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BRYOZOA FROM THE KORYTNICA CLAYS, GÓRY ŚWIĘTOKRZYSKIE, POLAND[1)]

(Pl. I – IV and 2 Figs.)

Mszywioły z iłów korytnickich[1)]

(Pl. I – IV i 2 fig.)

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A b s t r a c t: 53 bryozoan species were determined in Badenian deposits of the Korytnica Clays. Twenty two of them belong to the Cyclostomata order whilst the remaining 31 – to the Cheilostomata one. In the present paper only the characteristic species were described in detail.

K e y w o r d s: Cyclostomata, Cheilostomata, Badenian, Korytnica.

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T r e ś ć: Oznaczono 53 gatunki mszywiołów z iłów korytnickich, w tym 22 z rzędu Cyclostomata i 31 z rzędu Cheilostomata. Szczegółowo opisano jedynie gatunki najbardziej charakterystyczne.

INTRODUCTORY REMARKS

The Middle Miocene (Badenian) sea expanding to the north from the Carpathian Foredeep covered a very diversified morphology and formed several elongate bays reaching deep into the land (Radwański, 1964). One of them was the Korytnica Bay (Figs. 1, 2). According to Bałuk and Radwański (1977) its axis was oriented NW – SE and moreover, it was divided by isles into two small secondary basins. Abundant submarine vegetation developed near the steep rocky shores of the bay and around the isles. On the shallow bottom of the basin accumulated fine-grained calcareous sediments. Under such favorable conditions abundant fauna developed. Consequently, the deposits of this bay contain representatives of many types of marine animals, characteristic of different environmental conditions.

These deposits, called the Korytnica Clays, contain rich faunal assemblage,

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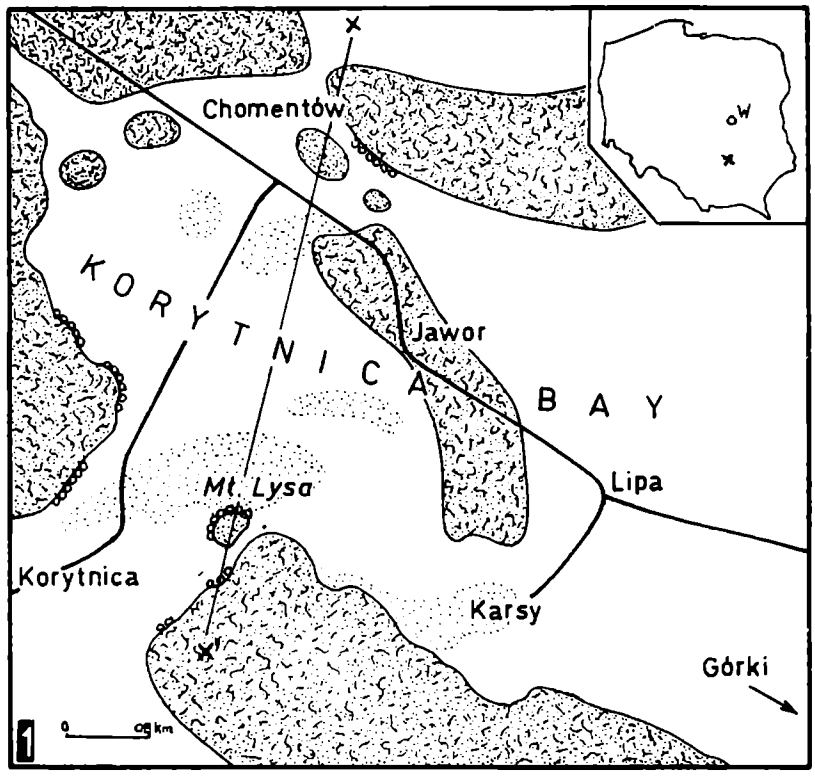

Fig. 1. Paleoenvironmental sketch of the Korytnica Bay (from Bałuk, Radwański, 1977). Blank – marine area of the Korytnica basin during the Middle Miocene (Badenian) transgression, stippled – present-day outcrops of the Korytnica Clays, circlec – preserved litoral structures, hachured – land or island areas

Fig. 1. Paleogeograficzny szkic zatoki korytnickiej (wg Bałuka, Radwańskiego, 1977). Białe pole – obszar basenu korytnickiego zajęty przez morze podczas transgresji środkowomioceńskiej (badeńskiej), kropki – współczesne odsłonięcia iłów korytnickich, kółka – zachowane struktury litoralne, szrafura – obszary lądowe lub wyspy

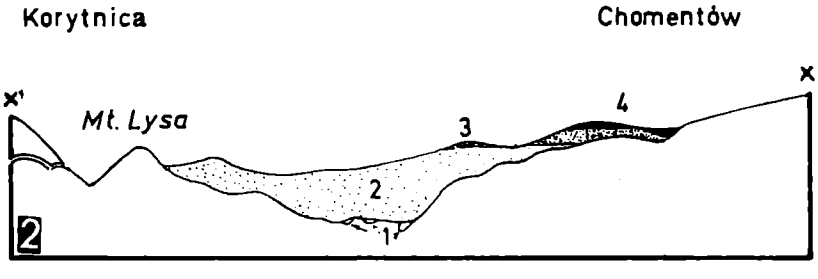

Fig. 2. Idealized section through the Korytnica Bay to show the general sequence of the Middle Miocene (Badenian) deposits (*cf.* Bałuk, Radwański, 1977). *1* – brown coal, *2* – Korytnica Clays (= *Pleurotoma* Clays), *3* – *Heterostegina* Sands, *4* – red-algal (*Lithothamnium*) limestones

Fig. 2. Modelowy przekrój przez osady zatoki korytnickiej (por. Bałuk, Radwański, 1977). *1* – osady z węglem brunatnym, *2* – iły korytnickie (pleurotomowe), *3* – piaski heterosteginowe, *4* – wapienie litotamniowe

examined for more than 100 years (Friedberg, 1911 – 1928; Kowalewski, 1930; Radwański, 1964; Radwański, Bałuk, 1977). It consists of ca. 800 species (Gastropoda, Pelecypoda) accompanied by fairly abundant species of: Amphineura, Scaphopoda, Anthozoa, Annelida, Brachiopoda, Cirripedia, Bryozoa, Crustacea, Echinodermata. Very rich and well preserved is foraminiferal assemblage. Spongiae and Lamellibranchiata were developing at the rocky shores. Locally, at the steep slopes, marly oyster mudstones were deposited, consisting of shell detritus, accompanied by Spongiae, Lamellibranchiata, Annelida, Cirripedia, Anthozoa. Classical outcrop of this deposits is situated in Łysa Góra near Korytnica. At the shores, under more freshwater conditions of flat, shallow part of the basin, there developed brackish assemblages with snails belonging the *Terebralia*, *Neritina*, *Potamides*, *Melanopsis* genera. In central parts of this basin flourished diverse snail assemblages, initially poor with individual coral *Flabellum* and gradually enriching due to shallowing of the bay. In the overlying *Pleurotoma* clays the snails of *Clavatula* (formerly *Pleurotoma*) species predominate. Very characteristic feature of these clays is a rich well preserved snail fauna in which, apart from Clavatula there occur: *Ancilla*, *Murex*, *Turritella*, *Cassis*, *Triton*, *Fusus*, *Tudicla*, *Natica*. The depth of water during their depositions was 20 – 40 meters. The overlying clay series is still more enriched in fossils. Apart from snails there appear: Lamellibranchiata, Anthozoa, Cirripedia. This highest member of the Korytnica Clays was formed in a very shallow sea, up to a dozen meters deep. Such faunal assemblage we actually find in tropic and subtropic areas. The clays of the Korytnica Bay series, containing the Bryozoan fauna examined, are overlain by *Heterostegina* sands abounding in *Heterostegina costata* and large oysters (*Crassostrea gryphoides*) with big Pelecypodes (*Pinna brocchii*, *Panope rudolphii*, *Cardium danubianum*) and Echinoids, Cirripedes and burrow crabs Ocypoda. Good outcrops of this series are situated at the road Korytnica – Chomentów. Near the latter village, the Miocene sequence is termined by *Lithothamnium* limestone series containing large blocks of Jurassic limestones abouding in borings of lithophags. Among faunal assemblage of Badenian deposits of the Korytnica Bay only Bryozoa were not examined till now in detail. Consequently, the present author collected and elaborated rich faunal material of this group from Chomentów, Karsy, Korytnica and Górki (Table 1). It was found that the richest Bryozoan assemblages was preserved near Chomentów (39 species) and Korytnica (28 species). In other parts of this Bay the Bryozoa are rather scarce. In Górki only 10 species were found and in Karsy but 5. It should be emphasized that the preserved fragments of Bryozoan colonies were very well preserved and, thus, easy to determinate. However, they were very crushed what is the reason of presenting in the enclosed plates not all the species determined. The present author is highly indebted to prof. Bałuk (Warsav University) for delivering supplementary material from his collections.

Table – Tabela 1

Stratigraphical range of Bryozoa from Korytnica Bay
Znaczenie stratygraficzne mszywiołów z zatoki korytnickiej

Species	E	O	A	B	H	Ba	S	P	Q	R	1	2	3	4
Crisia hoernesi	×		×	×	×	×		×	×	×	×			×
Tubigerina alternata					×	×					×			
Tubulipora dimidiata					×	×		×	×		×			
Tubulipora partschi					×	×					×			
Tubulipora pluma					×	×	×	×			×			
Idmonea atlantica			×	×	×	×	×	×	×	×	×	×	×	
Exidmonea concava					×	×					×			
Exidmonea delicatula			×	×	×	×					×			
Pleuronea pertusa				×	×	×	×					×		
Pleuronea fenestrata	×				×	×					×			
Pleuronea reticulata				×	×	×					×			
Tervia disticha			×	×	×	×					×			
Entalophora pulchella			×	×	×	×						×		
Diaperoecia flabellum				×	×	×	×	×	×		×			
Diplosolen obelium			×	×	×	×	×	×	×	×	×	×		
Ybselosoecia typica	×		×	×	×	×		×			×	×		
Hornera frondiculata			×	×	×	×			×		×	×	×	×
Hornera striata		×	×	×	×	×	×	×	×	×	×			
Reteporidea coronopus		×	×	×	×	×	×					×		
Lichenopora cumulata				×	×	×		×			×			
Lichenopora echinulata				×	×	×	×				×			
Lichenopora goldfussi					×	×	×					×		
Cupuladria canariensis			×	×	×	×		×	×	×	×	×	×	
Cupuladria haidingeri			×	×	×	×		×				×		
Tremopora radicifera			×	×	×	×					×	×		
Onychocella angulosa	×	×	×	×	×	×	×	×	×	×		×		
Rosseliana brevipora			×	×	×	×					×	×		
Lunulites androsaces			×		×	×		×				×		
Steginoporella elegans		×	×	×	×	×	×				×			
Cellaria crassa						×	×	×			×	×		
Cellaria fistulosa						×		×	×			×		
Cellaria salicornioides			×	×	×	×	×	×	×	×		×		
Cellaria johnsoni			×	×	×	×	×	×	×		×	×		
Cellaria farciminoides				×	×	×	×	×			×	×	×	
Scrupocellaria elliptica	×		×	×	×	×					×			
Cribrillaria radiata	×	×	×	×	×	×	×	×	×	×	×			
Schizoporella geminipora					×	×					×			
Escharoides coccinea					×	×	×	×			×	×		
Schizoporella unicornis		×			×	×		×	×	×	×	×		
Schizomavella aculifera			×	×	×	×								×
Schizomavella tenella			×	×	×	×					×			
Porella cervicornis	×				×	×		×		×	×	×	×	×
Tubucellaria cereoides					×	×	×	×			×	×		
Sertella cellulosa	×	×	×	×	×	×	×	×	×	×	×	×		×
Sertella beaniana					×	×	×					×		
Adeonella polystomella					×	×					×	×		×
Adeonella tessulata					×	×					×	×		
Cellepora globularis				×	×	×					×	×		
Costazia costazii					×	×	×	×	×	×				×
Holoporella cerioporoides			×	×	×	×								×
Holoporella palmata			×	×	×	×					×			×
Osthimosia coronopus			×	×	×	×	×				×			
Schismopora scruposa					×	×		×	.					×

E – Eocene, O – Oligocene, A – Aquitanian, B – Burdigalian, H – Helvetian, Ba – Badenian, S – Sarmatian, P – Pliocene, Q – Quaternary, R – Recent
Bryozoa from: 1 – Chomentów, 2 – Korytnica, 3 – Karsy, 4 – Górki

SYSTEMATIC DESCRIPTION

Order Cyclostomata Busk, 1852
Family Petaloporidae Gregory, 1899
Genus *Reteporidea* d'Orbigny, 1849

Reteporidea coronopus (Canu et Bassler, 1922)

Pl. I, Figs. 2, 3, 8

1847 *Idmonea cancellata* (Goldfuss); Reuss, p. 46, pl. V, fig. 25 – 27, pl. VI, fig. 33
1969 *Reteporidea coronopus* (Canu et Bassler, 1922); Mongereau, p. 222, pl. XX, fig. 6. *cum syn.*
1972 *Reteporidea coronopus* (Canu et Bassler); David, Mongereau, Pouyet, p. 93

Material: 18 specimens
Measurements (in mm): lz = 0.70 – 1.10 la = 0.08
df = 0.30 lp = 0.12

Remarks: In 1972, David, Mongereau and Pouyet have ranged the genus to the Petaloporidea family. The species *Reteporidea coronopus* is approached in character to the species: *Idmonea foraminosa* Reuss, 1851 and *Idmonea neopunctata* Lagaaij 1952. Differences between these species occur in the shape of cross-section of branches, as well as in the distribution and dimensions of zooecial fascicles.
Distribution: Miocene – France, Germany, Poland, Austria, Italy, Spain; Pliocene – USA; Quaternary – Italy.

Order Cheilostomata Busk, 1852
Family Cupuladriidae Lagaaij, 1952
Genus *Cupuladria* Canu et Bassler, 1919

Cupuladria canariensis (Busk, 1859)

Pl. III, Figs. 1, 2, 7; text fig. 1

1859 *Cupuladria canariensis* Busk; Busk, p. 87, pl. 13, fig. 2
1957 *Cupuladria canariensis* (Busk); Buge. p. 139, pl. IX, fig. 5, pl. X, fig. 3. *cum syn.*
1974 *Cupuladria canariensis* (Busk); David et Pouyet, p. 102
1977 *Cupuladria canariensis* (Busk); Bałuk, Radwański, p. 143, pl. I, fig. 1 – 6, pl. II, fig. 1 – 5, pl. III, fig. 1, 2

Material: 16 specimens
Description: Zoarium free, flattened, conical, reaching a maximum diameter of 13 mm at a height of 4 mm. Zooecia rhombic, in quincunx arrangement, a vibraculum distal to each zooecium. Opesia membraniporine, elongate, rectangular, depressed, occupying almost the whole of the frontal area. Cryptocyst slight, extending as a steeply-inclined narrow rim arround the opesia. Vibracula asymetrical, rounded-triangular, on one side concave, the other side straight and provided with a delicate tubular process, pointing distally and serving for the articulation of the vibracular seta. Concave surface dissected by a system of straight, radial grooves; the sectors thus obtained corresponding to radial rows of zooecia on the convex side of the zoarium and subdivided by tangential grooves into rectangular areas, each perforated by a number of large, rounded pores.

Measurements (in mm): Lz = 0.30 – 0.40 ho = 0.20 – 0.30
lz = 0.20 – 0.30 lo = 0.12 – 0.20

Distribution: Miocene – France, Germany, Poland, Austria, Italy and Spain; Pliocene – USA; Quaternary – Italy; Recent – tropical zone.

Cupuladria haidingeri (Reuss, 1847)

Pl. III, Figs. 3 – 5

1847 *Lunulites haidingeri* Reuss; Reuss, p. 58, pl. VII, fig. 26, 27
1957 *Cupuladria haidingeri* (Reuss); Buge, p. 140, pl. IX, fig. 6, 7. *cum syn.*

1974 *Cupuladria haidingeri* (Reuss); David et Pouyet, p. 100
1977 *Cupuladria haidingeri* (Reuss); Bałuk, Radwański, p. 143, pl. IV, fig. 1–7

Material: 12 specimens
Description: Zoarium free, flattened, conical, reaching a maximum diameter of 10 mm at a height of 3 mm. The margin distinctly serrate, owing to the projection of alternate rows of zooecia terminating in a large, rounded opening just on the edge of the zoarium. Zooecia rhombic, in quincunx arrangement; a vibraculum distal to each zooecium. Opesia membraniporine, depressed, invaded by one, single, proximal and two or three pairs of lateral calcareous denticles, which are denticulate themselves, and project from the surrounding cryptocyst; in apical zooecia often completely closed by a secondary calcareous deposit. Cryptocyst slight, extending as a steeply inclined, narrow rim around the opesia. Vibracula asymmetrical, rounded – triangular, on one side concave, the other side straight and provided with a delicate tubular process, pointing distally and seraing for the articulation of the vibracular seta. Concave surface dissected by a system of radial groves; the sectors thus obtained densily covered with large tubercles.
Measurements (in mm): Lz = 0.30–0.35 ho = 0.20–0.28
lz = 0.25–0.30 lo = 0.12–0.16
Distribution: Lower Miocene – France, Germany; Miocene (Badenian) – Vienna Basin, Poland; Pliocene – England.

Family Lunulitidae Lagaaij, 1952
Genus *Lunulites* Lamarck, 1816

Lunulites androsaces Michelotti, 1838

Pl. III, Fig. 6a, b

1838 *Lunulites androsaces* Michelotti; p. 53, pl. II, fig. 2
1949 *Lunulites androsaces* Michelotti; Vigneaux, p. 44, pl. III, fig. 7, 8. *cum syn.*
1974 *Lumulites androsaces* Michelotti; Davia et Pouyet, p. 120

Material: one specimen
Description: Zoarium free, lunulitiform, plano-convex, reaching a diameter of about 3.6 mm and height of 1.8 mm. Zooecia trapezoid, arranged in radial rows alternating with similar rows of vibracula. Zooecia and vibracula appearing at the same time in concentric annular arrangement. The first zooecium at the beginning of a new rows in the continuation of a row of vibracula differs from the normal zooecia in being much more elongated proximally. Opesia small semicircular, the proximal lip slightly concave. Cryptocyst slightly depressed, finely granular. Vibracula small, rhombic, in radial rows. Concave surface shallow, covered by a radiating system of coarsely perforated sectors, separated by straight or sinuosus groves.
Measurements (in mm): Lz = 0.34–0.36 ho = 0.18–0.20
lz = 0.30–0.32 lo = 0.16–0.18
Distribution: Miocene – France, Germany, Italy; Miocene (Badenian) – Poland; Pliocene – France.

Family Steginoporellidae Hincks, 1884 (emend Bassler, 1953)
Genus *Steginoporella* Smitt, 1873

Steginoporella elegans (Milne Edwards, 1836)

Pl. II, Fig. 1

1836 *Eschara elegans* Milne Edwards; p. 337, pl. 12, fig. 13
1973 *Steginoporella elegans* (Milne Edwards); Buge, p. 39, pl. V, fig. 5. *cum syn.*
1974 *Steginoporella cucullata* (Reuss); David et Pouyet, p. 124, pl. X, fig. 4

Material: 6 specimens

Measurements (in mm): Lz = 0.75–1.00 ho = 0.14–0.16
lz = 0.35–0.50 lo = 0.22–0.27

Remarks: This species was described repeatelly by authors in XIX and XX century under various names. Finally it was established as *Steginoporella elegans* (Milne-Edwards, 1836). In Polish Miocene it occur relatively rare in shallow-water sediments.

Distribution: Oligocene and Miocene – Europe.

Family Escharellidae Levinsen, 1909
Genus *Porella* Gray, 1848

Porella cervicornis (Pallas, 1766)
= *Eschara undulata* Reuss, 1847; = *Eschara varians* Reuss, 1847; = *Eschara patula* Manzoni, 1877

Pl. II, Figs. 5, 8

1766 *Millepora cervicornis* Pallas, p. 252
1973 *Porella cervicornis* (Pallas); Buge, p. 41, pl. 5, fig. 3.
1974 *Porella cervicornis* (Pallas); David et Pouyet, p. 194. *cum syn.*

Material: 32 specimens

Description: Zoarium free, erect, compressed, bilaminar, dichotomously branching. Zooecia strikingly variable in outer aspect, elongate-hexagonal, sub-cylindrical, or shortened and irregularly polygonal, more or less alternately arranged in longitudinal rows, not always distinctly separated exteriorly by shallow grooves. Secondary orifice subcircular or clithridiate, depending on the size of the proximal sinus, the other type being laterally constricted by a pair of condyles. Peristome very variable, ranging from completely absent to strongly developed, in particular on the marginal zooecia. No oral spines. Frontal wall almost flat, coarsely, though in most specimens indistinctly, perforate, Avicularia small, oral, partly concealed in the proximal peristome. Ovicells not observed.

Measurements (in mm): Lz = 0.70–1.00 ho = 0.15–0.20
lz = 0.25–0.32 lo = 0.15–0.18

Distribution: Miocene–Quaternary – Europa.

Family Adeonidae Jullien, 1903
Genus *Adeonella* Busk, 1884

Adeonella polystomella (Reuss, 1847)

Pl. II, Fig. 7

1847 *Eschara polystomella* Reuss: p. 70, pl. VIII, fig. 27, 28.
1972 *Adeonella polystomella* (Reuss): David, Mongereau, Pouyet, p. 73. *cum syn.*
1974 *Adeonella polystomella* (Reuss): David et Pouyet, p. 200, pl. 6, fig. 2. *cum syn.*

Material: 18 specimens

Measurements (in mm): Lz = 0.40–0.45 ho = 0.05–0.07
lz = 0.28–0.32 lo = 0.12–0.15

Distribution: Eocene – Poland; Miocene – Vienna Basin, Poland, Italy; Pliocene – Portugal.

Adeonella tessulata (Reuss, 1847)

Pl. II, Figs. 9, 10

1847 *Eschara tessulata* Reuss; p. 71, pl. VIII, fig. 35
1877 *Eschara tessulata* Reuss; Manzoni, p. 63, pl. X, fig. 33
1974 „*Eschara*" *tessulata* Reuss; David et Pouyet, p. 229

Material: 26 specimens

Description: Zoarium free, erect, bilamimellar, more or less contorted. Zooecia romboidal,

arranged alternately. Frontal wall callous, covered with scattered pores, surrounded by a single row of areolae. Primary orifice semielliptical with a narrow median sinus shouldered by a pair of minute, conical condyles. Secondary orifice drop shaped. Avicularia fronatal, small and rounded.

Measurements (in mm): Lz = 0.40–0.46 ho = 0.07
lz = 0.20–0.23 lo = 0.01

Distribution: Miocene – Vienna Basin, Italy, Poland.

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STRESZCZENIE

W niniejszym opracowaniu dotyczącym mszywiołów z osadów morskich zatoki korytnickiej oznaczono 53 gatunki (tab. 1). W zbiorze znajdują się również fragmenty innych gatunków, których ze względu na zły stan zachowania nie udało się oznaczyć.

Całkowity zespół mszywiołów jaki żył w tym zbiorniku nie przekraczał zapewne sześćdziesięciu gatunków, a więc był to zespół raczej ubogi. Wśród oznaczonych gatunków ze względu na ilość osobników bardzo wyraźnie wybijają się gatunki: *Porella cervicornis* (Pallas), *Sertella beaniana* (King), gatunki z rodziny Celleporidae Busk, oraz dwa gatunki z rodziny Cupuladriidae Lagaaij: *Cupuladria canariensis* Busk, *Cupuladria haidingeri* (Rss.). Wymienione dwa pierwsze gatunki tworzą kolonie krzaczkowate, Celleporidae zaś kolonie kuliste lub w formie nieregularnych bryłek. Kolonie zaś z rodzaju *Cupuladria* wykształcają się w formie odwróconych miseczek. Z danych zaczerpniętych z literatury wiemy, iż gatunki wyżej wymienione rozwijają się w zacisznych płytkich zatoczkach. Gatunki z rodzaju *Cupuladria* żyją dziś w strefach przybrzeżnych mórz tropikalnych i subtropikalnych. Najliczniejsze gatunki stwierdzane w osadach korytnickich wskazują więc na niewielką głębokość zbiornika wynoszącą zapewne nie więcej niż 30 m oraz na jego pełne zasolenie i wysoką temperaturę wody. Pozostałe gatunki tak z rzędu Cyclostomata, jak i Cheilostomata to również formy głównie płytkowodne, mogące żyć zarówno w wodach ciepłych, jak i chłodnych. Wiele z nich to formy tworzące kolonie obrastające rośliny. Stwierdzamy je głównie w zespole z Chomentowa, gdzie rozwijały się bujnie glony z rodzaju *Lithothamnium*. Oznaczony zespół mszywiołów z osadów mioceńskiej zatoki korytnickiej dostarczył danych potwierdzających wnioski sformułowane na podstawie badań innych zespołów organizmów, które żyły w tej części morza mioceńskiego.

EXPLANATIONS OF PLATES – OBJAŚNIENIA TABLIC

Plate – Plansza I

Fig. 1. *Turbigerina alternata* Michelin. Chomentów, × 8.
Fig. 2, 3, 8. *Reteporidea coronopus* (Canu&Bassler). Korytnica, × 8. 2a. Dorsal view. 2b. Frontal view. 3. Another specimen, frontal view. 8. Another specimen, side view.
Fig. 4. *Entalophora pulchella* Reuss. Korytnica, × 8.
Fig. 5. *Diaperoecia flabellum* Reuss. Korytnica, × 8.
Fig. 6. *Diaperoecia flabellum* Reuss. Korytnica, another specimen with gonozooecium, × 8.
Fig. 7. *Hornera striata* Milne-Edw. Chomentów, × 8. 7a. Frontal view. 7b. Dorsal view.
Fig. 9. *Lichenopora goldfussi* Reuss. Korytnica, × 8.
Fig. 10. *Schismopora scruposa* (Busk). Korytnica, × 8.
Fig. 11. *Cellepora globularis* Bronn. Chomentów, × 10.
Fig. 12. *Holoporella cerioporoides* Canu&Lec. Korytnica, × 10.
Fig. 13. *Costazia costazii Audouin*. Korytnica, × 10.

Plate – Plansza II

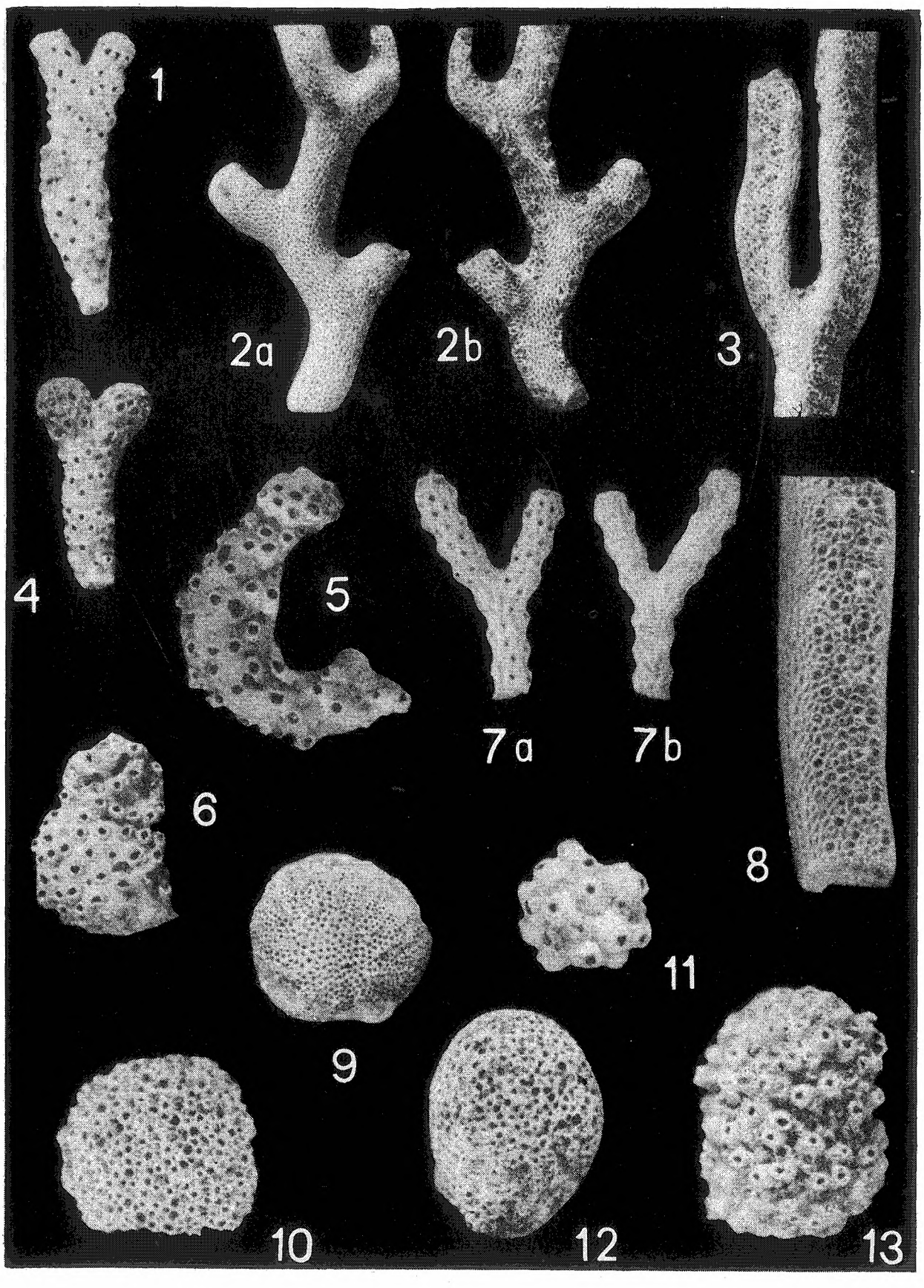
Fig. 1. *Steginoporella cucullata* (Milne-Edw.). Korytnica, × 8.
Fig. 2. *Cellaria crassa* Wood. Korytnica, × 8.
Fig. 3. *Tubucellaria ceroides* (Ellis et Sol.). Chomentów, × 8.
Fig. 4. *Schizomavella aculifera* Canu et Lec. Korytnica, × 8.
Fig. 5, 8. *Porella cervicornis* (Pallas). Korytnica, × 8.
Fig. 6. *Sertella beaniana King*. Korytnica, × 8. 6a. Frontal view. 6b. Dorsal view.
Fig. 7. *Adeonella polystomella* (Reuss). Korytnica, × 8.
Fig. 9, 10. *Adeonella tessulata* (Reuss). Korytnica, × 8.

Plate – Plansza III

Fig. 1. *Cupuladria canariensis* Busk. Korytnica, × 10. 1a. Frontal view. 1b. Dorsal view.
Fig. 2a, 2b. *Cupuladria canariensis* Busk. Korytnica, × 10. Juvenile colonie.
Fig. 3. *Cupuladria haidingeri* (Reuss). Korytnica, × 20. Fragment of a large, unbroken colony.
Fig. 4, 5. *Cupuladria haidingeri* (Reuss). Korytnica, × 10. Another specimen. 4. Frontal view. 5. Dorsal view.
Fig. 6. *Lunulites androsaces* Michelotti. Korytnica, × 10. 6a. Frontal view. 6b. Dorsal view.
Fig. 7. *Cupuladria canariensis* Busk. Korytnica, × 20. Another specimen, frontal view.

Plate – Plansza IV

Fig. 1. *Reteporidea coronopus* (Canu et Bassler),
Fig. 2. *Entalophora pullchella* Reuss
Fig. 3. *Diaperoecia flabellum* Reuss
Fig. 4. *Lichenopora goldfussi* Reuss
Fig. 5. *Cellaria crassa* Wood
Fig. 6. *Tubucellaria cereoides* Ellis et Sol.
Fig. 7. *Porella cervicornis* (Pallas)
Fig. 8. *Sertella beaniana* King
Fig. 9. *Adeonella polystomella* (Reuss)
Fig. 10. *Adeonella tessulata* (Reuss)
Fig. 11. *Cupuladria canarensis Busk*,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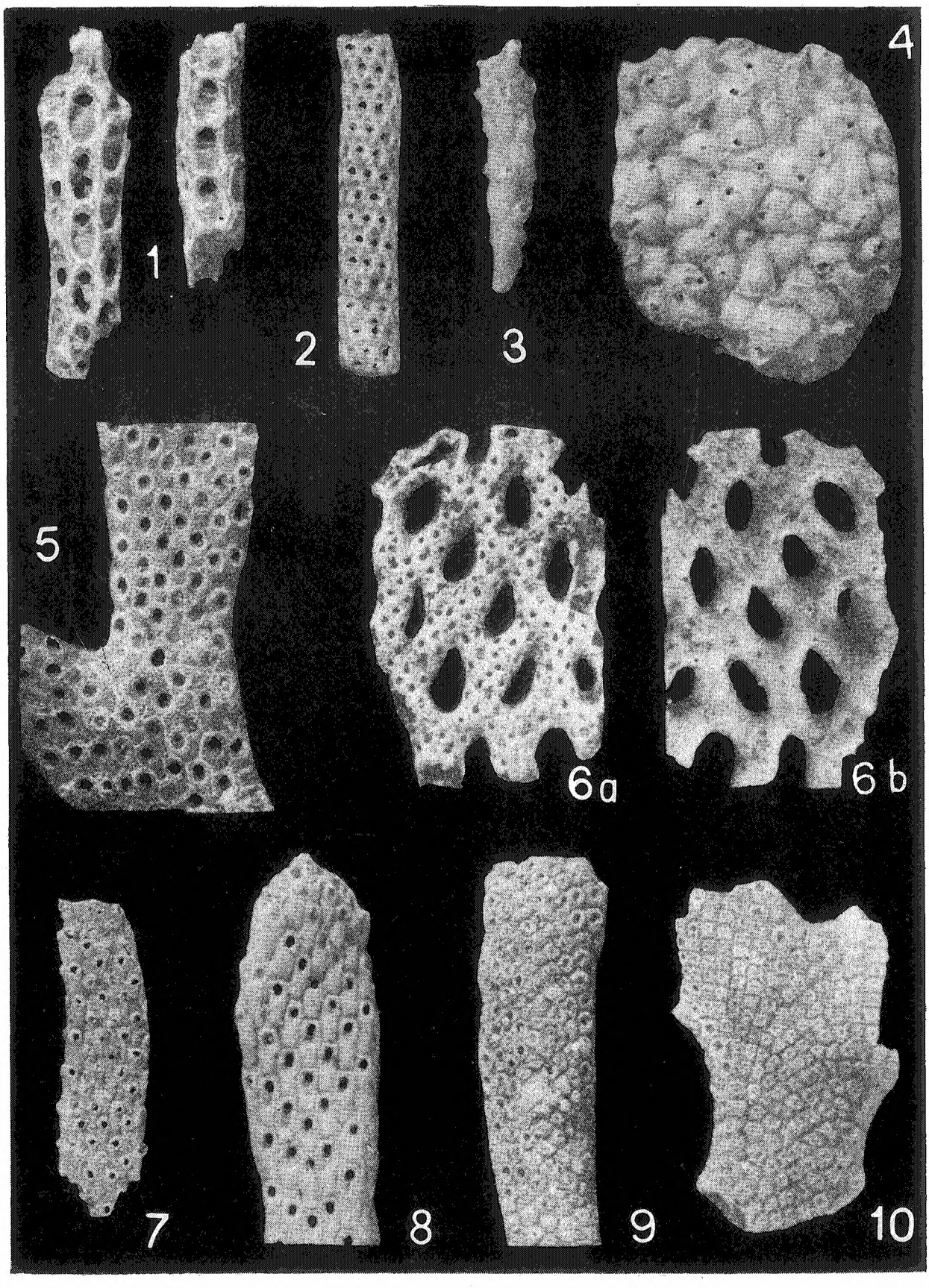
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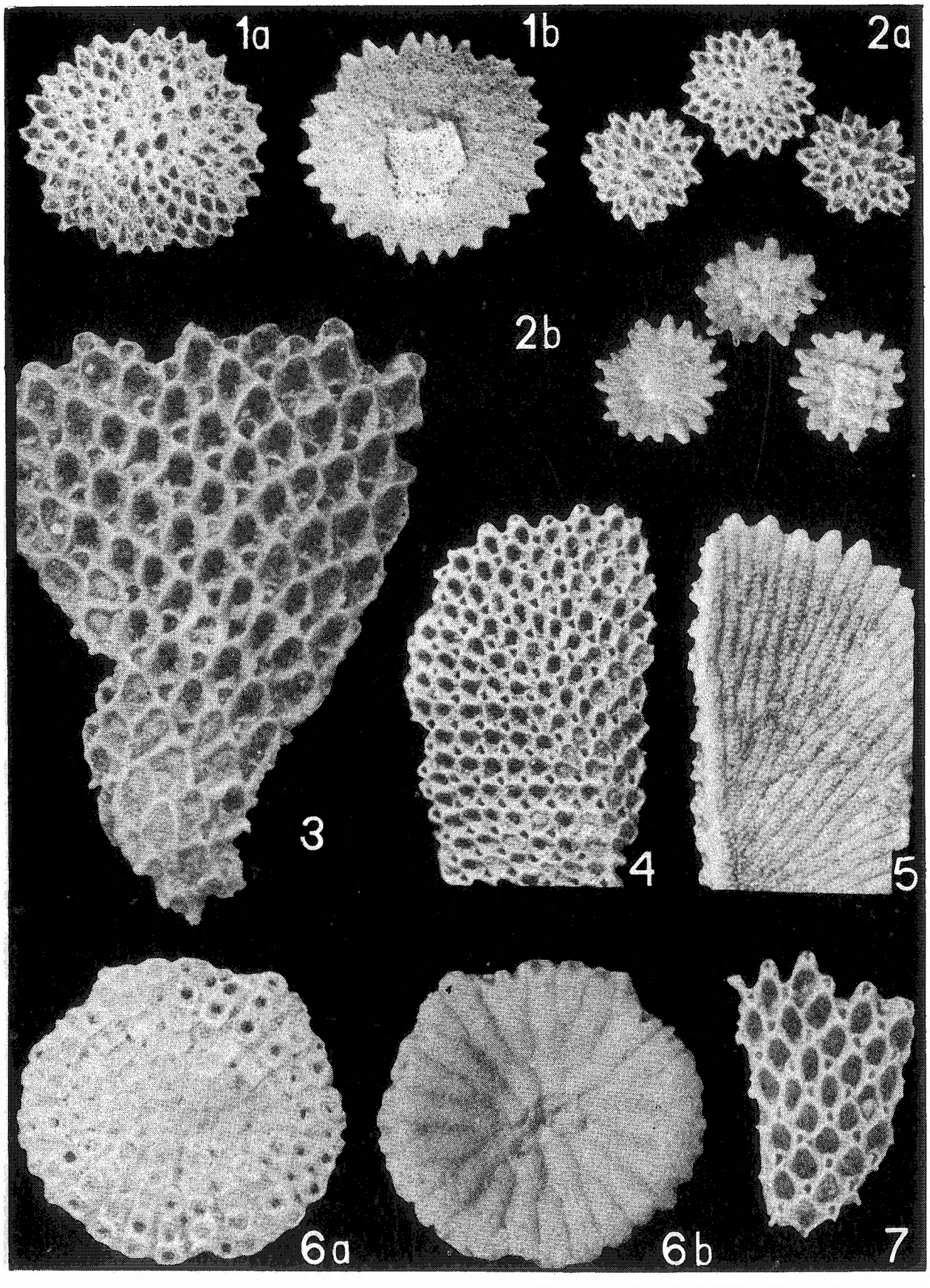
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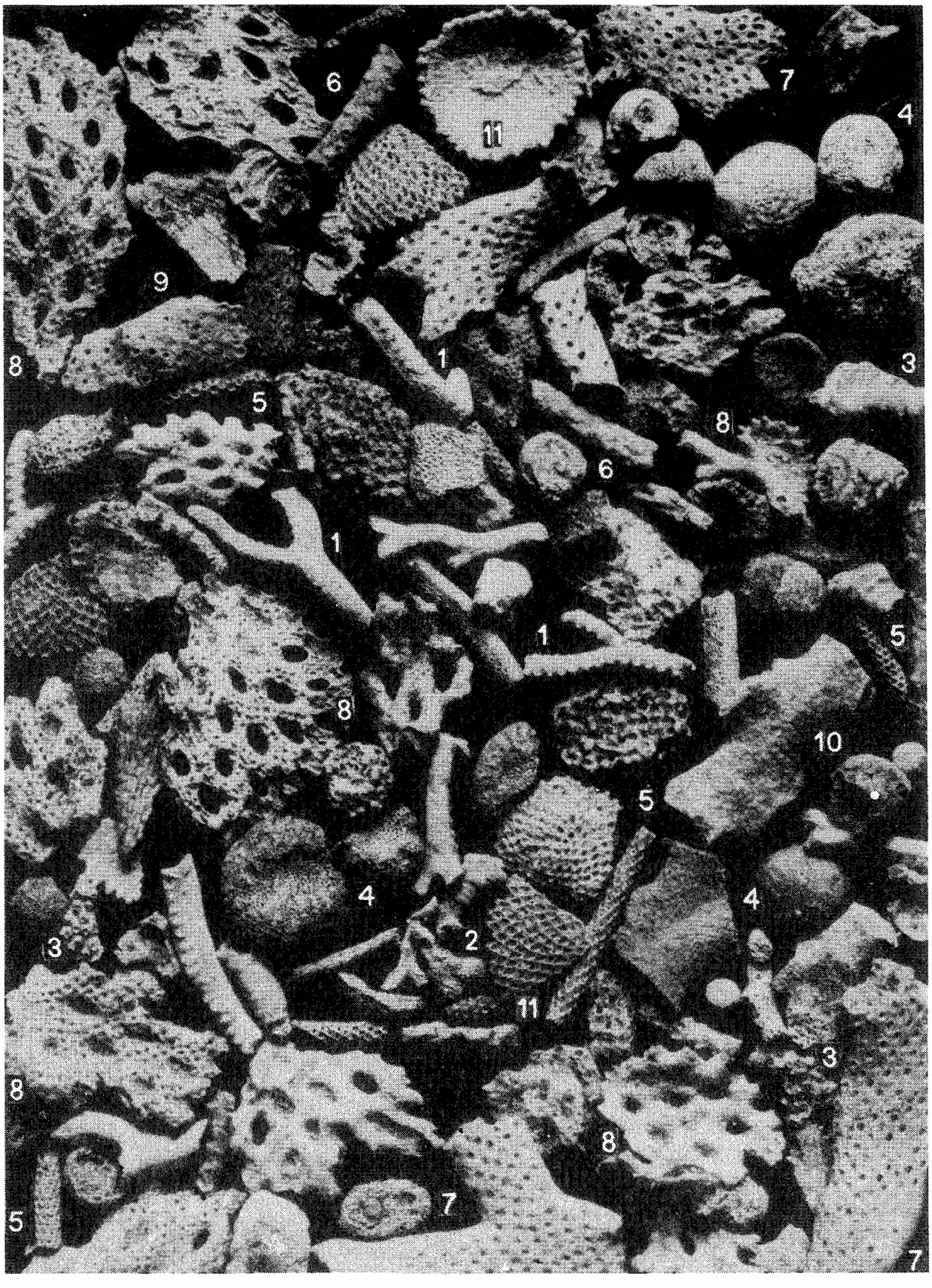
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