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Bryozoa on shells from the Kwintebank, Southern bight of the North Sea (Belgium)

by Hans DE BLAUWE

Abstract

Bryozoans were collected in marine sands and shells dredged from the Kwintebank (51° 21'N 2° 40' E) to raise the beach of Knokke. Several species of Bryozoa are reported for the first time from Belgian waters. Most of them were previously known from few localities, and only rarely illustrated. Two species of cheilostomate Bryozoa are entirely new to science, and are hereby described.

Key-words: Bryozoa, shells, new species, North Sea, Belgium.

Résumé

Des bryozoaires ont été récoltés dans un materiel sableux et coquillier dragué sur le banc Kwinte (51° 21'N 2° 40' E) pour réensabler la plage de Knokke. Quelques espèces sont mentionnées pour la première fois dans les eaux belges. La plupart d'entr'elles étaient déjà connues de certaines localités ou illustrées à quelques occasions. Deux espèces cheilostomes incrustant des coquilles de mollusques sont nouvelles pour la science et sont décrites.

Mots clés: Bryozoa, coquilles de mollusques, nouvelles espèces, Mer du Nord, Belgique.

Samenvatting

Bryozoa werden verzameld gedurende de ophoging van het strand van Knokke met zand en schelpkleppen afkomstig van de Kwintebank (51° 21'N 2° 40' E). Verscheidene mosdiersoorten worden voor het eerst gemeld uit België. De meeste waren voorheen enkel bekend van weinig vindplaatsen en zijn niet vaak geïllustreerd. Twee soorten cheilostome Bryozoa zijn nieuw voor de wetenschap en worden hier beschreven.

Sleutelwoorden: Bryozoa, schelpen, nieuwe soorten, Noordzee, België.

Introduction

The continental shelf of Belgium is situated in the southern bight of the North Sea. This transitional area to the English Channel is characterised by numerous large longitudinal sandbanks. Gravel can be found in the channels between the sandbanks. The sediment along the shore consists of fine sand; the offshore sandbanks consist of coarse sand and shells.

Professor Gustave GILSON intensively sampled the marine environment of the Belgian coast in the first half of the 20th century, especially in the period 1899 till 1914. The Royal Belgian Institute of Natural Sciences (RBINS) holds this historical the collection. During the revision of the Bryozoa of this collection by the present author it appeared that tiny colonies and spotcolonies were neglected. Nevertheless, the collection is of high scientific value as reference for the Belgian marine fauna. As there were no other major benthic surveys in Belgian waters with special attention to bryozoans, little is known of species specialized to colonize small substrates such as shells.

In April 2004 large quantities of coarse sand were extracted from the Kwintebank sandbank to replenish the beaches of Ostend and Knokke to strengthen coastal defence and enhance tourism. This provided a unique opportunity to study bryozoans colonizing shells on the Kwintebank. The colonies growing on the inner sides of the valves hardly suffered from extraction, transport and deposition. Several colonies could be studied alive or undamaged. The study revealed new data, including new distributional records and two species considered to be new to science out of 27 species recorded.

Materials and methods

Samples were collected during the raising of the beach at Knokke in May 2004. About 14000 shells were investigated by the naked eye for the presence of Bryozoa. The shells containing bryozoans were transported in seawater. Substrata were examined under a binocular microscope. All except the most common bryozoan colonies were counted and identified to species level and if possible tentacle number was noted. After identification the substrates were preserved dry. Casts were made of some specimens of shell-boring species by using a technique similar to POHOWSKY (1978), impregnating the material with liquefied polyester and dissolving the shell in hydrochloric acid. Julien CILLIS made scanning electron micrographs at the RBINS. The morphometric data given below are the grand mean of the colony means (X) and

the corresponding standard deviations (s.d.), the overall range, and the number of measurements (N). The abbreviations are: Lz: length of zooid; Wz: width of zooid; Lov: length of ovicell; Wov: width of ovicell. All measurements are in millimetres. Since 1996, electronic monitoring or "black-box" recording has registered all movements of the extraction vessels. With the data registered, the Management Unit of the Mathematical Model of the North Sea (MUMM) could precisely map the area where extraction occurred. To decide what species are recorded here for the first time from Belgium, the unpublished species list of DE GRAVE (1987-1988) has been consulted and in addition the collection of the RBINS has been reviewed by present author.

Results

Extraction occurred within the rectangle formed by following positions:

1) 51° 18'N 2° 40'E
2) 51° 18'N 2° 42'E
3) 51° 21'N 2° 40'E
4) 51° 21'N 2° 42'E

Water depth is between –10 and –25 m in this area.

27 species of Bryozoa were recorded (Cyclostomata: 1, Ctenostomata: 3, Cheilostomata: 23). Especially the inner surfaces of lamellibranch valves were covered, often with several species. All colonies are encrusting or boring, erect growths are not recorded. Several species are reproducing at small colony size as an adaptation to short survival on small, unstable substrata, conforming to the 'spot colony' model defined by BISHOP (1989). Compared to the biogeographic accounts given by HAYWARD & RYLAND (1985, 1998, 1999), most of them are known from the western part of the English Channel. In the present paper, 21 species are reported from Belgium for the first time: 13 were present in the RBINS but were not properly identified and 8 species were not previously collected from Belgium. Two species new to science are hereby described. A diagnosis is only given for species new for the Belgian fauna.

Name	A	B	C
Stomatoporina incurvata	1	X	
Immergentia suecica	Common	X	
Penetrantia sp.	Common		
Spathipora sp.	Common	X	
Membranipora tenuis	Common	X	
Conopeum reticulum	Common		
Electra monostachys	Common	X	
Electra pilosa	1		
Aspidelectra melolontha	Common		
Callopora discreta	35		X
Ammatophora nodulosa	6	X	
Setosella vulnerata	7		X
Collarina balzaci	2		X
Puellina praecox	23	X	
Puellina bifida	23		X
Puellina modica	1		X
Hippothoa flagellum	7	X	
Escharoides bishopi sp. nov.	6		X
Escharella gilsoni sp. nov.	24		X
Escharella immersa	1		
Neolagenipora collaris	19	X	
Hippoporina sp.	2	X	
Phylactella labrosa	59	X	
Escharina hyndmanni	1	X	
Escharina johnstoni	94		
Schizotheca divisa	3		X
Schizotheca fissa	10	X	

Tabel 1. List of the species collected in 2004 on shells from the Kwintebank.
A: number of colonies collected in 2004; B: present in the historical collection in the RBINS but not formerly recognized or identified; C: April 2004 first collection in Belgium

Systematic accounts

Class STENOLAEMATA
Order CYCLOSTOMATA
Family ONCOUSOECLIDAE CANU, 1918

Stomatoporina incurvata (HINCKS, 1859)
(Figure 1)

DIAGNOSIS

Autozooids uniserial, forming a curling, adherent colony; all apertures opening on convex side of the branch.

REMARKS

Known from several locations in the western Channel (HAYWARD & RYLAND, 1985) and from NW Spain (REVERTER GIL O. *et al.*, 1995). One colony collected in the inner surface of a valve of *Cerastoderma edule* (LINNAEUS) from the Kwintebank. Another specimen encrusting the inner surface of a lamellibranch valve was discovered during the revision of the collection of GILSON (RBINS) in inventory nr. 602 (place and date unknown).

Class GYMNOLAEMATA
Order CTENOSTOMATA
Family IMMERGENTIIDAE SILEN, 1946

Immergentia suecica Silen, 1947
(Figure 2)

DIAGNOSIS

Borings are characterised by the zooidal openings laying on the line of the stolon. Zooids with blunt proximal end, gener-

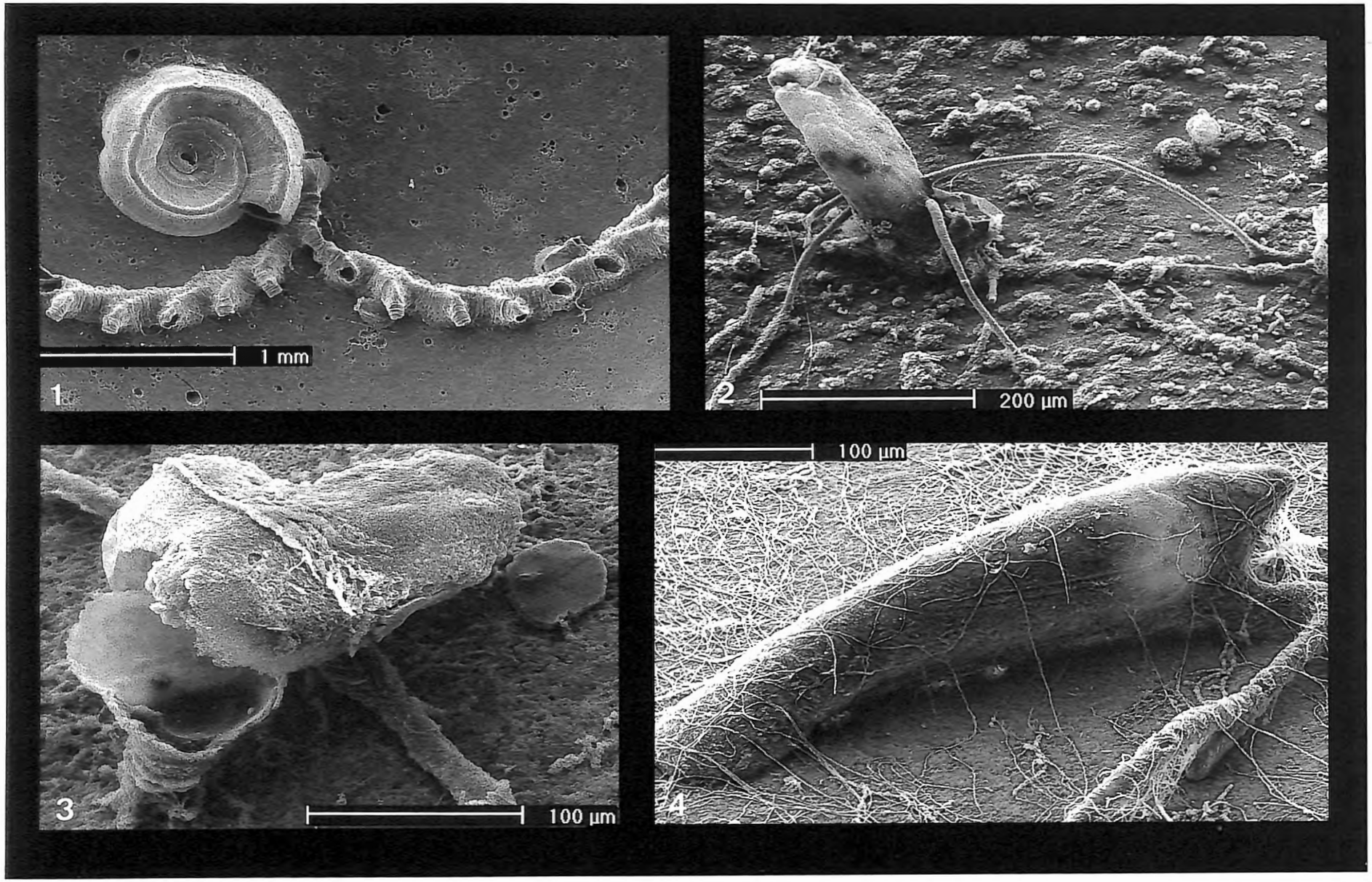

Plate 1
Fig. 1. *Stomatoporina incurvata*: colony from the Kwintebank. Fig. 2. *Immergentia suecica*: cast of autozooid with adventitious stolons. Fig. 3. *Penetrantia* sp.: broken cast of a gonozooid with ovicell. Fig. 4. *Spathipora* sp.: cast of autozooid.

ally occurring in straight rows. Adventitious stolons sometimes arise from zooids.

REMARK

Borings are common in shells from the Kwintebank and are present in material in the collection of GILSON (RBINS). Colonies were not found alive. A cast was made for SEM from a specimen from the Kwintebank. Figure 2 shows additional stolons running from the middle of the zooid to the surface of the shell.

Family PENETRANIIDAE SILEN, 1946

Penetrantia sp.
(Figure 3)

DIAGNOSIS

Borings are characterised by the kidney-shaped zooidal openings laying beside the line of the stolon. Zooids vertical in the substratum, peduncle inserted in distal half of zooid. Ovicellate gonozooids typically present.

REMARKS

Borings are common in shells from the Kwintebank and are present in material in the collection GILSON (RBINS). Colonies were not found alive. A cast was made for SEM from a specimen from the Kwintebank. *P. concharum* SILEN, 1946 has autozooids with pointed proximal end, the ovicellate autozooid (fig. 3) has a blunt proximal end.

Family SPATHIPORIDAE, POHOWSKY, 1978

Spathipora sp.
(Figure 4)

DIAGNOSIS

Zooids are orientated nearly horizontal in the substratum, zooids attached to a kenozooidal stolon by a peduncle. The peduncle is attached to the zooid near its proximal end but continuing over the zooid as a vein to the opening.

REMARKS

Borings are common in shells from the Kwintebank and are present in material in the collection GILSON (RBINS). Represented by borings only. A cast was made for SEM from a specimen from the Kwintebank. The present specimens differ from *S. sertum* FISCHER, 1866 in having a small proximal portion that is free; in *S. sertum*, the peduncle enters the zooid at its tapered proximal end, so that no portion of the proximal end is free. In *S. comma* (SOULE, 1950) the peduncle is attached to the zooid slightly distal to midlength.

Order CHEILOSTOMATA
Family MEMBRANIPORIDAE BUSK, 1854

Membranipora tenuis (Desor, 1848)
(Figure 5)

DIAGNOSIS

Encrusting colony. Zooids rectangular, opesia in the distal half, surrounded by a narrow and denticulate cryptocyste distally and laterally. The cryptocyst covers nearly the proximal half of the frontal. No ovicells, no avicularia. Often a tubercle present in the zooidal corners. Ancestrula a twin zooid.

REMARKS

Numerous specimens were collected on shells from the Kwintebank. Some colonies were collected alive, polypide with 11 tentacles. Even multilaminar encrustations on the outer surface of shells occur. Not reported from Belgium before, specimens in the collection of the RBINS collected on the Belgian continental shelf between 1899 and 1914 were not recognized as *M. tenuis*. PRENANT identified the specimens in the RBINS as *Membranipora pilosa*. PRENANT & BOBIN (1966) reports it in the North Sea only from Denmark, referring to LEVINSEN (1894), and emphasizes that it is curious that the species has not yet been encountered in Western Europe. Later, some specimens of *M. tenuis* in the RBINS were identified by DE GRAVE as *Electra pilosa*. *M. tenuis* is reported from the nearby entrance to the Channel by MIGNÉ & DAVOULT (2001).

Family ELECTRIDAE STACH, 1937

Electra monostachys (BUSK, 1854)
(Figure 6)

DIAGNOSIS

Colony encrusting, star shaped where single or multiple series grow in opposite direction. Gymnocyst comprising one-quarter to one-third of the frontal surface, smooth, without pores. Cryptocyst reduced to a narrow rim around the oval opesia. One proximal median spine is constant, often two distal spines, sometimes more spines around the opesia. Colonies make oval scars in the surface of the substratum.

REMARKS

Two undamaged colonies, many dead colonies or scars of zooids are present in the inner shell surfaces of *C. edule* and *Spisula* sp. three colonies were collected in Belgian waters by GILSON but stayed unnoticed until the revision.

Family CALLOPORIDAE NORMAN, 1903

Callopora discreta (HINCKS, 1862)
(Figure 7)

DIAGNOSIS

Colony very small, zooids oval, separated by deep groves.

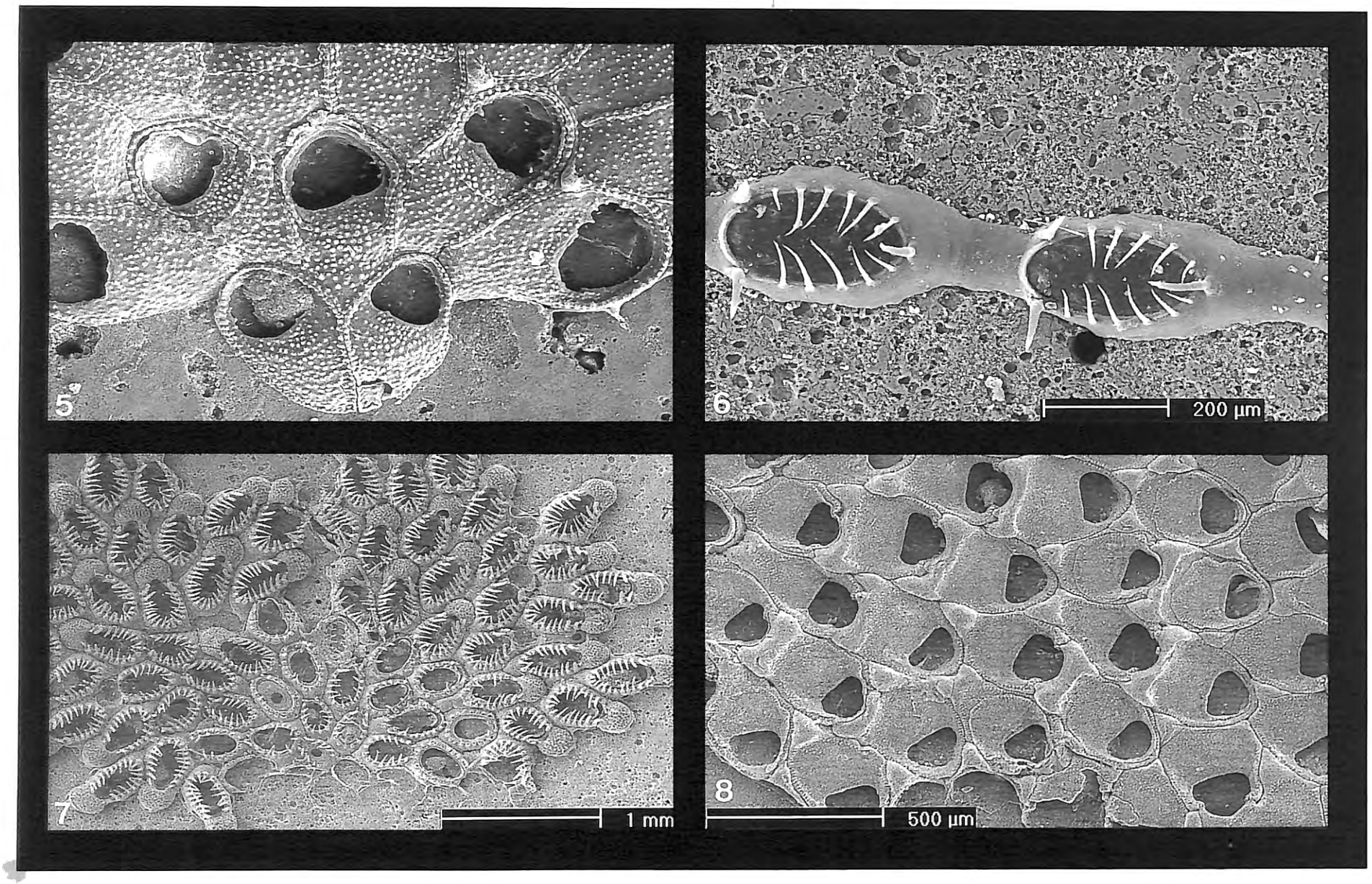

Plate 2

Fig. 5. *Membranipora tenuis*: twin ancestrula and succeeding zooids. Fig. 6. *Electra monostachys*: two zooids. Fig. 7. *Callopora discreta*: colony with autozooids, ovicells and 2 autozooids with frontal calcification yielding a small opesia. Fig. 8. *Ammatophora nodulosa*: autozooids, kenozooids and ovicells.

About 19 spines with thickened base around the opesia, the two distal-most spines curved outward, the other spines inclined over the frontal membrane. Avicularia wanting. Ovicells globose and coarsely textured.

REMARKS

35 colonies on the inner surface of *C. edule* and *Spisula* sp. from the Kwintebank. Figure 7 shows two zooids with frontal calcification, a feature that is not infrequent in anascan species.

Ammatophora nodulosa (HINCKS, 1877)
(Figure 8)

DIAGNOSIS

Colony small and encrusting. Autozooids oval, lateral walls raised, cryptocyst depressed, finely granular, occupying about the proximal half of the frontal. Opesia semi elliptical or trilobed. Large rounded, nodular kenozooids occur between the autozooids. Ovicell small, hyperstomial.

REMARKS

6 dead colonies encrusting the inner surface of *Cerastoderma edule*. One colony was found in the collections of the RBINS (place and date unknown).

Family SETOSELLIDAE LEVINSEN, 1909

Setosella vulnerata (BUSK, 1860)
(Figure 9)

DIAGNOSIS

Colony small and encrusting. Autozooids oval, lateral walls forming a thin rim, cryptocyst smooth and finely granular. Opesia rounded triangular, occupying less than one-quarter of the length of the frontal surface. Two slit-like opesiules present proximal to the opesia. A vibraculum is present distal to each autozooid, setae were not observed.

REMARKS

7 dead colonies were collected encrusting the inner surface of shells.

Family CRIBRILINIDAE HINCKS, 1879

Collarina balzaci (AUDOUIN, 1826)

DIAGNOSIS

Colonies forming a small irregular patch. Autozooids small, frontal shield formed of 4-6 pairs of costae, with 1-3 intercostal spaces between successive costa, a prominent tuberculate pseudopore at the base of each costa. Apertural bar thick and not arched, secondary orifice has a straight proximal margin and condyles. 3-5 oral spines, 2 persisting in ovicellate autozooids. Avicularia distal to the ovicell.

REMARKS

Two dead colonies were found encrusting the inner surface of *C. edule*, identified by J. BISHOP. No SEM photograph available.

Puellina praecox (BISCHOP & HOUSEHAM, 1987)
(Figure 10)

DIAGNOSIS

Colonies forming small irregular patches. Frontal shield consists of 11 costae, ridges of costae highest around the periphery of the shield. Orifice with straight proximal edge, apertural bar with a tubercle on each side of the median suture. Large suboral lacuna. 5 spines, 4 persisting in ovicellate autozooids. No avicularia. Ovicell recumbent on substratum, with 6-7 frontal tubercles. Ancestrula tatiform with 11 peripheral spines.

REMARKS

23 colonies on the inner surface of shells from the Kwintebank. Known from a few localities off the Channel coast of Brittany, where the largest known specimen consisted of about 20 zooids (HAYWARD & RYLAND, 1998). Specimens from the Kwintebank are sometimes larger and may consist of about 40 to 50 zooids. The smallest colony, an ancestrula and 3 zooids, has already one ovicell.

Puellina bifida (D'HONDT, 1970)
(Figure 11)

DIAGNOSIS

Colonies forming small irregular patches. Frontal shield consists of 9-11 ridged costae, ridges highest in the periphery. 4-5 slit-like intercostal pores between each successive costa. Orifice with straight proximal edge, apertural bar often with a tubercle on each side of the median suture. Indistinct suboral lacuna. 5 spines, 4 persisting in ovicellate autozooids. No avicularia. Kenozooids smaller than autozooids, with costate shield but lacking an aperture. Ovicell recumbent on succeeding autozooid, with 3-4 radiating ridges and an indistinct median suture.

REMARKS

23 colonies collected on the inner surface of shells from the Kwintebank. Using a stereomicroscope, the radiating ridges and the median suture of the ovicells are the most clearly distinctive feature between *P. bifida* and *P. praecox*; the latter has prominent tubercles frontally on the ovicell.

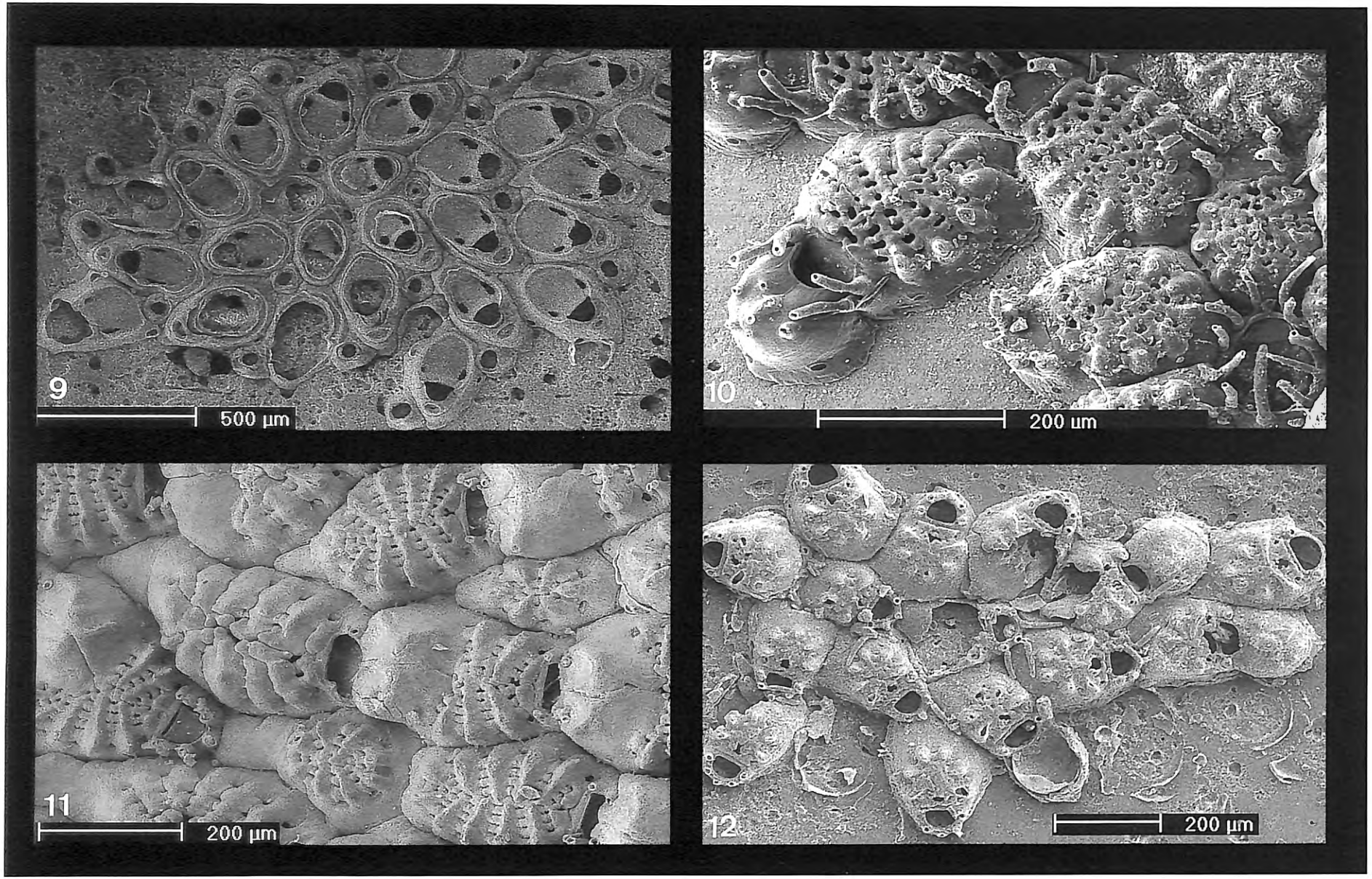

Plate 3
Fig. 9. *Setosella vulnerata*: colony. Fig. 10. *Puellina praecox*: colony ancestrula, autozooids and ovicells. Fig. 11. *Puellina bifida*: ovicellate autozooids and a kenozooid. Fig. 12. *Puellina modica*: colony.

Puellina modica (BISHOP & HOUSEHAM, 1987)
(Figure 12)

DIAGNOSIS

Colony forming a small irregular patch. Frontal shield consists of 4-6 costae. 2-3 slit-like intercostal pores between each successive costa. Orifice with straight proximal edge. Large suboral lacuna. 5 spines, 2 persisting in ovicellate autozooids. No avicularia. Ovicell recumbent on substratum.

REMARKS

1 colony on the inner surface of a shell from the Kwintebank.

Family HIPPOTHOIDAE BUSK, 1859

Hippothoa flagellum (MANZONI, 1870)

DIAGNOSIS

Colony adnate, forming branching uniserial lines of autozooids. Autozooids consisting of a distal dilatation and a long thread-like cauda, female zooid with short cauda, the dilated portion short.

REMARKS

7 colonies were found encrusting the inner surface of shells. The species makes scars in the surface of the shell. If the zooids are lost, the scars show that the female zooid was short, which is a distinctive feature. No SEM photograph available.

Family EXOCHELLIDAE BASSLER, 1935

Escharoides bishopi sp. nov.
(Figure 13, 14, 15)

TYPE LOCALITY

Kwintebank, Southern bight of the North Sea, Belgium (51° 20'N 2° 40'E)

HOLOTYPE

Colony from the Kwintebank (51° 20'N 2° 40'E), 10-25 m, May 2004, stored dry, deposited in the Royal Belgian Institute of Natural Sciences, n° 30546.

PARATYPES

Colony from the Kwintebank (51° 20'N 2° 40'E), 10-25 m, May 2004 stored dry and coated for SEM, deposited in the Royal Belgian Institute of Natural Sciences, n° 30546.
4 colonies from the same location, personal collection.

OTHER MATERIAL

20 juvenile colonies in one shell from Le Val André (France) (48° 35' 52"N 2° 33' 18"W), 0 m, 8 April 2005, deposited in the Royal Belgian Institute of Natural Sciences.

DERIVATION OF NAME

Named after John Bishop (Marine Biological Association, UK)

DIAGNOSIS

Escharoides lacking avicularia, aperture with slender and bifid proximal denticle.

DESCRIPTION

Colony forming a very small irregular patch, usually less than 40 autozooids, often much smaller. Autozooids broadly oval, 0.33-0.54 x 0.31-0.45 mm; strongly convex and separated by deep grooves. Large pore chambers present: one in each lateral wall and three closely spaced in the distal part. Frontal wall smooth to coarsely but indistinctly granular in regularly radiating series, imperforate, with large and distinct marginal areolae. Aperture oval to quadrate; six hollow spines in a distal arc. The proximal two or four spines persist and become very distinctive in ovicellate zooids. Peristome flared and with several peaks, with three denticles on its inner edge, middle denticle slender and bifid. No avicularia. Ovicell small but prominent, wider than long, smooth or covered by granular secondary calcification. A double series of small round pores present around the periphery of the ovicell; indistinct, usually visible only in smooth surfaced individuals. Ancestrula with 13 marginal spines.

Measurements

	Range	X	s.d.	N
Lz	0.333-0.538	0.424	0.065	9
Wz	0.308-0.448	0.380	0.047	9
Lov	0.154-0.231	0.177	0.086	11
Wov	0.231-0.346	0.280	0.091	11

These measurements were made on paratype material from the Kwintebank on scanning electron micrographs.

REMARKS

This species is characterized by its delicate denticle in the proximal border of the aperture and the lack of avicularia. The latter is rare in *Escharoides*. Two Pliocene species [*Escharoides infundibulata* (BUSK) and *Escharoides steenhuisi* (LAGAAIJ)], known from the low countries, also lack avicularia (LAGAAIJ, 1952).
Escharoides infundibulata does not have a median denticle in the proximal peristome, but this may have been lost during fossilisation. It further differs from the new species in not having oral spines, a transverse rounded-rectangular primary orifice and a thickened peristome.
Escharoides steenhuisi also does not possess a median denticle nor avicularia, but it differs clearly from the new species in its pseudo-hippoporine orifice and in having 4 (BISHOP &

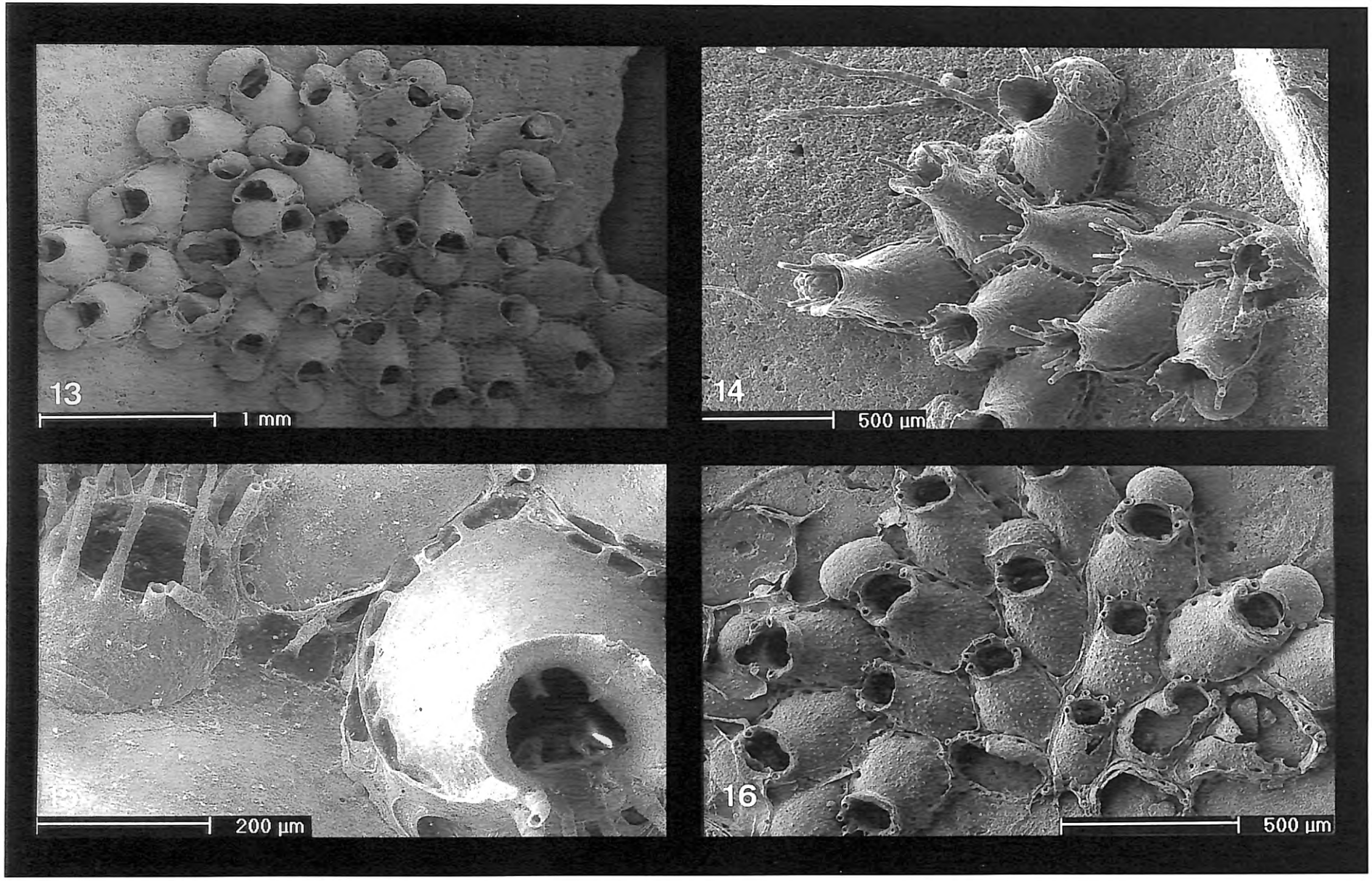

Plate 4
Fig. 13. *Escharoides bishopi*: paratype, specimen from the Kwintebank. Fig. 14. *Escharoides bishopi*, specimen from France. Fig. 15. *Escharoides bishopi*, specimen from France: ancestrula (left), aperture of autozooid with slender bifid denticle (right). Fig. 16. *Escharella gilsoni*, paratype, specimen from the Kwintebank.

HAYWARD, 1989) oral spines in non-ovicellate zooid as opposed to 6 in *Escharoides bishopi*.
Escharoides bishopi reproduces at small colony size as an apparent adaptation to short survival on small, unstable substrata, so it conforms the 'spot colony' model defined by BISHOP (1989) for whom it is named. Five colonies were found on the inner surface of *Cerastoderma edule* from the Kwintebank. Later, in April 2005, twenty small colonies were collected by present author at Le Val André (Brittany, France) at low tide, all on the inner surface of one *Acanthocardia echinata*. Colonies consisted of 2 to 24 zooids, reproducing already in colonies of 4 zooids. The species shows some variation in the number of spines persisting in ovicellate zooids: the specimens from the Kwintebank have 2, less frequently 4 spines, while there are 4 spines in almost all ovicellate zooids from France.

Family ESCHARELLIDAE LEVINSEN, 1909

Escharella gilsoni sp. nov.
(Figure 16)

TYPE LOCALITY

Kwintebank, Southern bight of the North Sea, Belgium (51° 20'N 2° 40'E)

HOLOTYPE

Colony from the Kwintebank (51° 20'N 2° 40'E), 10-25 m, May 2004, stored dry, deposited in the Royal Belgian Institute of Natural Sciences, n° 30546.

PARATYPES

Colony from the Kwintebank (51° 20'N 2° 40'E), 10-25 m, May 2004, stored dry and coated for SEM, deposited in the Royal Belgian Institute of Natural Sciences, n° 30546.
22 colonies from the same location, stored dry, personal collection.

DERIVATION OF NAME

Named after Prof. Gustave GILSON (1859-1944), former Director of the "Musée royal d'Histoire naturelle de Belgique".

DIAGNOSIS

Escharella with 6 oral spines (4 in ovicellate autozooids), lacking umbo or mucro, reproducing at small colony size, ovicell recumbent on the substratum.

DESCRIPTION

Colony forming a small patch of maximally 20 autozooids. Autozooids in alternating linear series, oval, convex and separated by deep grooves; 0.28-0.38 x 0.23-0.32 mm. Pore chambers present. Frontal wall finely granular; areolae not closely spaced, distinct, without intervening ridges, sometimes hidden by a thin ligulate secondary calcification. Primary orifice orbicular, with a short broad lyrula with concave edge. Blunt lateral condyles present. Six hollow oral spines present, four of which persist in ovicellate zooids. Peristome well developed, thickened and flaring, rising into a peak proximally, often broken. Ovicells broader than long, finely granular, recumbent on the substratum.

Measurements

	Range	X	s.d.	N
Lz	0.285-0.380	0.345	0.076	8
Wz	0.228-0.323	0.257	0.097	8
Lov	0.108-0.114	0.111	0.004	2
Wov	0.190	0.190	-	2

These measurements were made on paratype material from the Kwintebank on scanning electron micrographs.

REMARKS

Escharella gilsoni reproduces at small colony size as an apparent adaptation to short survival on small, unstable substrata, so it conforms the 'spot colony' model defined by BISHOP (1989). It is similar to *Escharella immersa* (FLEMING, 1828) in having 6 oral spines, 4 in ovicellate zooids, while all other western European species of *Escharella* have another spine formula. *Escharella immersa* grows in extensive sheets and does not reproduce at small colony size. In *Escharella gilsoni* the areolae are not separated by intervening ridges, as is *E. immersa*, the lyrula is similar but shorter and the zooids are more convex. The Mediterranean species *Escharella acuta* ZABALA, MALUQUER & HARMELIN, 1993 has the same spine formula as *E. gilsoni* and *E. immersa* but differs clearly from both in having a prominent acute umbo. *Escharella praealta* (CALVET, 1907) and *Escharella quadrata* LOPEZ DE LA CUADRA & GARCIA GOMEZ, 2001 are other European species having 6 spines, but both species conserve the 6 spines in ovicellate zooids (LOPEZ DE LA CUADRA & GARCIA GOMEZ, 1993 & 2001). *Escharella labiosa* (BUSK, 1856) has 4 oral spines but periancestrular autozooids may have 5 of 6 oral spines. The latter species differs from *E. gilsoni* in its slender lyrula and the ovicells that are recumbent on the succeeding autozooid and not on the substratum.

Neolagenipora collaris (NORMAN, 1867)
(Figure 17)

DIAGNOSIS

Colony forming small irregular patches. Autozooids strongly convex, separated by deep grooves. Frontal wall smooth with a few widely spaced marginal pores. Orifice with shallowly concave proximal border between blunt condyles. Peristome deep and widely flared, enclosing the proximal and lateral borders of the orifice. Ovicell prominent, broader than long, with variable number of pores and peripheral ooecial cover.

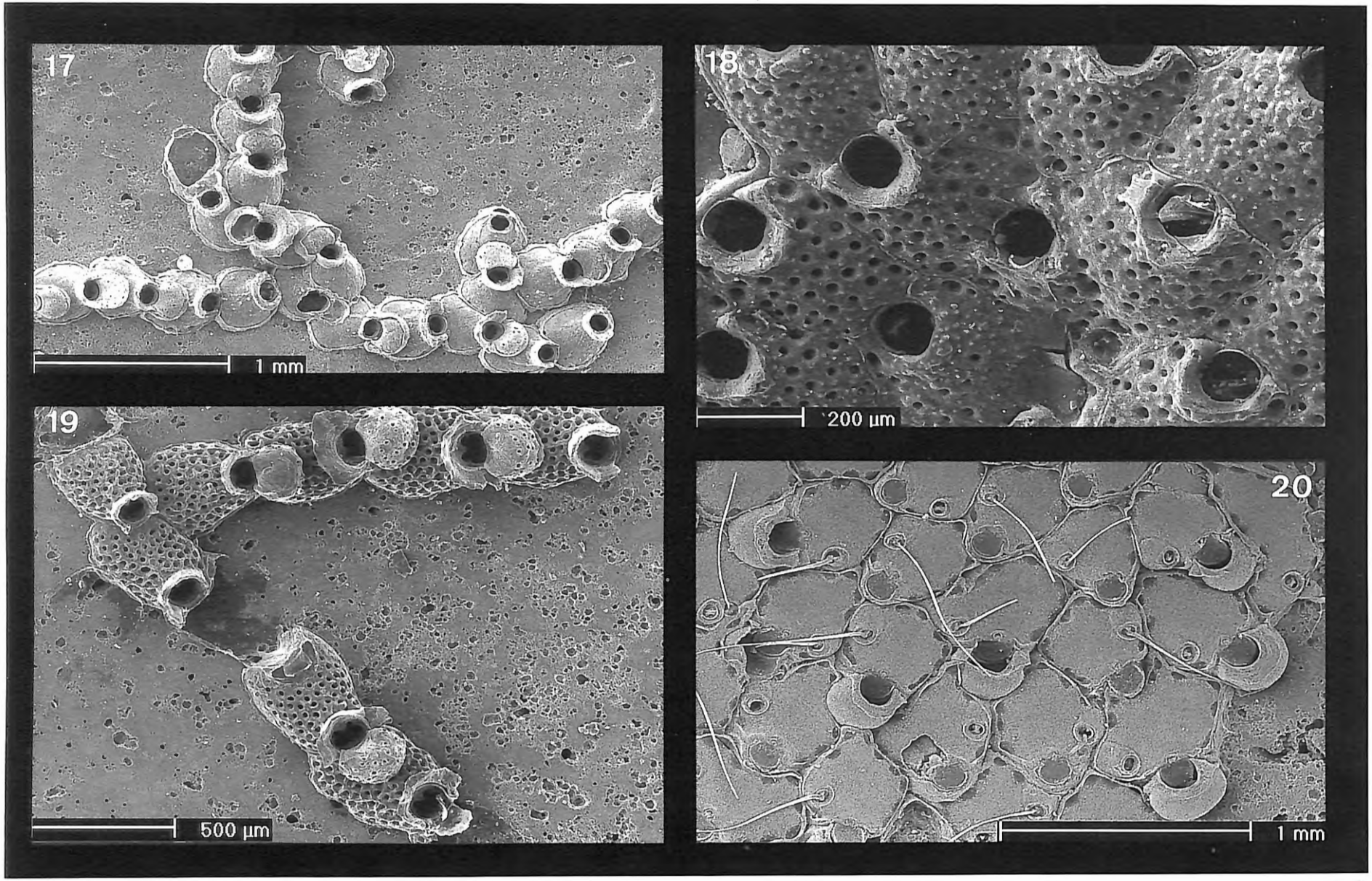

Plate 5
Fig. 17. *Neolagenipora collaris*: colony. Fig. 18. *Hippoporina* spec.: autozooids. Fig. 19. *Phylactella labrosa*: ovicellated autozooids. Fig. 20. *Escharina hyndmanni*: ovicellate and non-ovicellate autozooids.

REMARKS

19 colonies collected on shells from the Kwintebank. This species tends to form small rounded or irregular patches, but in small substrates it tends to grow uniserially. All specimens studied except one, form a 'spot colony'. It is rather curious that the colony shown in figure 17 does not form a 'spot colony' nor a round colony, although there is enough space. The zooids are nearly circular. The zooids are shorter and wider than the measurements given by HAYWARD & RYLAND (1999), which gives as measurements 0.38-0.5 x 0.2-0.3 mm

Measurements

	Range	X	s.d.	N
Lz	0.30-0.37	0.33	0.02	15
Wz	0.27-0.37	0.34	0.03	15

Measurements (in mm) made on the specimen figured in Figure 17 on scanning electron micrographs.

Family HIPPOPORINIDAE BASSLER, 1935

Hippoporina spec.
(Figure 18)

MATERIAL

2 colonies on the inner surface of *C. edule* from the Kwintebank.

DESCRIPTION

Colony forming a small round patch on the inner side of bivalve shells. Zooids small, broad rectangular, slightly convex, separated by irregular grooves. Zooid length 0.36-0.40 mm, zooid width 0.28-0.36 mm, orifice width about 0.10 mm. Primary orifice about as wide as long; proximal border concave, in the form of a shallow U; condyles rounded. Frontal shield distinctly granular, evenly perforated by round pores. A thick, flaring peristome encircles the orifice proximally and laterally but is absent distally. Avicularia, ovicells and ancestrula are not observed.

REMARKS

The material examined does not correspond to *Hippoporina pertusa* (ESPER, 1796) as the latter species lacks that prominent peristome. *H. pertusa* is much larger: 0.6-0.7 x 0.35-0.5 mm (HAYWARD & RYLAND, 1999).
Hippoporina polygonia (JULLIEN, 1882) has completely different ecological preferences as it is known from the Gulf of Cadiz, northern Portugal, the NW of the Iberian peninsula and from the Azores, reported only from depths between 420 and 1068 m (REVERTER-GIL & FERNANDEZ-PULPEIRO, 1999). The present specimen has relatively large pores separated by thick ridges, while in *H. polygonia* the frontal wall is granular but overall rather even because the pores are not as depressed, i.e. the intervening ridges do not stick out so much. The peristome of *H. polygonia* is thin and hardly protruding (D'HONDT, 1973). *H. polygonia* is much larger: Lz: 0.80-1.20 mm, Wz: 0.6-0.75 mm, Wor: 0.25-0.30 mm (D'HONDT, 1973)
More material should be collected to study the ovicells and ancestrula of the present species and more literature should be consulted to identify this specimens, or to decide that it is new to science.

Family TEUCHOPORIDAE NEVIANI, 1895

Phylactella labrosa (BUSK, 1854)
(Figure 19)

DIAGNOSIS

Colony forming small patches or uniserial series of zooids. Autozooids convex, separated by distinct grooves. Frontal shield evenly and closely punctured by large thick-rimmed pores. Orifice wider than long, with sharply pointed condyles and a tapered lyrula. Peristome a deep flaring cup around the proximal and lateral borders of the orifice, extending onto the ovicell, which is recumbent on the distally succeeding autozooid. Ovicell with about 20 pores of different size. Polypide with 11 tentacles. Ancestrula tatiform, with 9 peripheral spines.

REMARKS

59 colonies on the inner surface of lamellibranch valves from the Kwintebank. Often more than one colony in one shell, one shell being inhabited by 15 small colonies.
Phylactella labrosa (BUSK), living in the north-eastern Atlantic is characterized by sharply pointed condyles and a distinct, tapered lyrula; its ancestrula is encircled by eight spines (HAYWARD & RYLAND, 1999). As the ancestrula of specimens observed on material from the Kwintebank is surrounded by 9 spines instead of 8, it is needed to compare with two species newly described by ROSSO (2004) from the Mediterranean: *Phylactella mediterranea* ROSSO, 2004 and *Phylactella megarensis* ROSSO, 2004. Both species have nine spines encircling the ancestrula as in the present material. The lyrula of *Phylactella mediterranea* is large, occupying more than one-third of the orificial length, often showing pointed corners opposite to the condyles, opposed to the tapered and shorter lyrula of *P. labrosa* from the Kwintebank. The lyrula of *Phylactella megarensis* is widely arched distally and the condyles consist of a smooth distal part and a barren crest-shaped proximal part opposed to the tapered lyrula and the sharply pointed condyles of *P. labrosa* from the Kwintebank. As the ancestrula of *P. labrosa* is surrounded by 8 or 9 peripheral spines, this feature can not be used in distinguishing the former three species. The sporadic distal lamina completing the peristome or distal spines like in *P. labrosa tangerina* HARMELIN & D'HONDT (1992), are not seen in the specimens from the Kwintebank.

Family SCHIZOPORELLIDAE JULLIEN, 1903

Escharina hyndmanni (JOHNSTON, 1847)
(Figure 20)

DIAGNOSIS

Colony encrusting, autozooids flat, separated by raised sutures. Frontal shield smooth, imperforate centrally with a series of marginal pores. Primary orifice semicircular, sinus like an inverted keyhole. Avicularium left or right, proximal to the orifice, rostrum orbicular, setiform mandible longer than an autozooid.

REMARKS

1 colony on a shell from the Kwintebank.

Family PHIDOLOPORIDAE GABB & HORN, 1862

Schizotheca divisa (NORMAN, 1864)

DIAGNOSIS

Colony forming a small round incrustation. Autozooids convex and separated by deep grooves. Frontal shield smooth with only few small marginal pores. Peristome prominent with a deep U-shaped notch out of the middle on the inner side of the proximal border, the notch sometimes closed forming a tube. Ovicell elongate, smooth surfaced, with a median fissure that is closed proximally.

REMARKS

3 colonies on shells from the Kwintebank. No SEM photograph available.

Schizotheca fissa (BUSK, 1856)

DIAGNOSIS

Colony forming a small incrustation. Autozooids convex, separated by shallow grooves. Frontal shield smooth with only few small marginal pores. Peristome prominent with a U-shaped notch medially in the proximal rim. Avicularium rare, vicarious, rostrum triangular. Ovicell imperforate with a broad triangular, open ended frontal fissure.

REMARKS

10 colonies encrusting the inner surface of shells from the Kwintebank. Only 2 of these small colonies possess an avicularium. No SEM photograph available.

Discussion

Out of 27 species collected, only 6 were formerly identified from this region. This shows how poor the knowledge of the local bryozoan fauna is. 8 species are completely new to the Belgian fauna; of these *E. gilsoni*, *E. bishopi* and probably *Hippoporina* sp. are new to science. During a revision of the bryozoan-collection of the RBINS, it was found that the 13 other species were collected in Belgian waters between 1899 and 1914, but were not correctly identified (DE BLAUWE, unpublished data). Regarding the poor amount of shells in the Bryozoa collection, colonies on shell substrata seem to be neglected in this material. Only the "bryozoan" repository was considered during my revision. A survey of the overall historic collection of marine invertebrates of the RBINS (collection of Prof. Dr. G. GILSON, southern bight of the North Sea, years 1899-1914) has shown that yet many bryozoans lay in jars with other attached species such as hydrozoans or sponges. Furthermore, a fair amount of dry shells are also kept in repositories and have not yet been screened for encrusting bryozoans. It is likely that a deeper investigation of this collection would yield important conclusions concerning the long-term changes in the local bryozoan fauna. Obviously, the information content of the collection of the RBINS has so far been overlooked.

The results show anyway that to chart marine invertebrate biodiversity accurately, new sampling programmes are needed. As our knowledge of bryozoans in Belgian waters improves and ancient collections get properly surveyed, a comparison between the present fauna and the past could be made more accurately. It could improve the investigation of the impact of intensive fishery and sand extraction on bryozoans settled on shells and stones.

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