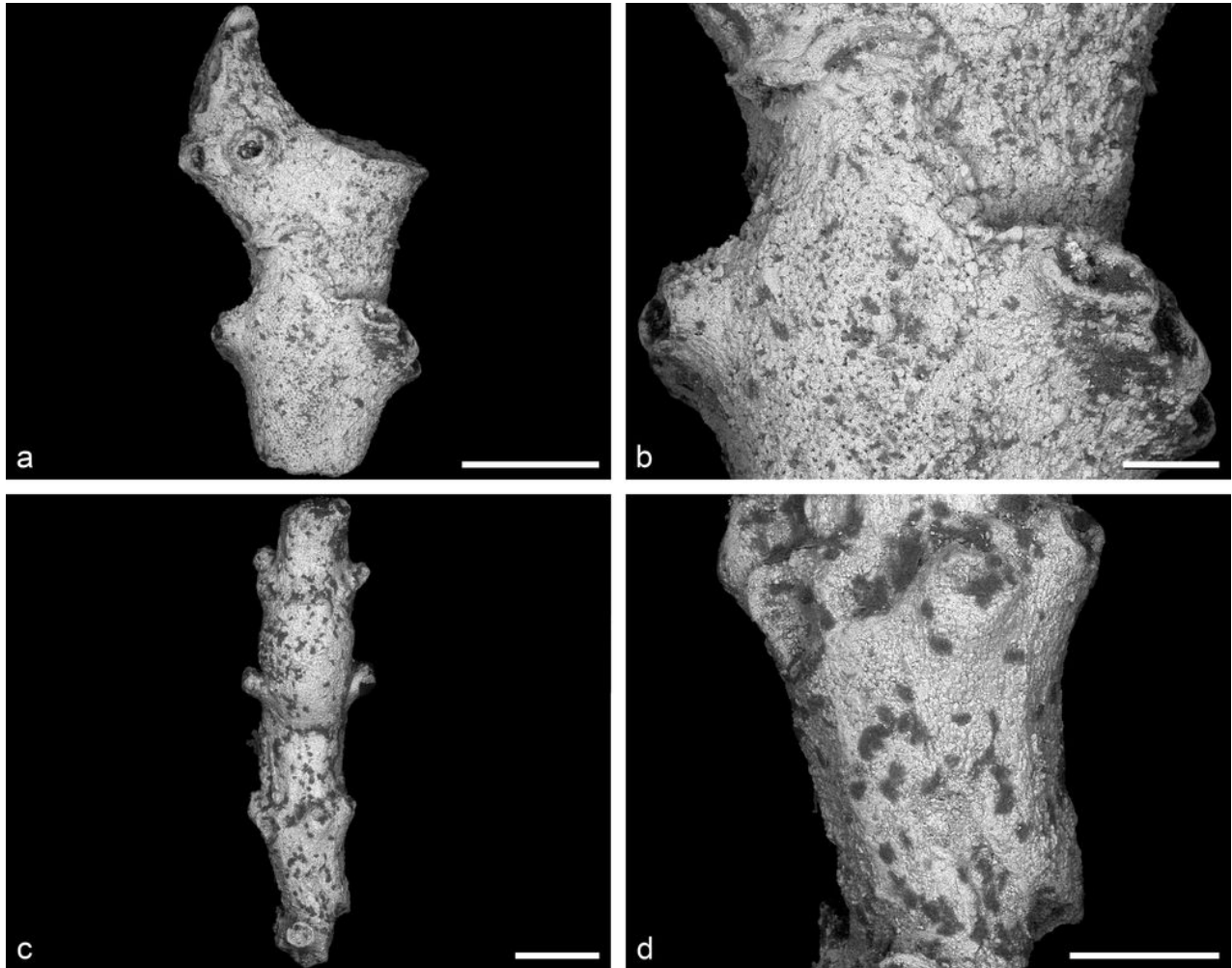


Figure 31: a-b *Spirentalophora cristata* VOIGT & FLOR, 1970, holotype, SMF 24321, late Turonian, Le Breuil near Thoré-la-Rochette, Centre-Val de Loire, France (probably "Coté de Breuil" along the Loire River or the "Rue du Bruil"). c-d *Spirentalophora frankel* VOIGT & FLOR, 1970, holotype, SMF 24309, early Cenomanian (*Neostlingoceras carcitense* ammonite Zone), Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany. Scale bars: a 1 mm; c 100 µm; b, d 250 µm.

Genus *Spirentalophora* VOIGT, 1968

Spirentalophora brandesi VOIGT & FLOR, 1970

(Fig. 30e-f)

*# 1970 *Spirentalophora brandesi* n.sp. – VOIGT & FLOR, p. 23, Fig. 7, Pl. 2, figs. 1–5, Pl. 15, fig. 8.

Holotype: SMF 24404 (VOIGT & FLOR, 1970, Pl. 2, fig. 1).

Original label: VOIGT collection number 5190.

Locus typicus: Abandoned quarry of the former iron-ore mine of Bülten-Adenstedt near Ilsede-Groß Bülten, Lower Saxony, Germany.

Stratum typicum: Glauconitic arenaceous limestone of the Gehrden Formation, *Goniotoothis westfalica* belemnite Zone, middle Santonian.

Stratigraphical range: Middle Santonian.

Remarks: The holotype originally belonged to the BRANDES collection. The image of the holotype is flipped horizontally in VOIGT and FLOR (1970).

Spirentalophora cristata VOIGT & FLOR, 1970

(Fig. 31a-b)

*# 1970 *Spirentalophora cristata* n.sp. – VOIGT & FLOR, p. 20, Figs. 4, 5, 24.36–37, Pl. 1, figs. 1–6.

Holotype: SMF 24321 (VOIGT & FLOR, 1970, Pl. 1, fig. 2).

Original label: VOIGT collection number 5538.

Locus typicus: Le Breuil near Thoré-la-Rochette, Centre-Val de Loire, France (probably "Coté de Breuil" along the Loire River or the "Rue du Bruil").

Stratum typicum: Sandy, calcareous marl.

Stratigraphical range: Late Turonian.

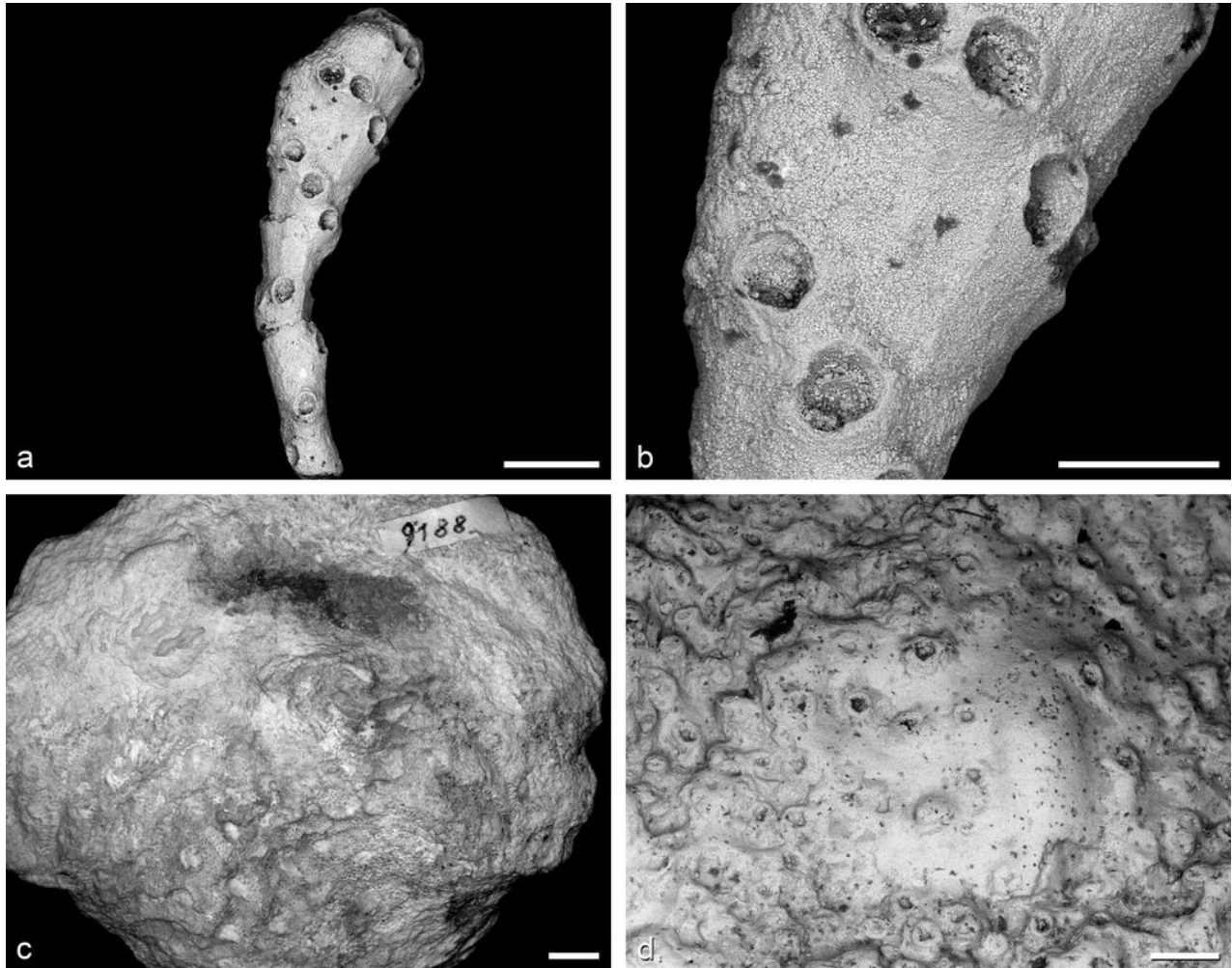


Figure 32: a-b *Spirentalophora inconspicua* VOIGT & FLOR, 1970, SMF 24367, early Turonian (*Actinocamax plenus* ammonite Zone), quarry north of Přeboj, Central Bohemian Region, Czech Republic. c-d *Talmontipora insolita* VOIGT & ERNST, 1985, holotype, SMF 25405, late Campanian, Talmont-sur-Gironde, Charente-Maritime, Nouvelle-Aquitaine, France.

Scale bars: c 5 mm; a, d 500 μ m; b 250 μ m.

***Spirentalophora frankei*
VOIGT & FLOR, 1970
(Fig. 31c–d)**

*# 1970 *Spirentalophora frankei* n.sp. – VOIGT & FLOR, p. 21, Figs. 6, 24.22–23, Pl. 1, figs. 7–20.

Holotype: SMF 24309 (VOIGT & FLOR, 1970, Pl. 1, figs. 9–10).

Original label: VOIGT collection number 5054.

Locus typicus: Kassenberg, Rauen Quarry in Mülheim an der Ruhr-Broich, North Rhine-Westphalia, Germany.

Stratum typicum: Probably the red limestone from the rocky shore facies of the Essen Greensand Formation in the *Neostlingoceras carcitanense* ammonite Zone (earliest Cenomanian) (see Remarks for further information).

Stratigraphical range: Probably Cenomanian.

Remarks: A. FRANKE collected all specimens of this species. The exact horizon in the Rauen Quarry, where the specimens were collected is un-

known according to VOIGT and FLOR (1970). However, the reddish colour of the specimens indicates that they probably came from the red limestone of the Essen Greensand Formation.

***Spirentalophora inconspicua*
VOIGT & FLOR, 1970
(Fig. 32a–b)**

*# 1970 *Spirentalophora inconspicua* n.sp. – VOIGT & FLOR, p. 24, Figs. 8, 24.38–39, Pl. 3, figs. 1–24.

Holotype: Not found (VOIGT & FLOR, 1970, Fig. 8A, D, Pl. 3, figs. 16–17)

Original label: VOIGT collection number 4731.

Locus typicus: Quarry north of Přeboj, Central Bohemian Region, Czech Republic.

Stratum typicum: Transgressive sediments on top of crystalline rocks (*Actinocamax plenus* ammonite Zone, early Turonian).

Stratigraphical range: Early Turonian.

Remarks: The holotype was listed by EISERHARDT (1998). Here, we image specimen SMF



24367 (VOIGT collection number 4694), which was figured by VOIGT and FLOR (1970, Pl. 3, fig. 4).

Genus *Talmontipora* VOIGT & ERNST, 1985

Talmontipora insolita

VOIGT & ERNST, 1985

(Fig. 32c–d)

*# 1985a *Talmontipora insolita* n.g. n.sp. – VOIGT & ERNST, p. 105, Pl. 1, figs. 1–5, Pl. 2, figs. 1–2, Pl. 3, figs. 1–4, Pl. 4, figs. 1–4, Pl. 5, figs. 1–5, Pl. 6, figs. 1–5, Pl. 7, figs. 1–4.

Holotype: SMF 25405 (VOIGT & ERNST, 1985a, Pl. 1, fig. 3, Pl. 2, fig. 1, Pl. 3, fig. 3).

Original label: VOIGT collection number 9188.

Locus typicus: Talmont-sur-Gironde, Charente Maritime, Nouvelle-Aquitaine, France.

Stratum typicum: Campanian, probably Barbezieux Formation.

Stratigraphical range: Late Campanian.

Remarks: *Talmontipora insolita* is the type species of *Talmontipora* VOIGT & ERNST, 1985.