

REPORT  
ON THE  
SCIENTIFIC RESULTS  
OF THE  
VOYAGE OF H.M.S. CHALLENGER  
DURING THE YEARS 1873-76

UNDER THE COMMAND OF  
CAPTAIN GEORGE S. NARES, R.N., F.R.S.  
AND THE LATE  
CAPTAIN FRANK TOURLE THOMSON, R.N.

PREPARED UNDER THE SUPERINTENDENCE OF  
THE LATE  
Sir C. WYVILLE THOMSON, Knt., F.R.S., &c.  
REGIUS PROFESSOR OF NATURAL HISTORY IN THE UNIVERSITY OF EDINBURGH  
DIRECTOR OF THE CIVILIAN SCIENTIFIC STAFF ON BOARD  
AND NOW OF  
JOHN MURRAY  
ONE OF THE NATURALISTS OF THE EXPEDITION

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1887

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PLATE 99.

Legion PHÆODARIA.

Order PHÆOGROMIA.

Family CHALLENGERIDA.



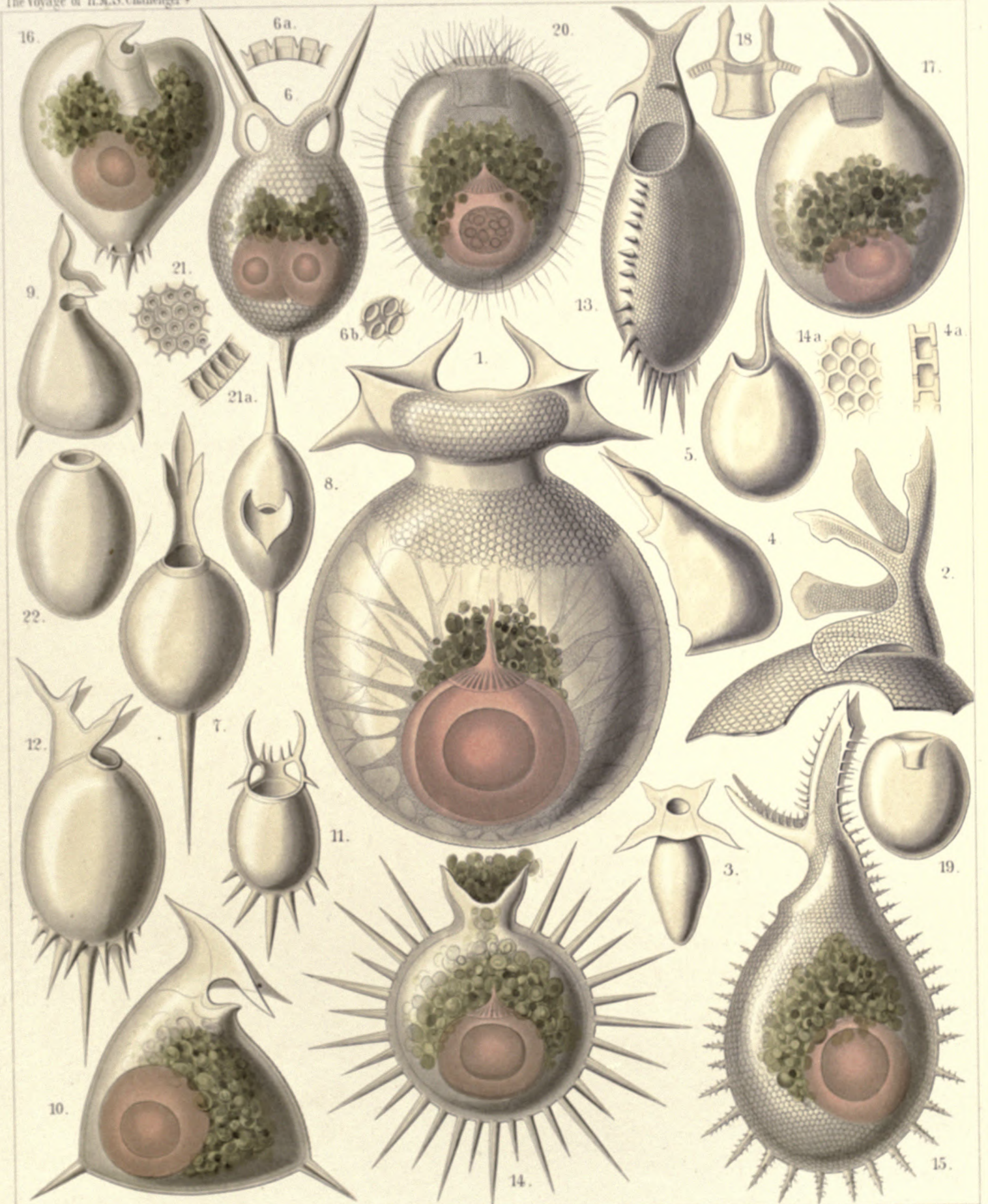
PLATE 99.

CHALLENGERIDA.

(The central capsule is coloured red and the phæodium green in Figs. 1, 6, 10, 14-17, 20).

	Diam.	Page
Fig. 1. <i>Challengeria murrayi</i> , n. sp., From the dorsal side. Numerous streams of sarcodæ arise from the central capsule and pierce the calymma inside the shell.	× 50	1653
Fig. 2. <i>Challengeria wildi</i> , n. sp., The peristome from the left side.	× 400	1653
Fig. 3. <i>Challengeria bromleyi</i> , n. sp., From the dorsal side.	× 400	1652
Fig. 4. <i>Challengeria sloggettii</i> , John Murray, The ventral corner broken off. From the left side. Fig. 4a. Vertical section through the shell-wall.	× 150	1649
Fig. 5. <i>Challengeria tritonis</i> , n. sp.,	× 150	1649
Fig. 6. <i>Challengeron diodon</i> , n. sp., From the dorsal side. The shell contains two central capsules.	× 400	1654
Fig. 7. <i>Challengeron pearceyi</i> , n. sp., From the dorsal side.	× 300	1654
Fig. 8. <i>Challengeron richardsii</i> , n. sp., From the oral margin.	× 100	1655
Fig. 9. <i>Challengeron fergusonii</i> , n. sp., From the right side.	× 100	1656
Fig. 10. <i>Challengeron triangulum</i> , n. sp., From the right side.	× 200	1656
Fig. 11. <i>Challengeron crosbiei</i> , n. sp., From the ventral side.	× 300	1657
Fig. 12. <i>Challengeron buchanaui</i> , n. sp., From the right side.	× 300	1657
Fig. 13. <i>Challengeron willemoesii</i> , n. sp., From the ventral side.	× 400	1659
Fig. 14. <i>Challengeron moseleyi</i> , n. sp., From the right side.	× 300	1658
Fig. 15. <i>Challengeron wyvillei</i> , n. sp., From the left side.	× 300	1660
Fig. 16. <i>Porcupinia cordiformis</i> , n. sp., From the right side.	× 200	1663
Fig. 17. <i>Pharyngella gastræa</i> , n. sp.,	× 150	1662
Fig. 18. <i>Pharyngella gastrula</i> , n. sp.,	× 150	1662
Fig. 19. <i>Entocannula infundibulum</i> , n. sp.,	× 100	1661
Fig. 20. <i>Entocannula hirsuta</i> , n. sp.,	× 150	1661
Fig. 21. <i>Lithogromia diatomacea</i> , n. sp., A piece of the shell with diatomaceous structure. Fig. 21a. Vertical section through the shell-wall.	× 400	1647
Fig. 22. <i>Lithogromia silicea</i> , n. sp.,	× 150	1647





E. Haeckel and A. Giltsch, Del.

E. Giltsch, Jena, Lithogr.

1-15. CHALLENGERIA, 16-18. PHARYNGELLA, 19, 20. ENTOCANNULA.  
21, 22. LITHOGROMIA.



PLATE 100.

Legion PHÆODARIA.

Order PHÆOGROMIA.

Family TUSCARORIDA.

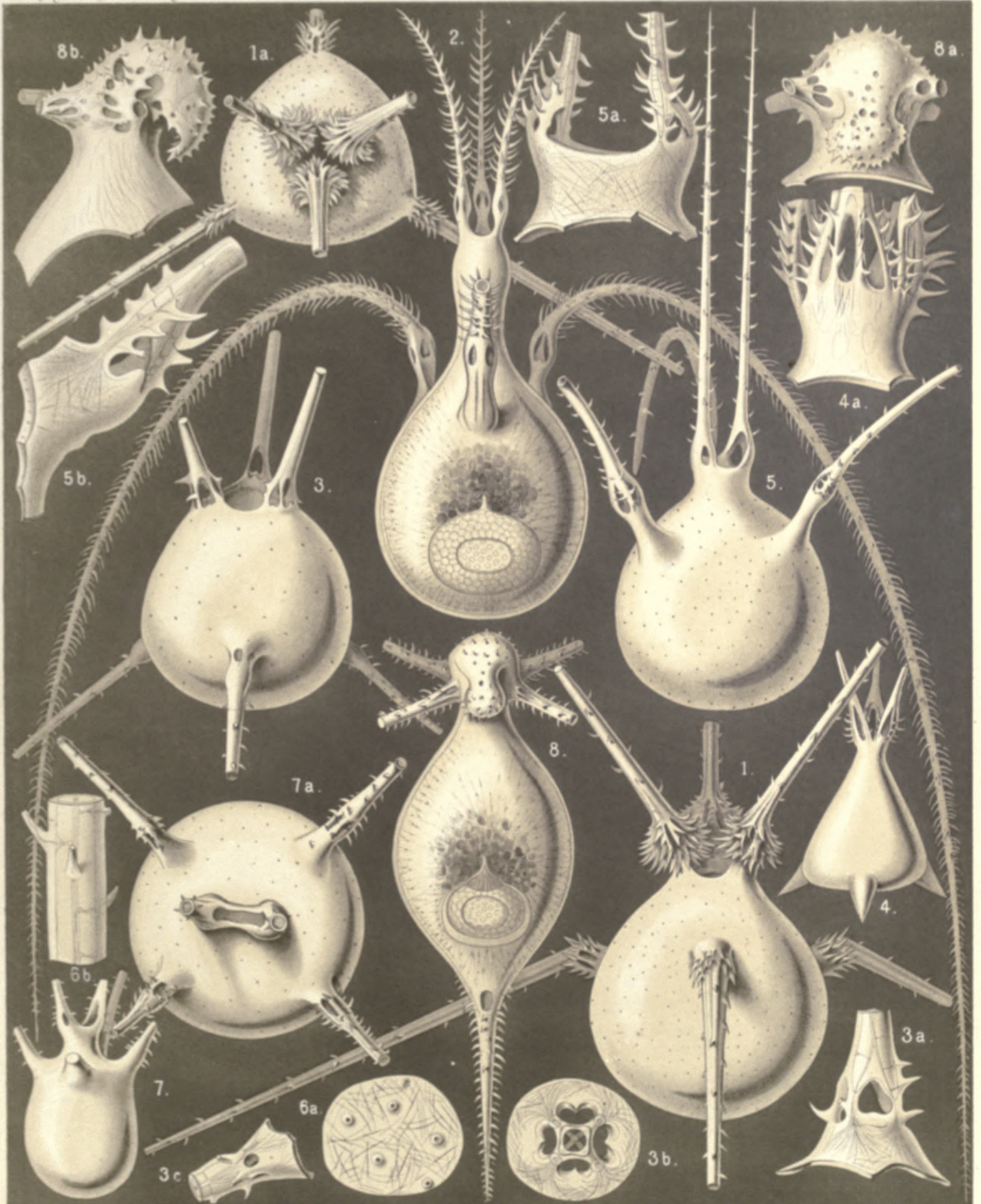


PLATE 100.

TUSCARORIDA.

	Diam.	Page
Fig. 1. <i>Tuscarora bisternaria</i> , John Murray, . . . . .	× 30	1706
View from the dorsal side.		
Fig. 1a. View from the mouth pole . . . . .	× 25	
Fig. 2. <i>Tuscarora murrayi</i> , n. sp., . . . . .	× 30	1706
View from the dorsal side. The central capsule (in the aboral half), and the phæodium (in the middle of the shell-cavity) are visible. A fine network of pseudopodia pierces the calymma, which fills up the shell-cavity.		
Fig. 3. <i>Tuscarora wyvillei</i> , n. sp., . . . . .	× 30	1707
View from the dorsal side.		
Fig. 3a. Base of a tooth, . . . . .	× 100	
Fig. 3b. Transverse section through the base of a tooth.		
Fig. 3c. Base of a foot.		
Fig. 4. <i>Tuscarora tetrahedra</i> , John Murray, . . . . .	× 15	1707
View from the dorsal side.		
Fig. 4a. Mouth with the three teeth, . . . . .	× 50	
Fig. 5. <i>Tuscarora tubulosa</i> , John Murray, . . . . .	× 40	1707
View from the ventral side.		
Fig. 5a. Mouth with the two teeth, . . . . .	× 100	
Fig. 5b. Basal part of a single tooth, . . . . .	× 150	
Fig. 6. <i>Tuscarora porcellana</i> , John Murray, . . . . .	× 600	1708
Fig. 6a. A piece of the shell, with five pores.		
Fig. 6b. A piece of a tooth, with the internal axial rod and its transverse branches.		
Fig. 7. <i>Tuscarusa medusa</i> , n. sp., . . . . .	× 25	1709
View from the side.		
Fig. 7a. View from the mouth, . . . . .	× 50	
Fig. 8. <i>Tuscaridium lithornithium</i> , n. sp., . . . . .	× 20	1710
View from the ventral side. Central capsule and calymma as in fig. 2.		
Fig. 8a. Peristome from the ventral side.		
Fig. 8b. Peristome from the right side.		





TUSCARORA.



PLATE 101.

Legion PHÆODARIA.

Order PHÆOCYSTINA.

Families PHÆODINIDA, CANNORRHAPHIDA et AULACANTHIDA.

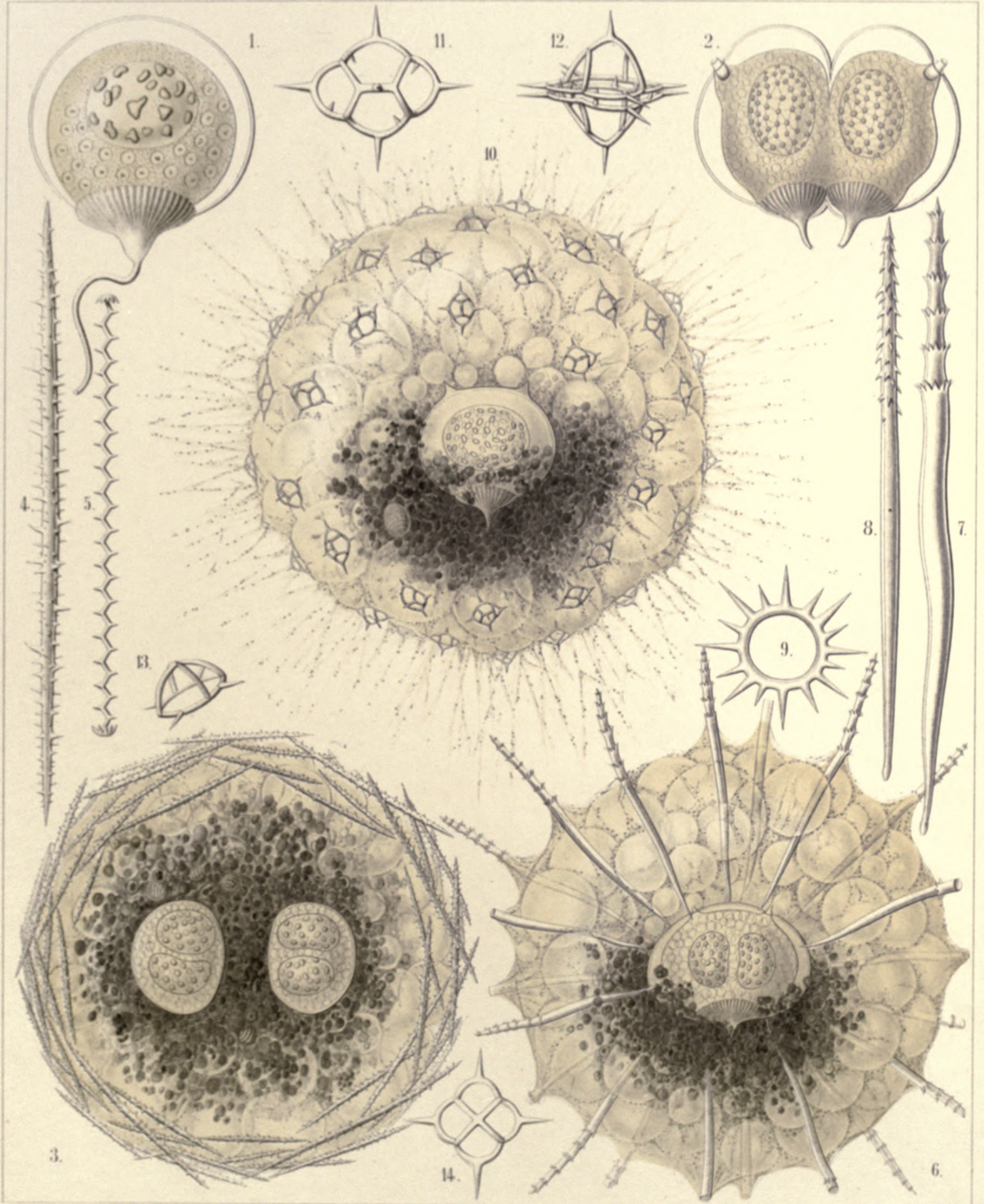


PLATE 101.

PHÆODINIDA, CANNORRHAPHIDA et AULACANTHIDA.

	Diam.	Page
Fig. 1. <i>Phæocola primordialis</i> , n. sp., . . . . .	× 300	1544
Central capsule, isolated. The double contoured outer membrane exhibits only one opening, with a radiate operculum and long proboscis. The granular protoplasm encloses clear spherical vacuoles. The spheroidal nucleus contains irregular amœboid nucleoli.		
Fig. 2. <i>Phæodina tripylea</i> , n. sp., . . . . .	× 300	1545
A central capsule in self-division, with two elliptical nuclei. The astropyle is already bisected and has two proboscides.		
Fig. 3. <i>Cannorrhaphis spinulosa</i> , n. sp., . . . . .	× 100	1552
A complete specimen with two central capsules, each of which contains two nuclei. The alveolate calymma contains a dark phæodium and is surrounded by tangential tubular needles.		
Fig. 4. <i>Cannorrhaphis spinulosa</i> , n. sp., . . . . .	× 300	1552
A single tangential tube.		
Fig. 5. <i>Cannorrhaphis spathillata</i> , n. sp., . . . . .	× 300	1552
A single tangential tube.		
Fig. 6. <i>Aulactinium actinastrum</i> , n. sp., . . . . .	× 100	1574
A complete specimen, seen in optical meridional section. In the centre the spheroidal central capsule, with its double membrane and three openings (above two lateral parapylæ, below the large astropyle with its radiate operculum). The capsule encloses numerous spherical vacuoles and two hemispherical nuclei, each with numerous nucleoli. The anterior half of the capsule is surrounded by the blackish phæodium. The spherical calymma contains numerous globular alveoles and is pierced by the radial tubes, the proximal ends of which are in contact with the surface of the central capsule (compare Pl. 103, fig. 1).		
Fig. 7. <i>Aulactinium actinastrum</i> , n. sp., . . . . .	× 300	1574
A single radial tube.		
Fig. 8. <i>Aulactinium actinelium</i> , n. sp., . . . . .	× 200	1574
A single radial tube.		
Fig. 9. <i>Mesocena stellata</i> , n. sp., . . . . .	× 600	1557
A single annular piece of the skeleton		
Fig. 10. <i>Dictyocha stapedia</i> , n. sp., . . . . .	× 300	1561
A complete specimen, observed living at Ceylon. In the centre is visible the large, spheroidal, tripylean central capsule, with its three openings, containing a large nucleus with numerous nucleoli. Its oral half is covered with the dark phæodium. The voluminous spherical calymma contains numerous globular alveoles and its surface is covered with scattered, stirrup-shaped pieces of the skeleton. Numerous free pseudopodia arise from the surface.		
Fig. 11. <i>Dictyocha stapedia</i> , n. sp., . . . . .	× 800	1561
A single piece of the skeleton, from above.		
Fig. 12. <i>Dictyocha stapedia</i> , n. sp., . . . . .	× 800	1561
A twin piece of the skeleton.		
Fig. 13. <i>Dictyocha medusa</i> , n. sp., . . . . .	× 800	1560
A single piece of the skeleton, from the side.		
Fig. 14. <i>Dictyocha medusa</i> , n. sp., . . . . .	× 800	1560
A single piece of the skeleton, from above.		





W. Hesse and A. Rehn, del.

W. Hesse, litt. Lithogr.

1-2. PHAEODINA. 3-5. CANNORRHAPHIS. 6-8. AULACTINIUM, 9. MESOCENA, 10-14. DICTYOCHEA.



PLATE 102.

Legion PHÆODARIA.

Order PHÆOCYSTINA.

Family AULACANTHIDA.



PLATE 102.

AULACANTHIDA.

	Diam.	Page
Fig. 1. <i>Auloceros elegans</i> , n. sp., . . . . .	× 80	1584
<p>A complete specimen, observed living at Ceylon. In the centre is visible the red central capsule with its three openings, containing a large nucleus of half the size, with numerous nucleoli. The alveolate calymma encloses a green excentric phæodium, is surrounded by a veil of interwoven tangential needles, and forms conical elevations, which enclose the piercing radial tubes. Between these radiate numerous pseudopodia (compare for the single parts, Pl. 103, fig. 1 and Pl. 104, figs. 1-3, and their explanation).</p>		
Figs. 2-6. <i>Auloceros furcosus</i> , n. sp., . . . . .	× 100	1583
<p>Distal ends of different radial tubes, exhibiting the great variability of this species.</p>		
Fig. 7. <i>Auloceros trigeminus</i> n. sp., . . . . .	× 300	1584
<p>Distal end of a single tube.</p>		
Fig. 8. <i>Auloceros capreolus</i> , n. sp., . . . . .	× 200	1584
<p>Distal end of a single tube</p>		
Figs. 9, 10. <i>Auloceros cervinus</i> , n. sp., . . . . .	× 300	1584
<p>Distal ends of two single tubes.</p>		
Fig. 12. <i>Auloceros spathillaster</i> , n. sp., . . . . .	× 300	1585
<p>Distal end of a single tube.</p>		
Figs. 11, 13. <i>Auloceros arborescens</i> , n. sp., . . . . .	× 300	1585
<p>Distal ends of two single tubes.</p>		





F. H. C. Smith and A. G. S. Deane Del.

Ed. B. J. Van Linné Sculp.

AULOCERA.



PLATE 103.

Legion PHÆODARIA.

Order PHÆOCYSTINA.

Family AULACANTHIDA.



PLATE 103.

AULACANTHIDA.

	Diam.	Page
Fig. 1. <i>Aulographis candelabrum</i> , n. sp., . . . . .	× 100	1583
<p><i>p</i>, The dark phaeodium surrounding the central capsule on its oral part; <i>a</i>, a part of the surrounding alveolate calymma, also surrounding the central capsule; <i>s</i>, the veil of tangential needles covering the surface of the alveolate calymma; <i>r</i>, the big radial tubes, seven of which are visible, with an elegant verticil of terminal branches; <i>f</i>, the numerous pseudopodia radiating between the branches. The central capsule exhibits the following parts:—<i>o</i>, Astropyle; <i>u</i>, parapylæ; <i>e</i>, outer membrane; <i>i</i>, inner membrane; <i>v</i>, vacuoles; <i>n</i>, nucleus; <i>l</i>, nucleoli.</p>		
Figs. 2-9. <i>Aulographis pandora</i> , n. sp., . . . . .	× 100	1577
<p>Distal ends of various radial tubes of a single specimen, exhibiting the extraordinary variability of this species.</p>		
Fig. 10. <i>Aulographis furcula</i> , n. sp., . . . . .	× 400	1580
<p>A two-branched tube.</p>		
Fig. 11. <i>Aulographis furcula</i> , n. sp., . . . . .	× 400	1580
<p>A three-branched tube.</p>		
Figs. 12, 13. <i>Aulographis bovicornis</i> , n. sp., . . . . .	× 200	1577
<p>Two tubes with two branches.</p>		
Fig. 14. <i>Aulographis bovicornis</i> , n. sp., . . . . .	× 200	1577
<p>A tube with three branches.</p>		
Fig. 15. <i>Aulographis triangulum</i> , n. sp., . . . . .	× 200	1580
<p>A single tube.</p>		
Fig. 16. <i>Aulographis taumorpha</i> , n. sp., . . . . .	× 300	1577
<p>Two tubes, each with two branches.</p>		
Fig. 17. <i>Aulographis triglochis</i> , n. sp., . . . . .	× 300	1578
<p>A tube with three branches.</p>		
Figs. 18, 19. <i>Aulographis hexancistra</i> , n. sp., . . . . .	× 300	1581
<p>Distal end of two tubes (one with four, the other with five terminal branches).</p>		
Fig. 20. <i>Aulographis dentata</i> , n. sp., . . . . .	× 200	1582
<p>Distal end of a single tube.</p>		
Fig. 21. <i>Aulographis ancorata</i> , n. sp., . . . . .	× 300	1578
<p>Two tubes, each with four recurved branches.</p>		
Fig. 22. <i>Aulographis tetrancistra</i> , n. sp., . . . . .	× 300	1581
<p>A single tube.</p>		
Fig. 23. <i>Aulographis stellata</i> , n. sp., . . . . .	× 300	1578
<p><i>a</i> and <i>b</i>, Two rudimentary or incompletely developed tubes; <i>c</i>, a well-developed tube of the usual form.</p>		
Fig. 24. <i>Aulographis asteriscus</i> , n. sp., . . . . .	× 300	1581
<p>Terminal verticil of a single tube.</p>		
Fig. 25. <i>Aulographis cruciata</i> , n. sp., . . . . .	× 300	1578
<p>Distal end of a single tube.</p>		
Fig. 26. <i>Aulographis pulvinata</i> , n. sp., . . . . .	× 400	1582
<p>Distal end of a single tube.</p>		
Fig. 27. <i>Aulographis serrulata</i> , n. sp., . . . . .	× 400	1582
<p>Distal end of a single tube.</p>		





L. Haeckel and A. Billet, Del.

Lithogr. von Litogr.

AULOGRAPHIS.



**PLATE 104.**

**Legion PHÆODARIA.**

**Order PHÆOCYSTINA.**

**Family AULACANTHIDA.**

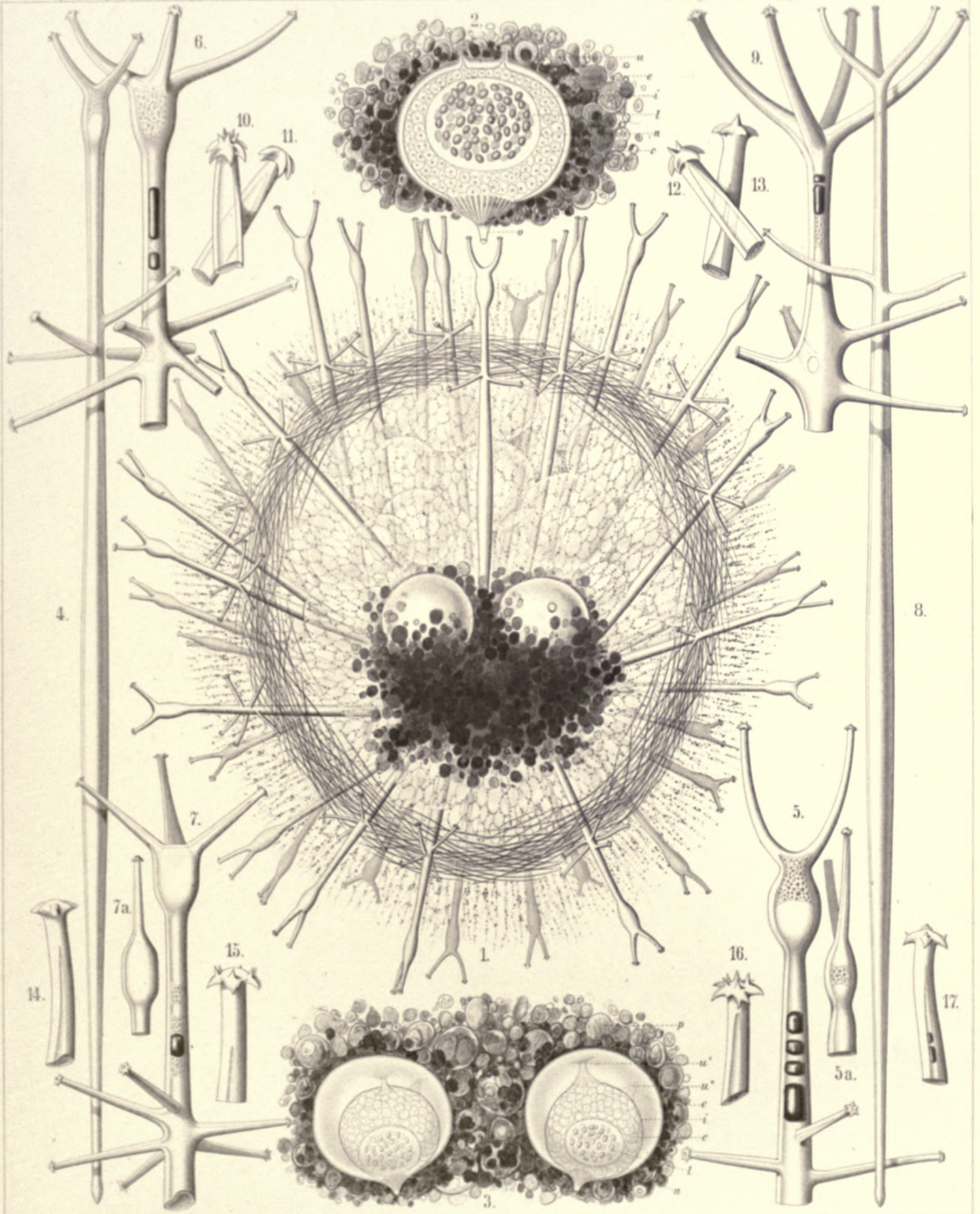


PLATE 104.

AULACANTHIDA.

	Diam.	Page
Fig. 1. <i>Aulospathis bifurca</i> , n. sp., . . . . .	× 50	1586
A complete specimen, excellently preserved, with an ovate alveolate calymma and two central capsules. The surface of the calymma is covered with tangential needles.		
Fig. 2. <i>Aulospathis bifurca</i> , n. sp., . . . . .	× 100	1586
An isolated central capsule of another specimen, surrounded by granules of the phæodium. <i>o</i> , Radiate operculum of the astropyle; <i>u</i> , the two lateral parapylæ; <i>e</i> , external membrane of the capsule; <i>i</i> , internal membrane; <i>c</i> , vacuoles in the protoplasm; <i>n</i> , nucleus; <i>l</i> , numerous nucleoli.		
Fig. 3. <i>Aulospathis bifurca</i> , n. sp., . . . . .	× 80	1586
Two central capsules of another specimen, surrounded by the phæodium (Self-division). Characters as in fig. 2.		
Fig. 4. <i>Aulospathis bifurca</i> , n. sp., . . . . .	× 100	1586
A single radial tube.		
Fig. 5. <i>Aulospathis bifurca</i> , n. sp., . . . . .	× 200	1586
Distal part of another radial tube, partly filled up by air-bubbles.		
Fig. 6. <i>Aulospathis trifurca</i> , n. sp., . . . . .	× 200	1586
Distal part of a single radial tube.		
Fig. 7. <i>Aulospathis trifurca</i> , n. sp., . . . . .	× 200	1586
Distal part of another radial tube.		
Fig. 8. <i>Aulospathis triodon</i> , n. sp., . . . . .	× 100	1587
A single radial tube.		
Fig. 9. <i>Aulospathis tetradon</i> , n. sp., . . . . .	× 200	1588
Distal end of a single tube.		
Figs. 10-13. <i>Aulospathis polymorpha</i> , n. sp., . . . . .	× 400	1587
Four single terminal branches with very different forms of spathillæ.		
Figs. 14-17. <i>Aulospathis variabilis</i> , n. sp., . . . . .	× 400	1588
Four single terminal branches with very different forms of spathillæ.		





E. Sars and A. Sars del.

E. Sars lithogr.

AULOSPAXIS



PLATE 105.

Legion PHÆODARIA.

Order PHÆOCYSTINA.

Family AULACANTHIDA.



PLATE 105.

AULACANTHIDA.

	Diam.	Page
Fig. 1. <i>Aulodendron indicum</i> , n. sp., A single tube.	× 200	1590
Fig. 2. <i>Aulodendron pacificum</i> , n. sp., Distal half of a tube.	× 400	1589
Fig. 3. <i>Aulodendron australe</i> , n. sp., A single tube.	× 300	1589
Fig. 4. <i>Aulacantha spinosa</i> , n. sp., Distal half of a tube.	× 300	1575
Fig. 5. <i>Aulodendron antarcticum</i> , n. sp., A single tube.	× 300	1589
Fig. 6. <i>Aulographis pistillum</i> , n. sp., A single tube.	× 300	1579
Fig. 7. <i>Aulographis martagon</i> , n. sp., Distal end of a single tube.	× 300	1579
Fig. 8. <i>Aulographis triæna</i> , n. sp., A single tube.	× 80	1579
Fig. 9. <i>Aulographis flammabunda</i> , n. sp., Distal end of a tube.	× 100	1579
Fig. 10. <i>Aulographis flosculus</i> , n. sp., Distal end of a tube.	× 300	1580
Fig. 11. <i>Aulographis gemmasceus</i> , n. sp., Distal end of a tube.	× 100	1580
Fig. 12. <i>Aulographis verticillata</i> , n. sp., Distal end of a tube. Fig. 12a. Apical view, with four verticils of five branches.	× 400	1582
Fig. 13. <i>Aulographis tripentas</i> , n. sp., Distal end of a tube. Fig. 13a. Apical view, with three verticils of five branches.	× 300	1582
Fig. 14. <i>Auloceros dicranaster</i> , n. sp., Distal end of a tube, seen from the side.	× 400	1585
Fig. 15. <i>Auloceros dicranaster</i> , n. sp., Distal end of a tube, seen from the terminal face.	× 200	1585
Fig. 16. <i>Aulacantha cannulata</i> , n. sp., Distal end of a tube.	× 300	1576





K. Baerzel and A. Ulrich Del.

T. Ulrich Sculp.

1-5. AULODENDRON. 6-15. AULOGRAPHIS. 16. AULACANTHA.



PLATE 106.

Legion PHÆODARIA.

Order PHÆOSPLÆRIA.

Family OROSPHÆRIDA.



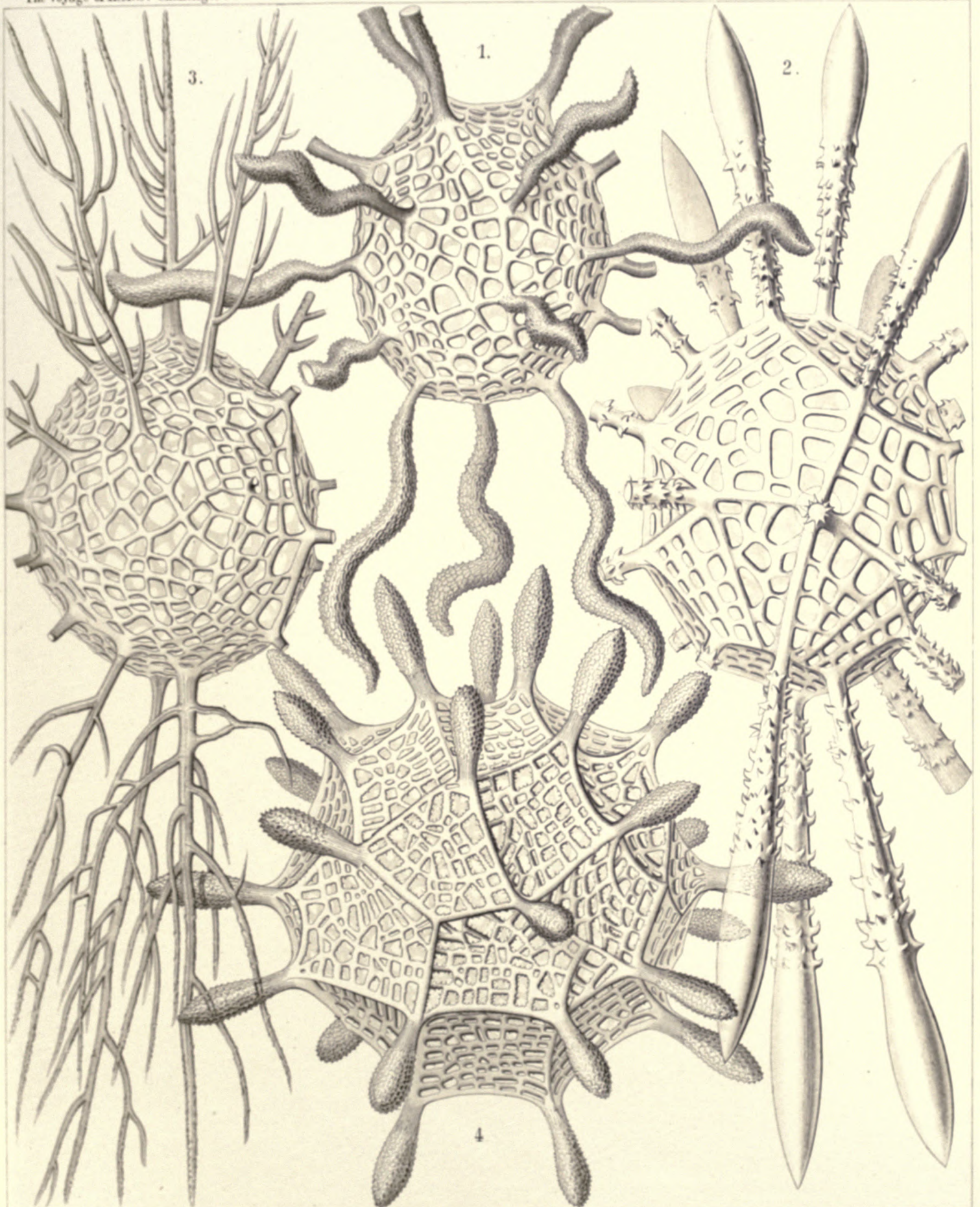
PLATE 106.

OROSPHERIDA.

		Diam.	Page
Fig. 1. <i>Orosphæra serpentina</i> , n. sp.,	. . . . .	× 50	1595
The entire shell.			
Fig. 2. <i>Orosphæra horrida</i> , n. sp.,	. . . . .	× 50	1596
The entire shell.			
Fig. 3. <i>Orosphæra arborescens</i> , n. sp. (vel <i>Orothamnus arborescens</i> ),	. . . . .	× 50	1597
The entire shell.			
Fig. 4. <i>Orosphæra gegenbauri</i> , n. sp.,	. . . . .	× 50	1597
The entire shell.			

(Compare Pl. 12, fig. 1.)





E. Haeckel and A. Giesb. Del.

L. Schenk. Jena. Lithogr.

1. 2. ORONIA, 3. OROTHAMNUS, 4. OROSCENA.



PLATE 107.

Legion PHÆODARIA.

Order PHÆOSPHÆRIA.

Family OROSPHÆRIDA.



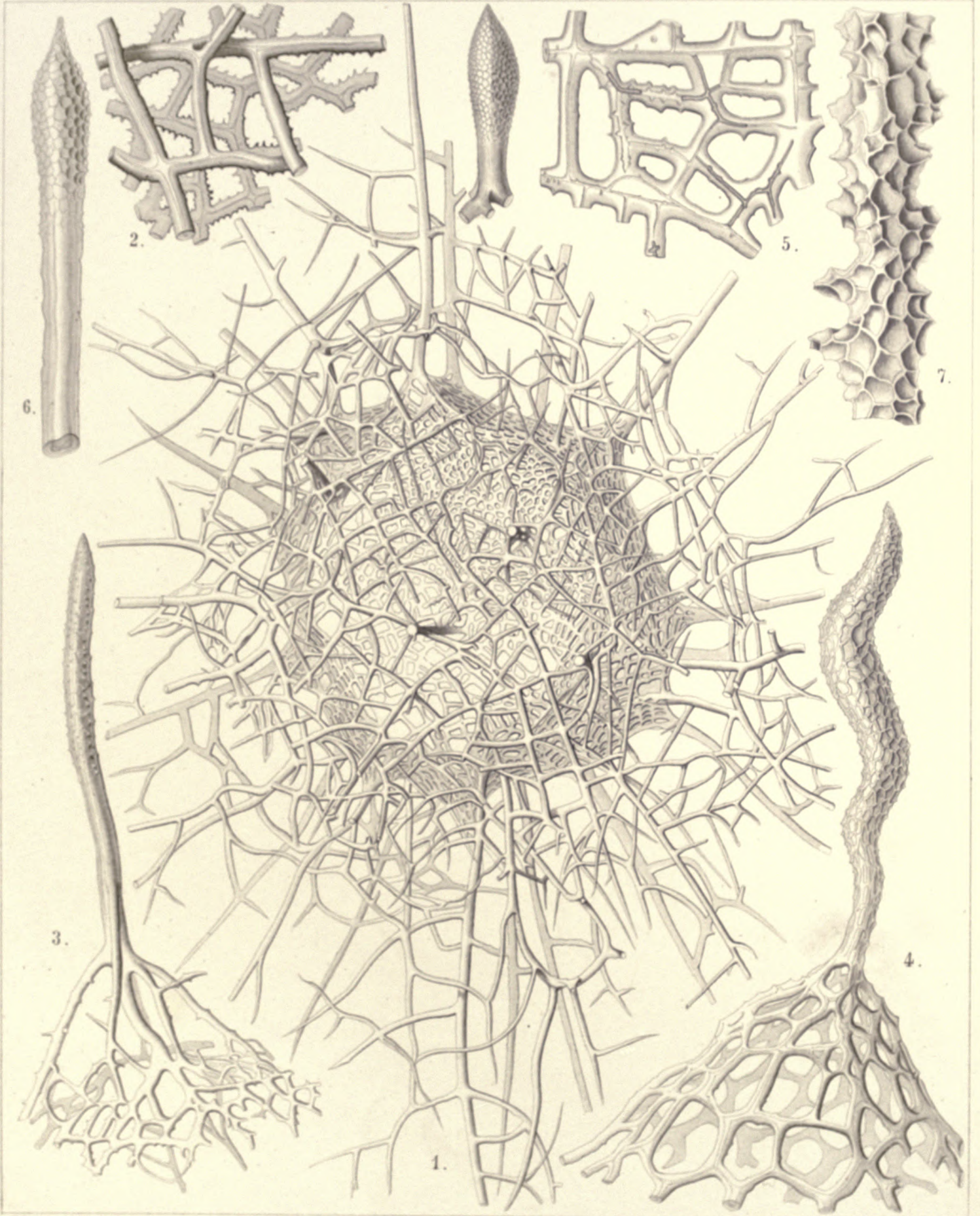
PLATE 107.

OROSPHERIDA.

(Fig. 8 of this Plate has no number, by mistake; it is at the top in the middle.)

	Diam.	Page
Fig. 1. <i>Oroplegma diplosphæra</i> , n. sp., . . . . .	× 50	1600
The entire shell, enveloped by an outer mantle of spongy framework.		
Fig. 2. <i>Oroplegma giganteum</i> , n. sp., . . . . .	× 200	1601
A small piece of the spongy framework.		
Fig. 3. <i>Oroplegma spongiosum</i> , n. sp., . . . . .	× 50	1601
A pyramidal elevation of the inner shell, with its spongy framework, and a radial spine on the top.		
Fig. 4. <i>Oroscena bærii</i> , n. sp., . . . . .	× 100	1598
A pyramidal elevation of the shell, with a radial spine on its top.		
Fig. 5. <i>Orona maxima</i> , n. sp., . . . . .	× 300	1594
A small piece of the network; the central canals of the bars are partly filled by air.		
Fig. 6. <i>Oroscena cuvieri</i> , n. sp., . . . . .	× 50	1598
A single radial spine.		
Fig. 7. <i>Orona crassissima</i> , n. sp., . . . . .	× 300	1594
A single bar of the coarse network, with dimpled surface.		
Fig. 8. <i>Oroscena mülleri</i> , n. sp., . . . . .	× 50	1598
A single radial spine.		





E. Huxley and A. Silliman, Del.

E. Huxley, Sculp.

1-3. OROPLEGMA, 4-7. OROSCENA.



PLATE 108.

Legion PHÆODARIA.

Order PHÆOSPHERIA.

Family SAGOSPHERIDA.

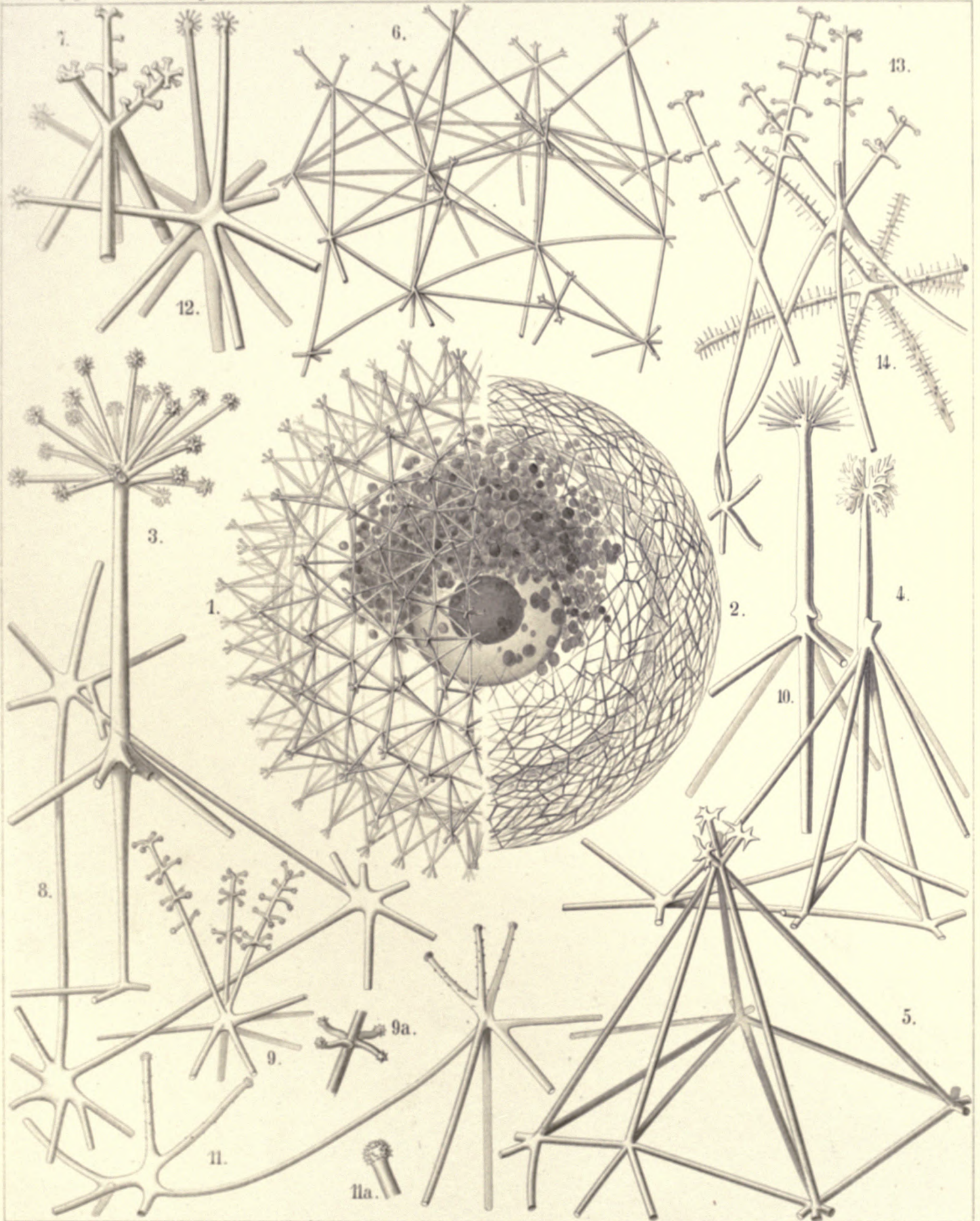


PLATE 108.

SAGOSPHERIDA.

	Diam.	Page
Fig. 1. <i>Sagoscena castra</i> , n. sp., . . . . .	× 50	1608
Half the shell, with the enclosed central capsule and the phæodium, stained by carmine. (The central nucleus dark.)		
Fig. 2. <i>Sagmarium spongodictyum</i> , n. sp., . . . . .	× 50	1612
Half the shell, with its delicate spongy framework.		
Fig. 3. <i>Sagenoscena stellata</i> , n. sp., . . . . .	× 300	1610
Top and axial rod of a pyramid, prolonged into a crowned radial spine.		
Fig. 4. <i>Sagenoscena ornata</i> , n. sp., . . . . .	× 300	1610
A single pyramid with its axial rod, prolonged into a crowned radial spine.		
Fig. 5. <i>Sagoscena peltorium</i> , n. sp., . . . . .	× 300	1609
A single pyramid of the shell-surface.		
Fig. 6. <i>Sagoscena tentorium</i> , n. sp., . . . . .	× 100	1608
A piece of the shell with eight pyramids.		
Fig. 7. <i>Sagoscena prætorium</i> , n. sp., . . . . .	× 400	1609
Top of a pyramid.		
Fig. 8. <i>Sagena ternaria</i> , n. sp., . . . . .	× 400	1606
A single triangular mesh of the lattice sphere.		
Fig. 9. <i>Sagmidium crucicorne</i> , n. sp., . . . . .	× 400	1613
A single nodal point with three radial spines. Fig. 9a. A portion of a spine, more highly magnified.		
Fig. 10. <i>Sagosphæra penicilla</i> , n. sp., . . . . .	× 400	1607
One nodal point and its radial spine.		
Fig. 11. <i>Sagosphæra furcilla</i> , n. sp., . . . . .	× 300	1607
Two nodal points of the network. Fig. 11a. Extremity of a spine.		
Fig. 12. <i>Sagmidium quadricorne</i> , n. sp., . . . . .	× 400	1614
A nodal point of the shell surface, with four divergent spines.		
Fig. 13. <i>Sagoplegma scenophora</i> , n. sp., . . . . .	× 300	1615
Tops of two pyramids.		
Fig. 14. <i>Sagmarium plegmosphærium</i> , n. sp., . . . . .	× 300	1612
A nodal point of the spongy framework.		





E. Haeckel del.

E. Giesch. Jena, lithogr.

1-7. SAGOSCENA, 8. SAGENA, 9-14. SAGOSPHAERA.



PLATE 109.

Legion PHÆODARIA.

Order PHÆOSPHERIA.

Family AULOSPHERIDA.

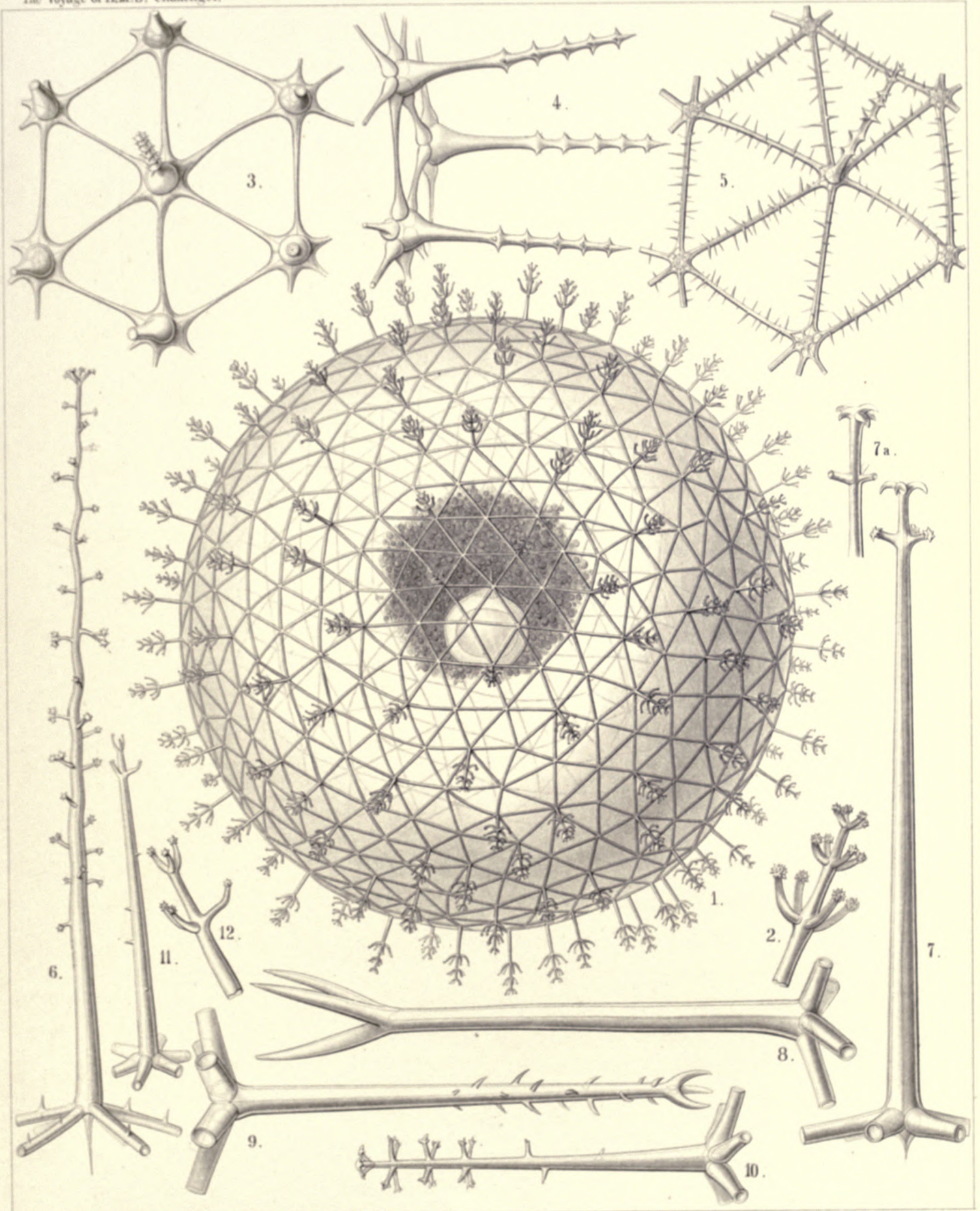


PLATE 109.

AULOSPHERIDA.

	Diam.	Page
Fig. 1. <i>Aulosphæra dendrophora</i> , n. sp., . . . . .	× 50	1625
The entire shell, with the central capsule and its nucleus, enveloped by the dark granular phæodium.		
Fig. 2. <i>Aulosphæra dendrophora</i> , n. sp., . . . . .	× 300	1625
A single radial tube.		
Fig. 3. <i>Aulosphæra sceptrophora</i> , n. sp., . . . . .	× 300	1625
A hexagonal group of six triangular meshes.		
Fig. 4. <i>Aulosphæra sceptrophora</i> , n. sp., . . . . .	× 300	1625
A similar group, seen from the side, with three radial tubes.		
Fig. 5. <i>Aulosphæra spinosa</i> , n. sp., . . . . .	× 300	1627
A hexagonal group of six triangular meshes.		
Fig. 6. <i>Aulosphæra undulata</i> , n. sp., . . . . .	× 400	1627
A single radial tube.		
Fig. 7. <i>Aulosphæra spathillata</i> , n. sp., . . . . .	× 400	1624
A single radial tube.		
Fig. 7a. An abnormal variety, . . . . .	× 400	
Fig. 8. <i>Aulosphæra triodon</i> , n. sp., . . . . .	× 400	1623
A single radial tube.		
Fig. 9. <i>Aulosphæra trifurca</i> , n. sp., . . . . .	× 400	1626
A single radial tube.		
Fig. 10. <i>Aulosphæra cruciata</i> , n. sp., . . . . .	× 300	1624
A single radial tube.		
Fig. 11. <i>Aulosphæra bisternaria</i> , n. sp., . . . . .	× 300	1624
A single radial tube.		
Fig. 12. <i>Aulosphæra bisternaria</i> , n. sp., . . . . .	× 600	1624
Distal end of a single radial tube.		





E. Haeckel and A. G. Sars, Del.

F. Sittler, Sculp.

AULOSPHERA.



PLATE 110.

Legion PHÆODARIA.

Order PHÆOSPHERIA.

Family AULOSPHERIDA.

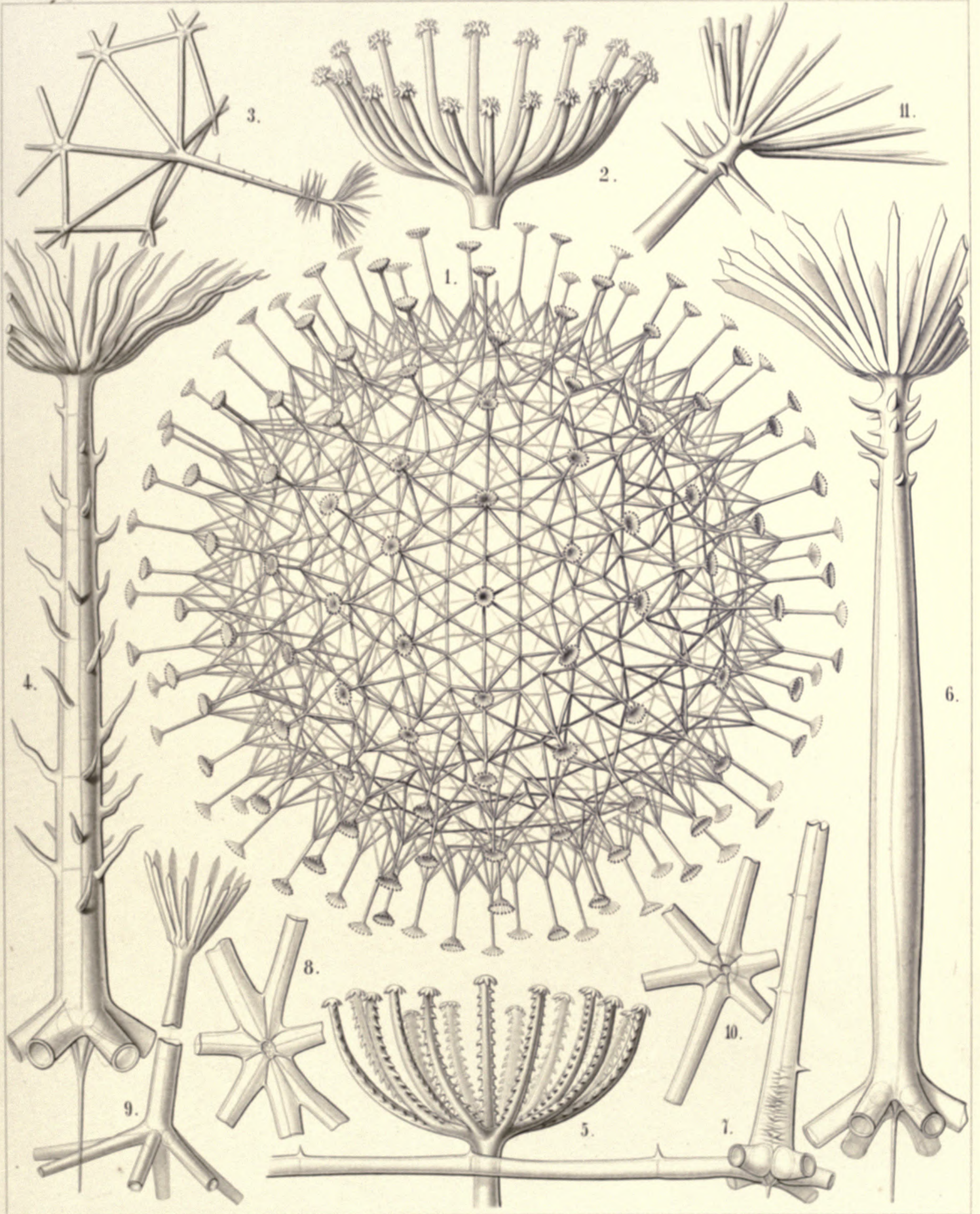


PLATE 110.

AULOSPHERIDA.

	Diam.	Page
Fig. 1. <i>Aulosцена mirabilis</i> , n. sp., . . . . .	× 50	1628
The complete shell, representing a regular latticed sphere, which is composed of equal hexagonal pyramids; the top of each pyramid bears a radial tube with a terminal corona.		
Fig. 2. <i>Aulosцена mirabilis</i> , n. sp., . . . . .	× 600	1628
Terminal corona of a single radial tube.		
Fig. 3. <i>Aulosцена penicillus</i> , n. sp., . . . . .	× 200	1629
A single tent-shaped elevation or six-sided pyramid, bearing on the top a brush-shaped radial tube.		
Fig. 4. <i>Aulosцена flammabunda</i> , n. sp., . . . . .	× 400	1629
A single radial tube, with a centripetal free prolongation at the base and a verticil of undulate terminal branches at the distal end.		
Fig. 5. <i>Aulosцена serrata</i> , n. sp., . . . . .	× 600	1630
Terminal corona of a single radial tube.		
Fig. 6. <i>Aulosцена tentorium</i> , n. sp., . . . . .	× 400	1628
A single radial tube, with a centripetal prolongation at the base and a terminal corona at the distal end.		
Fig. 7. <i>Aulosцена gigantea</i> , n. sp., . . . . .	× 400	1629
Basal part of a radial tube, exhibiting the internal axial thread and its connection with the six tubes, which form the edges of a flat six-sided pyramid (usually more elevated than the figure exhibits).		
Fig. 8. <i>Aulosцена spectabilis</i> , n. sp., . . . . .	× 400	1628
Apex of an abnormal pyramid (sometimes occurring), in which seven radial tubes are united, instead of six.		
Fig. 9. <i>Aulosцена spectabilis</i> , n. sp., . . . . .	× 800	1628
Basal part of a radial tube, in the top of a flat six-sided pyramid; above it the distal part of the same tube with its terminal corona (middle part of the tube wanting).		
Fig. 10. <i>Aulosцена verticillus</i> , n. sp., . . . . .	× 300	1629
Apex of a six-sided pyramid, seen from the inside.		
Fig. 11. <i>Aulosцена verticillus</i> , n. sp., . . . . .	× 400	1629
Distal part of a single radial tube, with the terminal corona.		





E. Haeckel and J. G. Rebecq.

R. S. Sars, Ten. Lohng.

AULOSCENA.



PLATE 111.

Legion PHÆODARIA.

Order PHÆOSPHERIA.

Family AULOSPHERIDA.

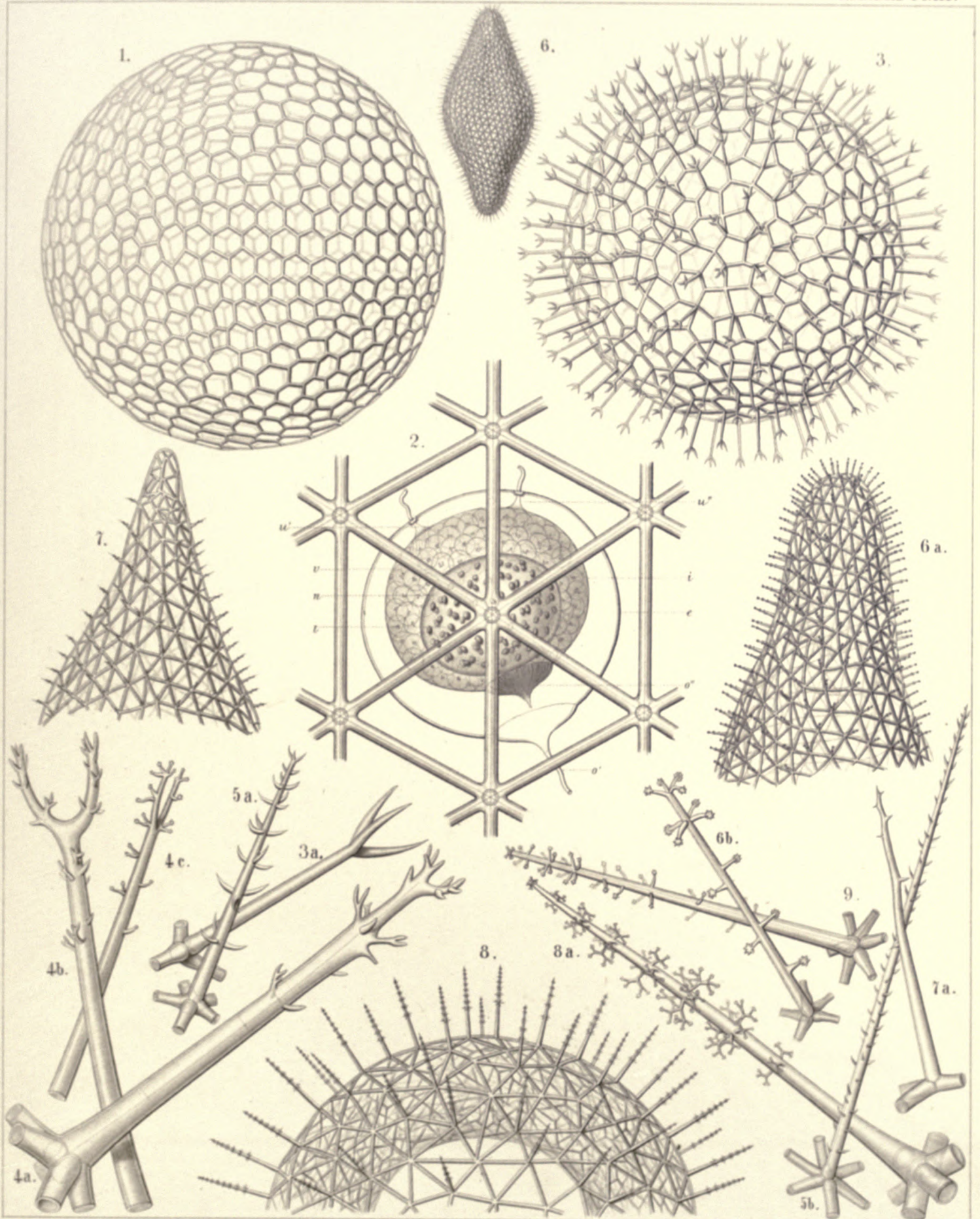


PLATE 111.

AULOSPHERIDA.

	Diam.	Page
Fig. 1. <i>Aulonia hexagonia</i> , n. sp., The complete spherical shell.	× 30	1634
Fig. 2. <i>Aularia ternaria</i> , n. sp., A group of six triangular meshes, with seven nodal points of radial tubes. Behind the central capsule, with its double membrane ( <i>e</i> , outer; <i>i</i> , inner) and radiate operculum ( <i>o</i> ); <i>u</i> , the two outer parapylæ; <i>v</i> , vacuoles in the protoplasm. The ellipsoidal nucleus ( <i>n</i> ) contains numerous nucleoli ( <i>l</i> ).	× 300	1621
Fig. 3. <i>Aulastrum triceros</i> , n. sp., The complete shell.	× 50	1635
Fig. 3a. <i>Aulastrum triceros</i> , n. sp., A single radial tube.	× 300	1635
Figs. 4a, 4b, 4c. <i>Aulastrum dendroceros</i> , n. sp., Three single radial spines (taken from three different specimens).	× 400	1635
Fig. 5a. <i>Aulophacus lenticularis</i> , n. sp., A single radial spine.	× 300	1631
Fig. 5b. <i>Aulophacus amphidiscus</i> , n. sp., A single radial spine.	× 300	1631
Fig. 6. <i>Aulatractus fusiformis</i> , n. sp., The complete shell, five times enlarged.	× 5	1632
Fig. 6a. <i>Aulatractus fusiformis</i> , n. sp., Apical part of the shell.	× 20	1632
Fig. 6b. <i>Aulatractus fusiformis</i> , n. sp., A single radial tube.	× 400	1632
Fig. 7. <i>Aulatractus diploconus</i> , n. sp., Apical part of the shell.	× 20	1632
Fig. 7a. <i>Aulatractus diploconus</i> , n. sp., A single radial tube.	× 400	1632
Fig. 8. <i>Auloplegma perplexum</i> , n. sp., Half the shell.	× 50	1630
Fig. 8a. <i>Auloplegma perplexum</i> , n. sp., A single radial tube.	× 400	1630
Fig. 9. <i>Auloplegma spongiosum</i> , n. sp., A single radial tube.	× 300	1631





1. AULONIA, 2-5. AULOSPHERA, 6. 7. AULATRACTUS,  
8. AULOPLEGMA.



PLATE 112.

Legion PHÆODARIA.

Order PHÆOSPHERIA.

Family CANNOSPHERIDA.

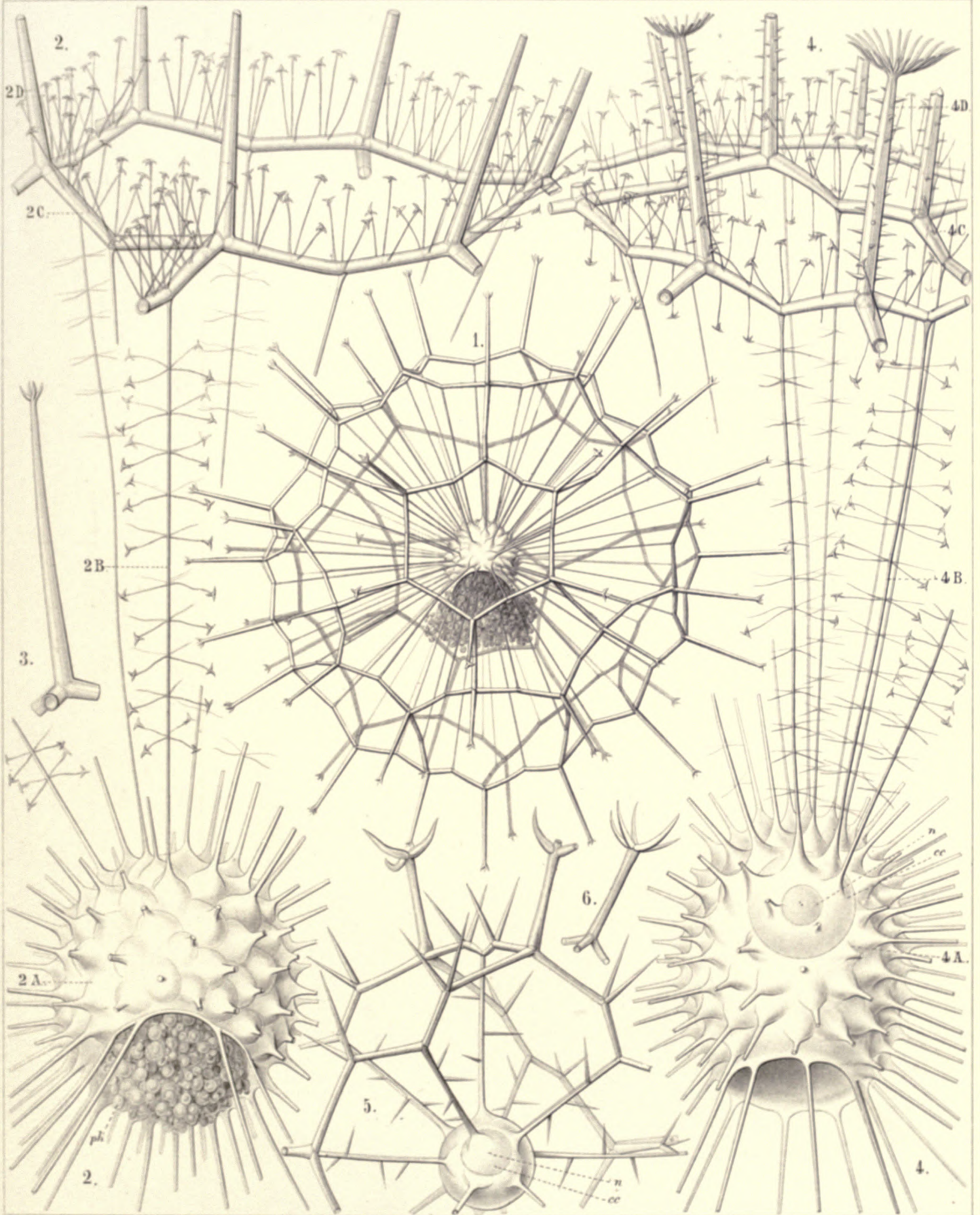


PLATE 112.

CANNOSPHERIDA.

	Diam.	Page
Fig. 1. <i>Cannosphæra antarctica</i> , n. sp., . . . . .	× 50	1640
The entire shell. The inner mammillate shell, from the mouth of which is prominent the phæodium, is connected by numerous radial beams with the outer shell.		
Fig. 2. <i>Cannosphæra antarctica</i> , n. sp., . . . . .	× 200	1640
The inner shell, from the mouth of which is prominent the phæodium, and a single hexagonal mesh of the outer shell, connected with the former by thin radial threads.		
Fig. 3. <i>Cannosphæra antarctica</i> , n. sp., . . . . .	× 200	1640
A single radial spine, with four terminal branches.		
Fig. 4. <i>Cannosphæra pacifica</i> , n. sp., . . . . .	× 200	1641
The inner shell, exhibiting on its base the widely open mouth, and in its upper half the transparent spherical central capsule with its nucleus. Of the outer shell (which is connected with the inner by thin radial threads), only a few polygonal meshes are visible.		
Fig. 5. <i>Cannosphæra atlantica</i> , n. sp., . . . . .	× 200	1640
The inner shell, connected by spiny radial beams with the outer shell, a quadrant only of which is visible,		
Fig. 6. <i>Cannosphæra atlantica</i> , n. sp., . . . . .	× 200	1640
A single radial spine, with five terminal branches.		





Diesselhoff and J. Hilgner del.

Ed. Jena Lithogr.

CANNOSPHAERA.



PLATE 113.

Legion PHÆODARIA.

Order PHÆOGROMIA.

Family CASTANELLIDA.



PLATE 114.

Legion PHÆODARIA.

Orders PHÆOCYSTINA ET PHÆOGROMIA.

Families CANNORRHAPHIDA et CIRCOPORIDA.

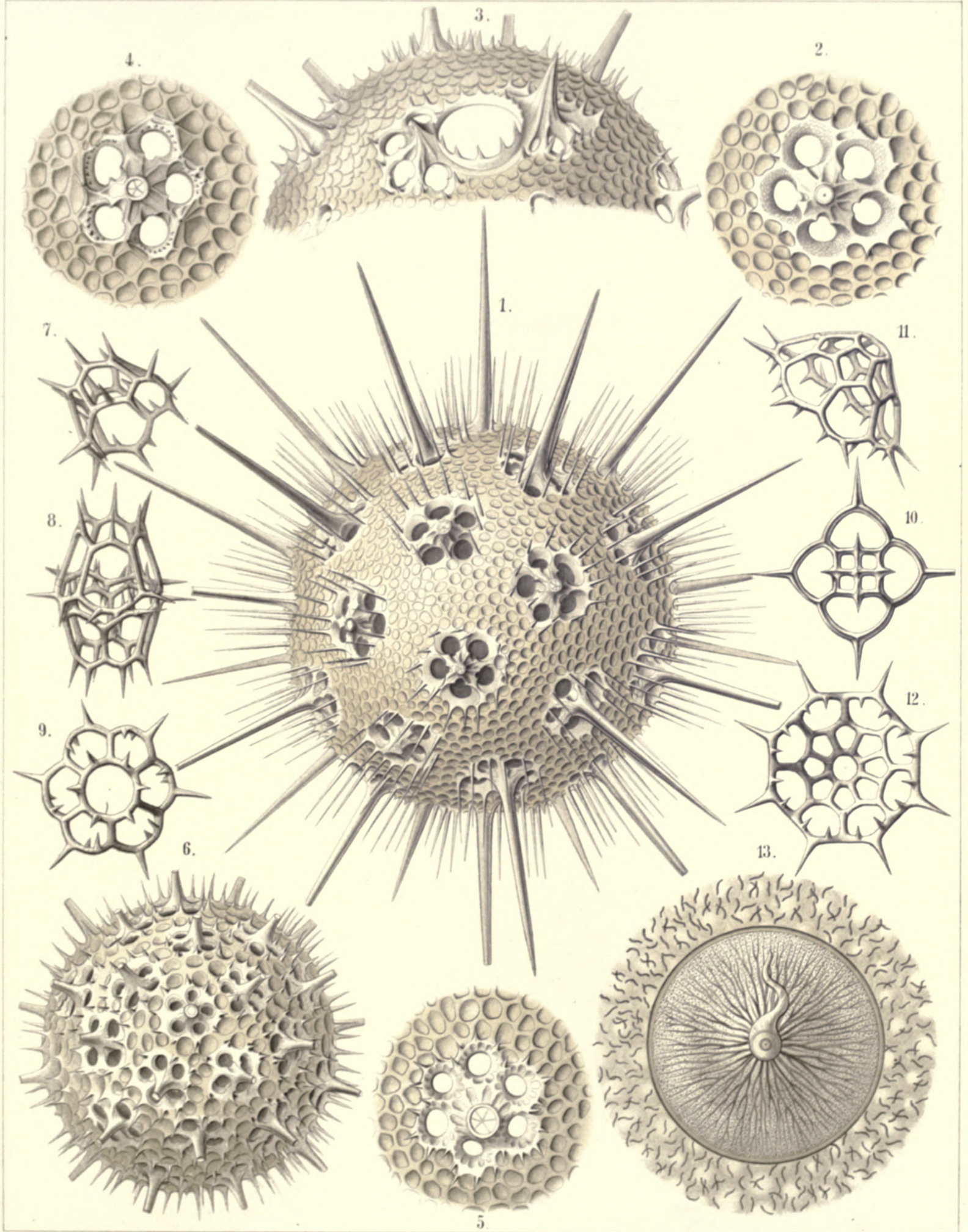


PLATE 114.

CANNORRHAPHIDA et CIRCOPORIDA.

	Diam.	Page
Fig. 1. <i>Haeckeliana darwiniana</i> , n. sp., . . . . . A complete shell.	× 200	1702
Fig. 2. <i>Haeckeliana darwiniana</i> , n. sp., . . . . . A single coronet of pores.	× 400	1702
Fig. 3. <i>Haeckeliana gætheana</i> , n. sp., . . . . . The oral part of the shell with the mouth.	× 300	1702
Fig. 4. <i>Haeckeliana lamarckiana</i> , n. sp., . . . . . A single coronet of pores.	× 400	1701
Fig. 5. <i>Haeckeliana maxima</i> , n. sp., . . . . . A single coronet of pores.	× 300	1701
Fig. 6. <i>Haeckeliana porcellana</i> , John Murray, . . . . . A complete shell.	× 200	1701
Fig. 7. <i>Distephanus corona</i> , n. sp., . . . . . A single pileated piece (half from the side, half from below).	× 800	1566
Fig. 8. <i>Distephanus corona</i> , n. sp., . . . . . Two coupled pileated pieces caught into one another (twin-piece).	× 800	1566
Fig. 9. <i>Distephanus corona</i> , n. sp., . . . . . A single pileated piece, seen from above.	× 800	1566
Fig. 10. <i>Cannopilus diplostaurus</i> , n. sp., . . . . . A single pileated piece, seen from above.	× 800	1568
Fig. 11. <i>Cannopilus cyrtoides</i> , n. sp., . . . . . A single pileated piece, seen obliquely from the side.	× 800	1569
Fig. 12. <i>Cannopilus cyrtoides</i> , n. sp., . . . . . A single pileated piece, seen from below.	× 800	1569
Fig. 13. <i>Haeckeliana porcellana</i> , John Murray, . . . . . The radiate operculum of the central capsule.	× 600	1526





E. Haeckel and A. C. Sars, Del.

Lithogr. J. Neumann, Neudamm.

1-6. HAECKELIANA, 7-9. DISTEPHANUS, 10-13. CANNOPILUS.



PLATE 115.

CONTENTS.

1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10

**PLATE 115.**

**Legion PHÆODARIA.**

**Order PHÆOGROMIA.**

**Family CIRCOPORIDA.**



PLATE 115.

CIRCOPORIDA.

		Diam.	Page
Fig. 1.	<i>Circoporus sexfuscinus</i> , n. sp., . . . . .	× 100	1695
	The cruciform mouth is visible in the upper part of the figure, to the right.		
Fig. 2.	<i>Circoporus sexfuscinus</i> , n. sp., . . . . .	× 200	1695
	A single radial spine, with four cruciate pores at the base.		
Fig. 3.	<i>Circoporus sexfuscinus</i> , n. sp., . . . . .	× 600	1695
	The radiate operculum of the central capsule, with the proboscis.		
Fig. 4.	<i>Circospathis furcata</i> , n. sp., . . . . .	× 100	1696
	Five of the nine spines are visible, two others (on the upper face) broken off. Between the latter the pentagonal mouth (with five teeth).		
Fig. 5.	<i>Circospathis furcata</i> , n. sp., . . . . .	× 300	1696
	The mouth with its five teeth.		
Fig. 6.	<i>Circospathis furcata</i> , n. sp., . . . . .	× 400	1696
	A piece of the shell with a radial spine.		
Fig. 7.	<i>Circospathis furcata</i> , n. sp., . . . . .	× 400	1696
	Vertical section through the base of a radial spine, to show the central funicle.		
Fig. 8.	<i>Circogonia dodecacantha</i> , n. sp., . . . . .	× 100	1698
	The central capsule with the elliptical nucleus (to the right) and the dark phæodium (to the left) are visible, in the upper part (to the left) the mouth of the shell, with six teeth.		
Fig. 9.	<i>Circogonia dodecacantha</i> , n. sp., . . . . .	× 400	1698
	A fragment of the shell, exhibiting its peculiar structure (needles tangentially scattered in the cement of the porcellanous substance), and a circle of nine pores around the base of a broken spine.		
Fig. 10.	<i>Circospathis tetrodonta</i> , n. sp., . . . . .	× 400	1697
	The mouth with four teeth, in profile view.		





E. Haeckel and A. Göttsch, Del.

E. Göttsch, Jenæ, Lithogr.

1-3. CIRCOPORUS, 4-10. CIRCOSPETHIS.



PLATE 116.

Legion PHÆODARIA.

Order PHÆOGROMIA.

Families MEDUSETTIDA et CIRCOPORIDA.

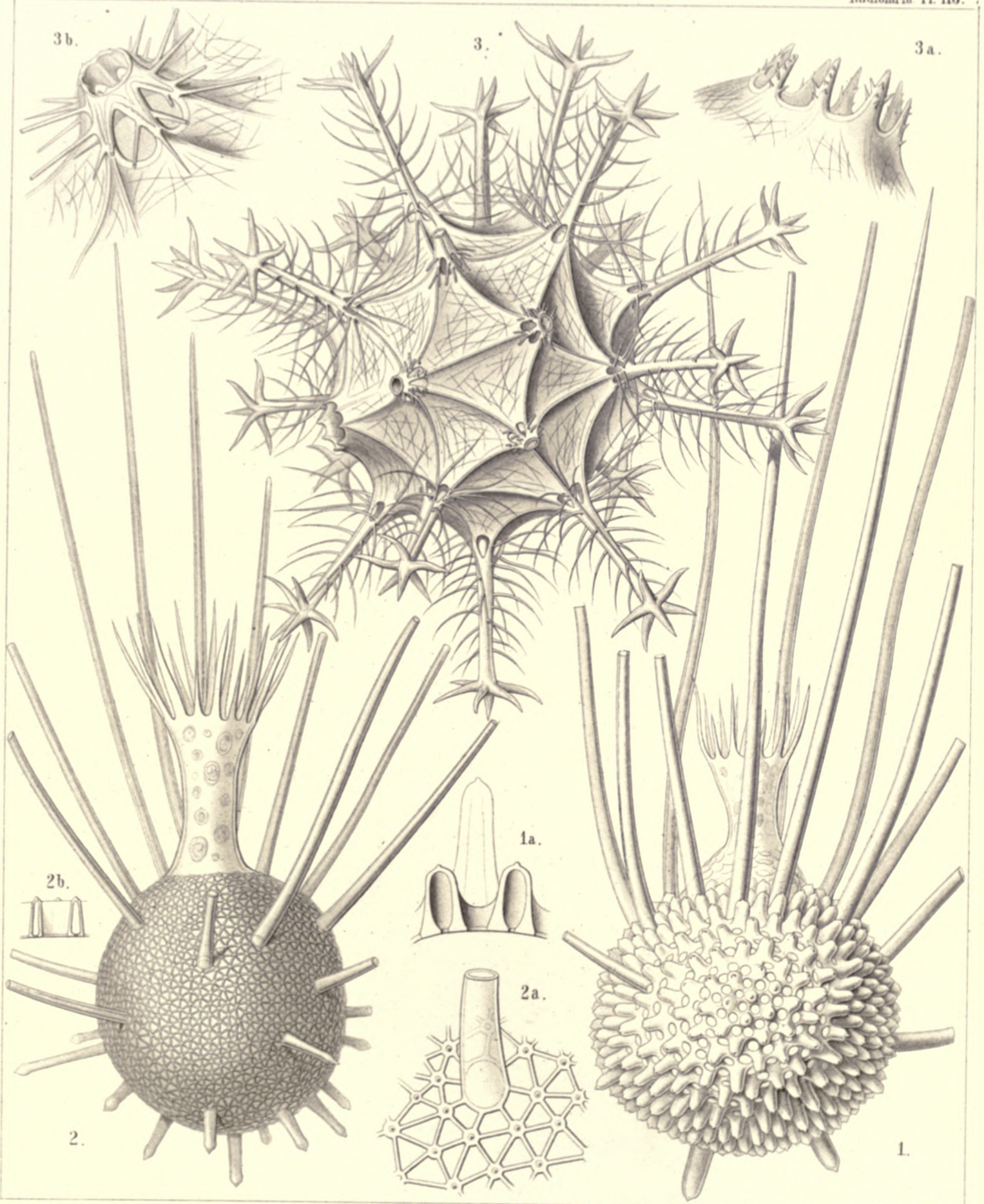


PLATE 116.

MEDUSETTIDA et CIRCOPORIDA.

	Diam.	Page
Fig. 1. <i>Polypetta mammillata</i> , n. sp., . . . . .	× 500	1677
In the upper part of the figure the dentate proboscis.		
Fig. 1a. Vertical section through the shell-wall, showing two of the hollow alveoles, opening on its inside, . . . . .	× 1000	
Fig. 2. <i>Polypetta tabulata</i> , n. sp., . . . . .	× 500	1677
In the upper part of the figure the dentate proboscis.		
Fig. 2a. A piece of the shell, seen from the surface, with the triangular plates, . . . . .	× 1000	
Fig. 2b. Vertical section through the shell-wall, with an alveole, . . . . .	× 1000	
Fig. 3. <i>Circostephanus coronarius</i> , n. sp., . . . . .	× 150	1699
The polyhedral shell exhibits in its wall the small tangential needles. The radial spines are partly broken off. The mouth of the shell, surrounded by eight short conical teeth, is visible on the left side of the figure.		
Fig. 3a. The mouth of the shell, seen in profile, with eight conical spinulate teeth, . . . . .	× 400	
Fig. 3b. The base of a radial spine broken off, to show the corona of (five or six) basal pores, . . . . .	× 400	





E. Hervey, and A. Gibbich Del

E. Gibbich, Jena. Lithogr

1. 2. POROSPETHIS, 3. CIRCOSTEPHANUS.



PLATE 117.

Legion PHÆODARIA.

Orders PHÆOCYSTINA ET PHÆOGROMIA.

Families CANNORRHAPHIDA, MEDUSETTIDA et CIRCOPORIDA.

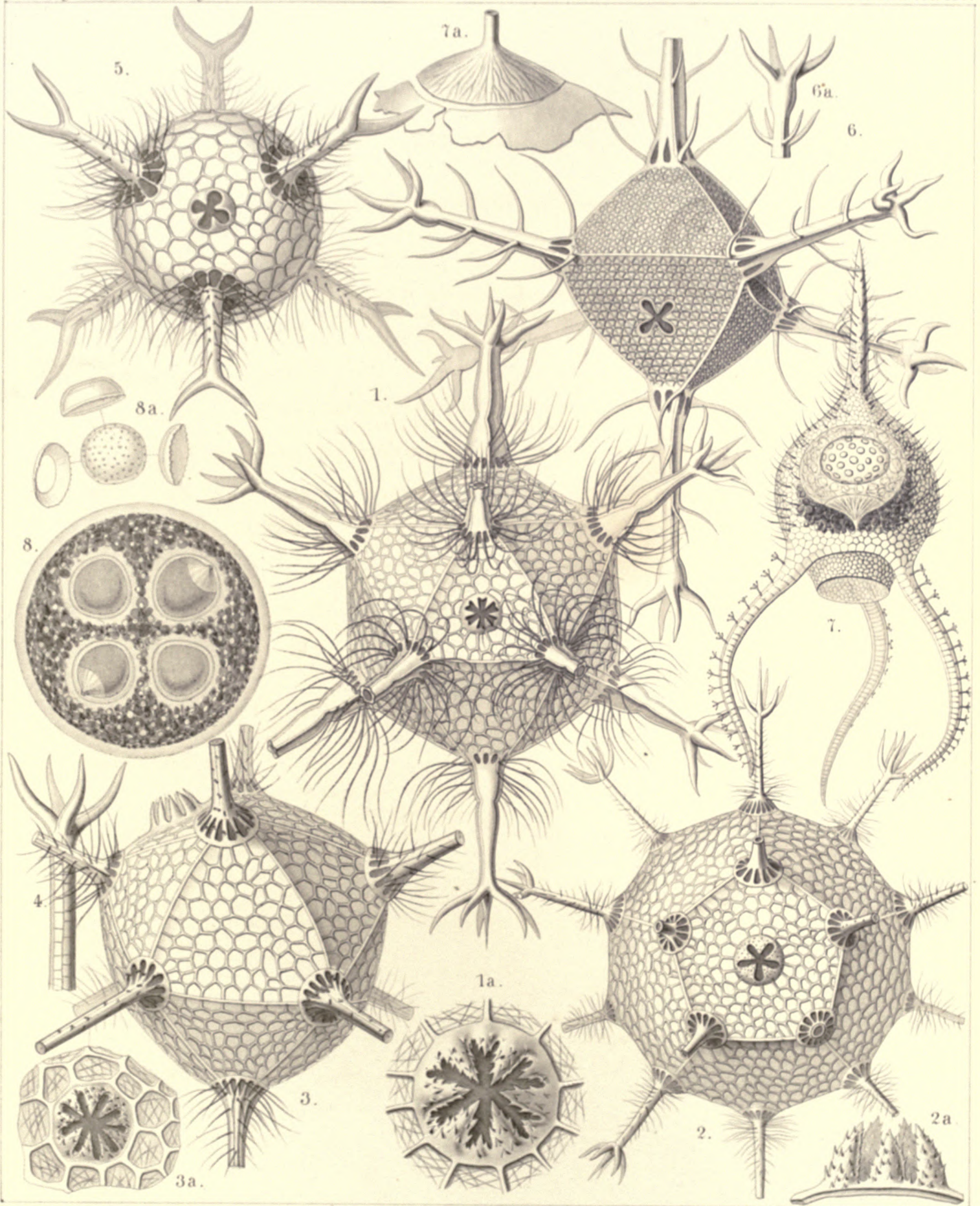


PLATE 117.

CANNORRHAPHIDA, MEDUSETTIDA et CIRCOPORIDA.

	Diam.	Page
Fig. 1. <i>Circogonia icosahedra</i> , n. sp., . . . . .	× 80	1698
The entire shell, with twelve radial tubes and twenty triangular faces. In the centre of one face is the mouth, with six teeth.		
Fig. 1a. The mouth alone, with its six spinulate teeth, . . . . .	× 400	
Fig. 2. <i>Circorrhagma dodecahedra</i> , n. sp., . . . . .	× 80	1699
The entire shell, with twenty radial tubes and twelve pentagonal faces. In the centre of one face is the mouth, with five teeth.		
Fig. 2a. The mouth alone, with its five spinulate teeth, seen in profile, . . . . .	× 200	
Fig. 3. <i>Circospathis novena</i> , n. sp., . . . . .	× 100	1696
The entire shell, with nine radial tubes and fourteen triangular faces. In one face (to the left above) is the mouth with nine teeth.		
Fig. 3a. The mouth alone, with its nine spinulate teeth, . . . . .	× 150	
Fig. 4. <i>Circoporus hexastylus</i> , n. sp., . . . . .	× 80	1695
A single radial spine.		
Fig. 5. <i>Circoporus sexfurcus</i> , n. sp., . . . . .	× 80	1694
The entire spherical shell with six forked and ciliated radial tubes. In the centre the cruciform mouth with four teeth.		
Fig. 6. <i>Circoporus octahedrus</i> , n. sp., . . . . .	× 300	1695
The entire shell, with six verticillate radial tubes and eight triangular faces. In the centre of one face is the mouth, with four teeth.		
Fig. 7. <i>Cortinetta tripodiscus</i> , n. sp., . . . . .	× 300	1667
The entire shell with the enclosed central capsule, and the phæodium around the astropyle.		
Fig. 7a. The astropyle, partly detached from the wall of the central capsule, seen in profile, . . . . .	× 800	
Fig. 8. <i>Catinulus quadrifidus</i> , n. sp., . . . . .	× 80	1553
A complete specimen, with four equal central capsules, united in a single spherical calymma.		
Fig. 8a. Some single pieces of the skeleton, . . . . .	× 400	





E. Haeckel and A. Giltsch, Del.

A. Giltsch, Jens, Lithogr.

1. CIRCOGONIA . 2. CIRCORRHEGMA . 3. CIRCOSPETHIS .  
 4-6. CIRCOPORUS , 7. CORTINETTA , 8. CATINULUS .



PLATE 118.

Legion PHÆODARIA.

Order PHÆOGROMIA.

Family MEDUSETTIDA.

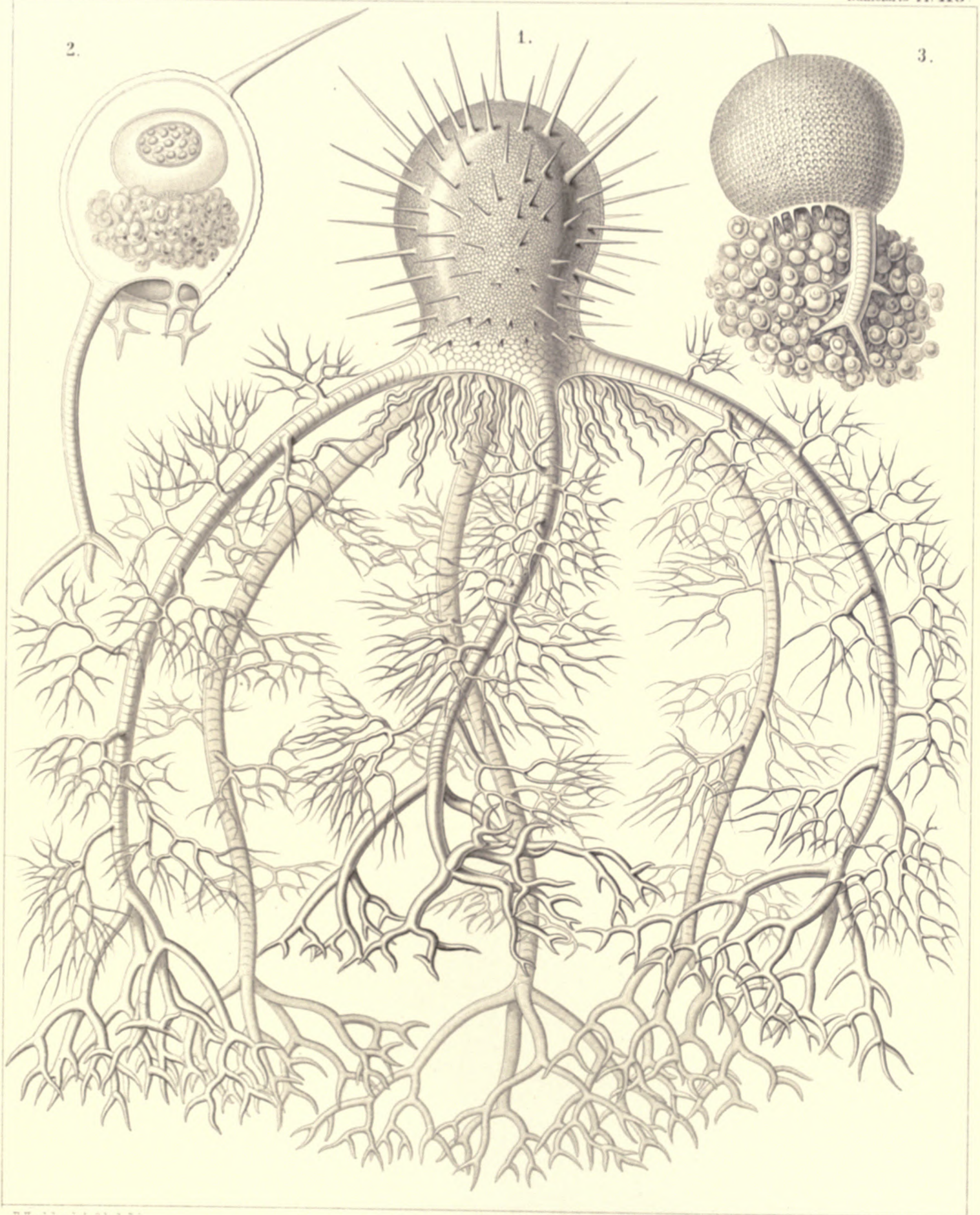


PLATE 118.

MEDUSETTIDA.

- |  | Diam. | Page |
|--|-------|------|
| Fig. 1. <i>Gazelletta melusina</i> , n. sp., . . . . .   | × 300 | 1674 |
| <p>From the peristome of the thorny campanulate shell arise six large descending feet, which are studded with arborescent fragile lateral branches, and armed at the distal end with stouter dichotomous terminal branches.</p>  |       |      |
| Fig. 2. <i>Euphysetta staurocodon</i> , n. sp., . . . . .  | × 300 | 1670 |
| <p>The peristome of the ovate shell bears an odd large foot with three terminal branches and three cruciate rudimentary feet. In the upper part of the shell-cavity is visible the sphaeroidal central capsule (containing a nucleus of half the size, with numerous nucleoli); in the lower half the dark pigment-masses of the green phæodium.</p> |       |      |
| Fig. 3. <i>Euphysetta ampicodon</i> , n. sp., . . . . .  | × 300 | 1670 |
| <p>The shell-wall exhibits the regular alveolate structure. From the mouth are prominent large masses of the phæodium, which is more voluminous than the shell-cavity, and seems to contain nucleated cells.</p>   |       |      |





E. Haeckel and A. Schmidt Del.

L. Strauch, Jena, Lithogr.

1. GAZELLETTA, 2. 3. EUPHYSETTA.



PLATE 119.

Legion PHÆODARIA.

Order PHÆOGROMIA.

Family MEDUSETTIDA.

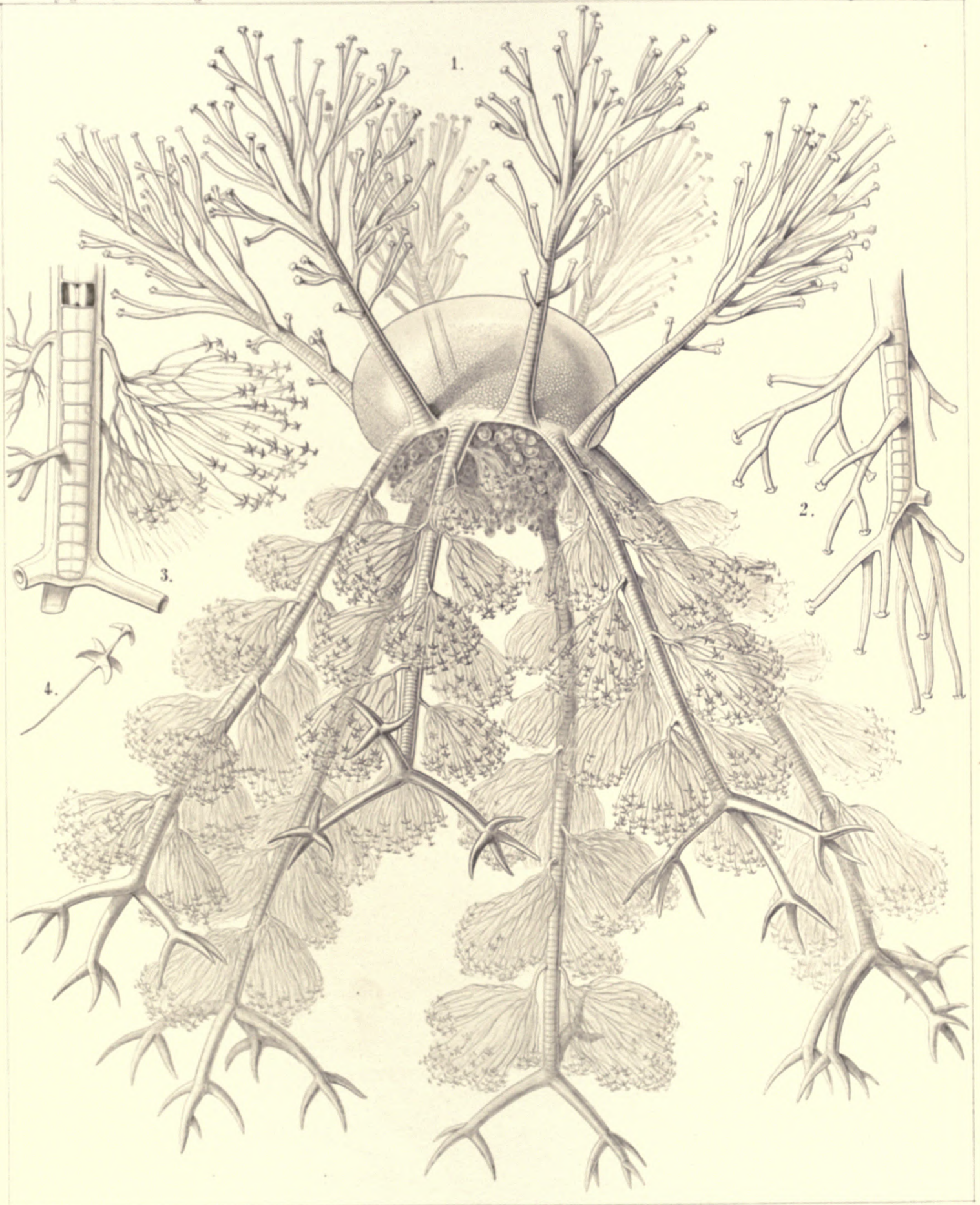


PLATE 119.

MEDUSETTIDA.

	Diam.	Page
Fig. 1. <i>Gorgonetta mirabilis</i> , n. sp., . . . . .	× 100	1674
<p>The entire body. From the margin of the cap-shaped shell arise six ascending arborescent feet and six alternating descending feet, which are covered with anchor-pencils and branched at the distal end. From the mouth of the delicately alveolate shell depend prominent parts of the dark voluminous phæodium.</p>		
Fig. 2. <i>Gorgonetta mirabilis</i> , n. sp., . . . . .	× 300	1674
<p>The distal end of an ascending foot; the branches bear a terminal spathilla with small recurved teeth.</p>		
Fig. 3. <i>Gorgonetta mirabilis</i> , n. sp., . . . . .	× 300	1674
<p>The distal end of a descending foot, with three lateral anchor-pencils and three terminal branches (broken off). One alveole contains an air-bubble.</p>		
Fig. 4. <i>Gorgonetta mirabilis</i> , n. sp., . . . . .	× 600	1674
<p>A single thread of an anchor-pencil, with two quadridentate spathillæ, a larger proximal and a smaller distal (terminal).</p>		





K. H. Beckel and A. G. F. Sch. del.

E. J. Sch. Jena. lithogr.

GORGONETTA.



PLATE 120.

Legion PHÆODARIA.

Order PHÆOGROMIA.

Family MEDUSETTIDA.

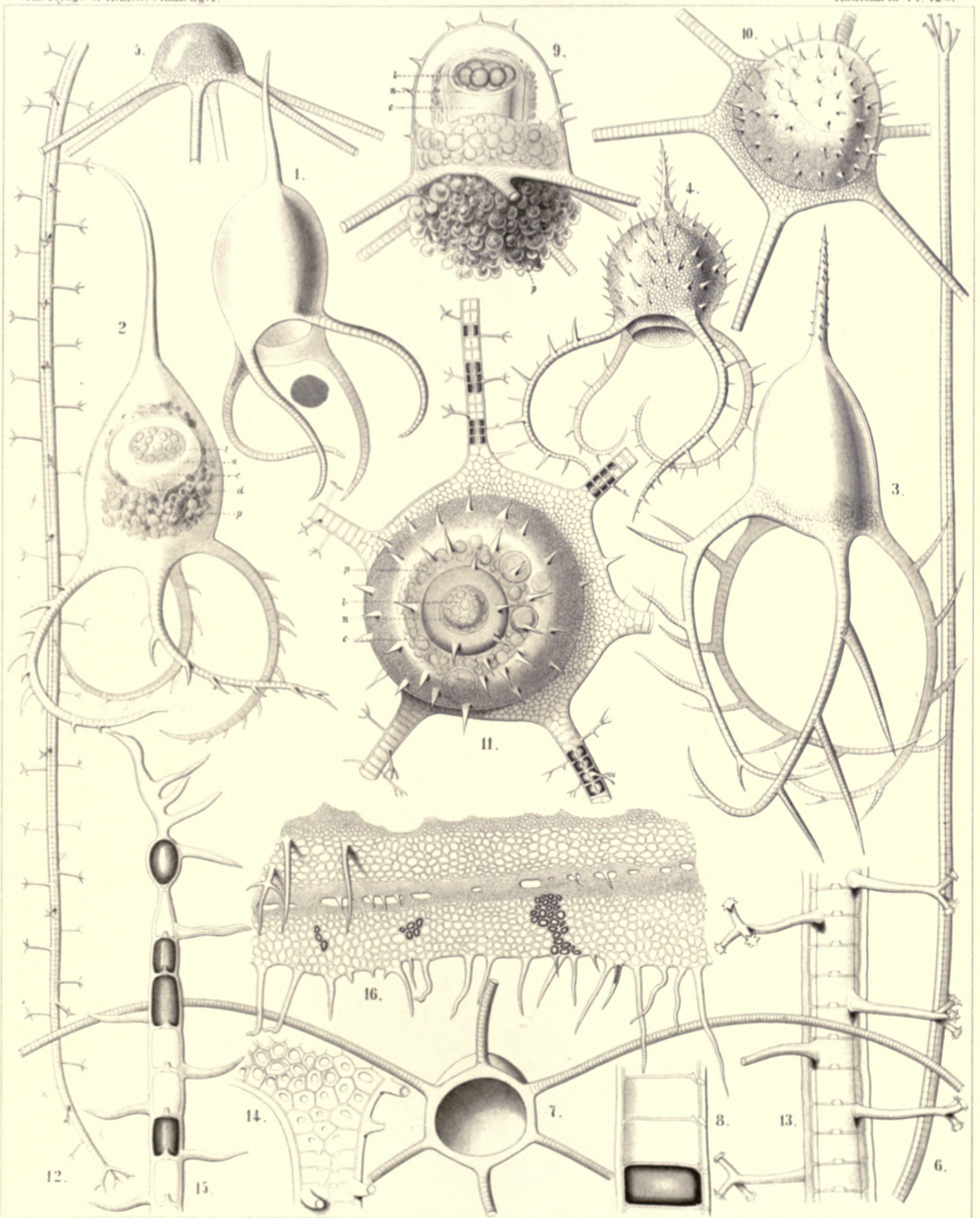


PLATE 120.

MEDUSETTIDA.

		Diam.	Page
Fig. 1.	<i>Medusetta codonium</i> , n. sp., . . . . .	× 400	1668
Fig. 2.	<i>Medusetta quadrigata</i> , n. sp., . . . . .	× 400	1668
	The central capsule is visible in the upper half, the phæodium in the lower half of the shell-cavity.		
Fig. 3.	<i>Medusetta tetranema</i> , n. sp., . . . . .	× 400	1669
Fig. 4.	<i>Medusetta craspedota</i> , n. sp., . . . . .	× 400	1669
Fig. 5.	<i>Gazelletta hexanema</i> , n. sp., . . . . .	× 300	1671
Fig. 6.	<i>Gazelletta bifurca</i> , n. sp., . . . . .	× 300	1672
	A single alveolate foot.		
Fig. 7.	<i>Gazelletta macronema</i> , n. sp., . . . . .	× 200	1671
	Oral view of the shell.		
Fig. 8.	<i>Gazelletta macronema</i> , n. sp., . . . . .	× 800	1671
	Three joints of an alveolate foot.		
Fig. 9.	<i>Gazelletta cyrtanema</i> , n. sp., . . . . .	× 300	1671
	The upper part of the shell encloses the central capsule with its nucleus. The voluminous phæodium is prominent over the mouth.		
Fig. 10.	<i>Gazelletta orthonema</i> , n. sp., . . . . .	× 200	1671
	The central capsule and its nucleus are visible in the shell-cavity.		
Fig. 11.	<i>Gazelletta schleinitzii</i> , n. sp., . . . . .	× 400	1673
	Oblique apical view, with the enclosed central capsule, the nucleus of which contains numerous nucleoli.		
Fig. 12.	<i>Gazelletta schleinitzii</i> , n. sp., . . . . .	× 300	1673
	A single alveolate foot.		
Fig. 13.	<i>Gazelletta trispathilla</i> , n. sp., . . . . .	× 400	1673
	The middle part of a foot.		
Fig. 14.	<i>Gazelletta robusta</i> , n. sp., . . . . .	× 300	1673
	The base of a foot, exhibiting the pores of the alveoli.		
Fig. 15.	<i>Gazelletta studeri</i> , n. sp., . . . . .	× 400	1673
	The distal end of a foot; four alveoli filled up by air-bubbles.		
Fig. 16.	<i>Gazelletta dendronema</i> , n. sp., . . . . .	× 300	1674
	A part of the velum, seen from the inside. The alveoles are partly filled by air.		





1-4. MEDUSETTA, 5-16. GAZELLETTA.

Egiltach, Jena, Litho.



PLATE 121.

Legion PHÆODARIA.

Order PHLEOCONCHIA.

Family CÆLODENDRIDA.

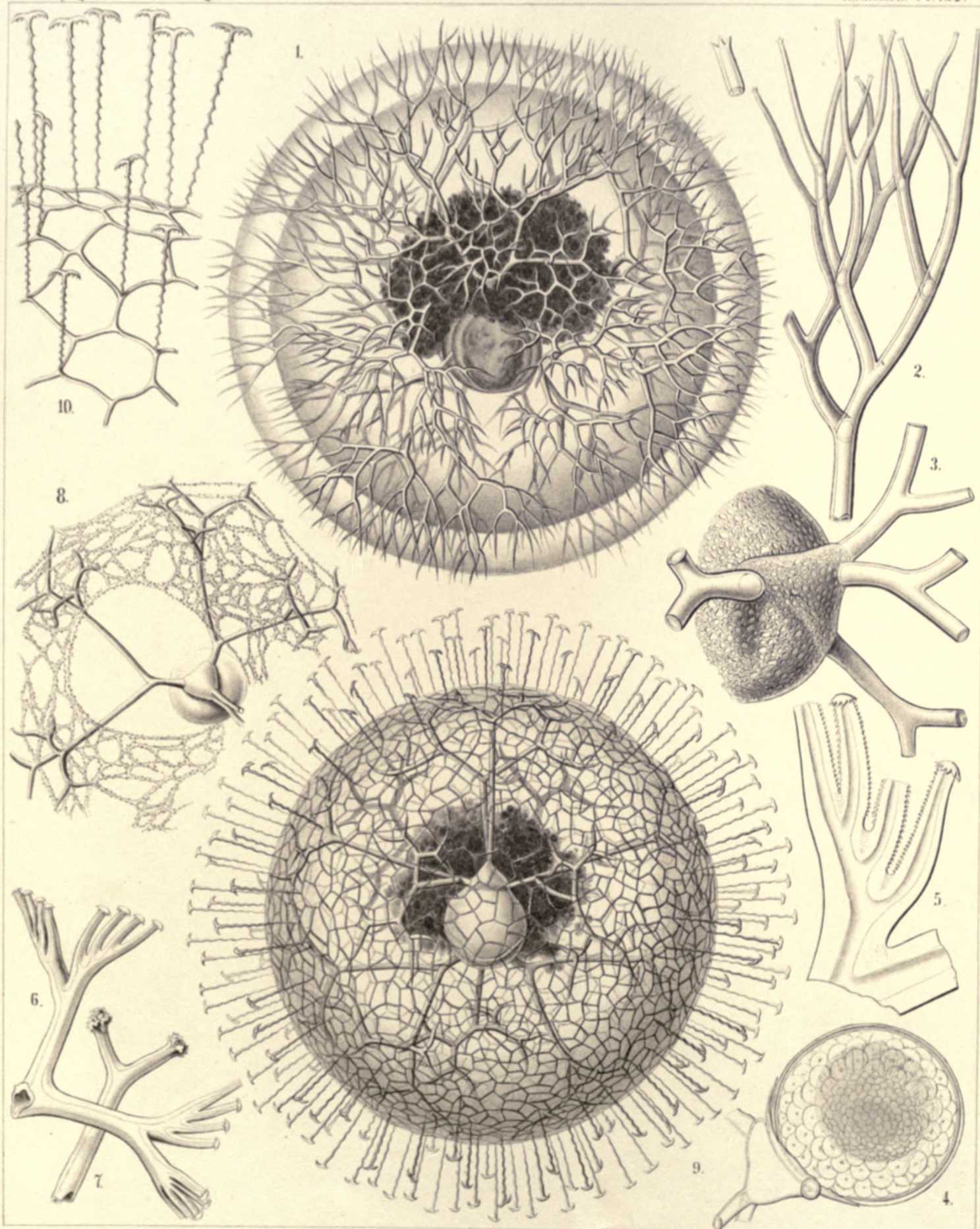


PLATE 121.

CÆLODENDRIDA.

	Diam.	Page
Fig. 1. <i>Cælodendrum furcatissimum</i> , n. sp., . . . . .	× 50	1735
A complete specimen with the central capsule and the big phæodium. The spherical calymma envelops almost the entire skeleton.		
Fig. 2. <i>Cælodendrum furcatissimum</i> , n. sp., . . . . .	× 300	1735
A distal branch with its terminal ramification.		
Fig. 3. <i>Cælodendrum furcatissimum</i> , n. sp., . . . . .	× 100	1735
One valve of the shell, with its galea and the four hollow forked tubes arising from it.		
Fig. 4. <i>Cælodendrum furcatissimum</i> , n. sp., . . . . .	× 100	1735
The central capsule with its nucleus; on the left side one valve of the closely enveloping shell (seen in vertical section), and its galea with the origin of the four tubes.		
Fig. 5. <i>Cælodendrum serratum</i> , n. sp., . . . . .	× 400	1737
A flabellate terminal branch.		
Fig. 6. <i>Cælodendrum flabellatum</i> , n. sp., . . . . .	× 150	1737
A flabellate terminal branch.		
Fig. 7. <i>Cælodendrum spinosissimum</i> , n. sp., . . . . .	× 300	1735
Forked distal end of a terminal branch.		
Fig. 8. <i>Cælodendrum cervicorne</i> , n. sp., . . . . .	× 150	1736
One valve of the shell, with its galea and the four tubes arising from it. A network of protoplasm connects the distal branches.		
Fig. 9. <i>Cælodrymus ancoratus</i> , n. sp., . . . . .	× 50	1738
A complete specimen, with the central capsule and the enveloping phæodium. The surface of the spherical calymma is covered by a dense network, from which arise numerous, anchor-bearing, radial tubules.		
Fig. 10. <i>Cælodrymus ancoratus</i> , n. sp., . . . . .	× 150	1738
A small piece of the superficial network of the skeleton, with the zigzag radial tubules arising from it, each of which bears an anchor with two recurved denticulate teeth on the distal end.		





E. Reichenow and A. Dittuschei.

E. Reichenow Lithogr.

1-8 COELODENDRUM, 9, 10. COELODRYMUS.



PLATE 122.

Legion PHÆODARIA.

Order PHÆOCONCHIA.

Family CÆLOGRAPHIDA.



PLATE 122.

CŒLOGRAPHIDA.

	Diam.	Page
Fig. 1. <i>Cælotholus octonus</i> , n. sp., . . . . .	× 30	1749
The entire bivalved shell, seen obliquely from the dorsal and somewhat from the right side, enveloped by the yellowish calymma.		
Fig. 2. <i>Cælotholus octonus</i> , n. sp., . . . . .	× 100	1749
One valve of the shell ( <i>h</i> ) with its large galea and the origin of the three styles. The base of the two lateral styles ( <i>g</i> <sup>1</sup> , <i>g</i> <sup>2</sup> ) is connected by two latticed lateral frenula ( <i>b</i> <sup>1</sup> , <i>b</i> <sup>2</sup> ) with the mouth ( <i>m</i> ) of the rhinocanna ( <i>t</i> ). The odd style ( <i>g</i> <sup>3</sup> ) is free.		
Fig. 3. <i>Cælothauma duodenum</i> , n. sp., . . . . .	× 20	1750
The entire shell, seen from the dorsal side. The long styles are enveloped by the yellowish calymma.		
Fig. 4. <i>Cælothauma duodenum</i> , n. sp., . . . . .	× 80	1750
One valve of the shell ( <i>h</i> ), seen from the apical side; <i>t</i> , rhinocanna; <i>m</i> , its mouth; <i>b</i> <sup>1</sup> , <i>b</i> <sup>2</sup> , the two lateral frenula; <i>g</i> <sup>1</sup> , <i>g</i> <sup>2</sup> , the two paired styles; <i>g</i> <sup>3</sup> , the odd style.		
Fig. 5. <i>Cælothauma duodenum</i> , n. sp., . . . . .	× 80	1750
One valve of the shell, seen in profile. Characters as in fig. 4.		
Fig. 6. <i>Cælothamnus bivalvis</i> , n. sp., . . . . .	× 30	1751
The entire shell, enveloped by the yellowish calymma, seen from the left side; between the two valves is the central capsule, with nucleus and astropyle.		
Fig. 7. <i>Cælothamnus bivalvis</i> , n. sp., . . . . .	× 100	1751
A single lateral anchor-pencil.		
Fig. 8. <i>Cælothamnus bivalvis</i> , n. sp., . . . . .	× 200	1751
Distal end of a style, with its anchor-pencils.		
Fig. 9. <i>Cælothamnus bivalvis</i> , n. sp., . . . . .	× 400	1751
A single anchor-thread, with its quadridentate terminal spathilla.		





E. Haeckel and A. Giltsch Del.

A. Giltsch Jena, Lithogr.

COELOTHOLUS.



PLATE 123.

Legion PHÆODARIA.

Order PHÆOCONCHIA.

Family CONCHARIDA.



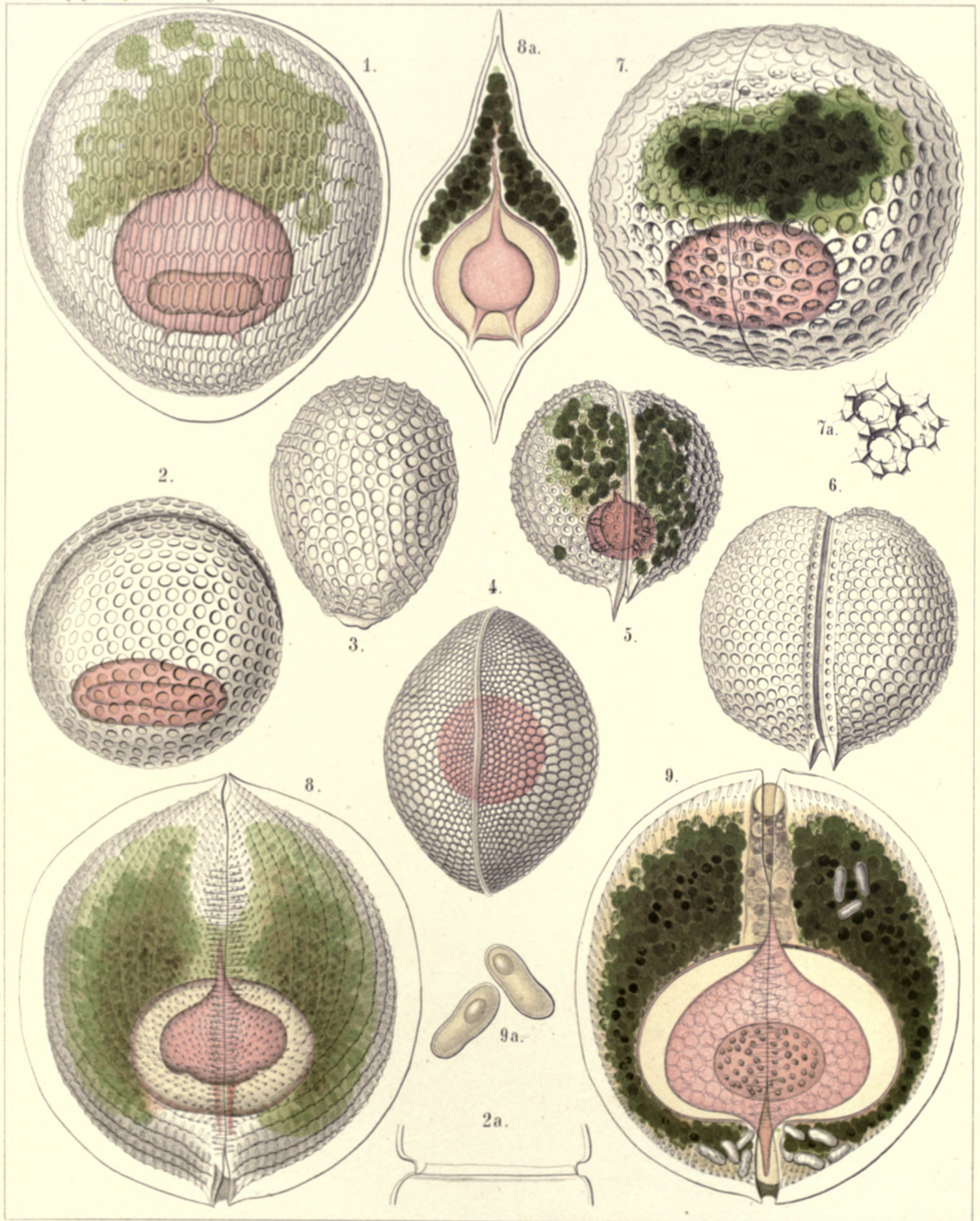
PLATE 123.

CONCHARIDA.

(The central capsule is coloured red in the figures of this plate, the phæodium green).

	Diam.	Page
Fig. 1. <i>Concharium diatomeum</i> , n. sp., . . . . .	×	1717
Dorsal view. The central capsule (red) exhibits above the anterior tubular main-opening (astropyle), and below the two small posterior lateral openings (right and left parapylæ).		
Fig. 2. <i>Concharium bivalvum</i> , n. sp., . . . . .	× 150	1717
Dorsal view. The central capsule is visible in the lower part, the margin of the two valves in the upper part of the figure.		
Fig. 2a exhibits the two smooth lateral margins of the valves, catching into one another. (Lateral view).		
Fig. 3. <i>Concharium nucula</i> , n. sp., . . . . .	×	1717
The dorsal valve alone, seen from the outside.		
Fig. 4. <i>Concharium bacillarium</i> , n. sp., . . . . .	×	1718
Lateral view from the smooth margin, by which the two valves are united.		
Fig. 5. <i>Conchasma radiolites</i> , n. sp., . . . . .	× 300	1719
Lateral view. In the aboral half of the shell-cavity lies the red central capsule, in the oral half the green phæodium.		
Fig. 6. <i>Conchasma sphaerulites</i> , n. sp., . . . . .	× 300	1719
Lateral view. On the aboral pole the two horns of the hinge.		
Fig. 7. <i>Conchellium tridacna</i> , n. sp., . . . . .	× 200	1720
Oblique lateral view (from the right and ventral side).		
Fig. 7a. Three pores of the same, with their hexagonal frames and six internal denticles, . . . . .		
	× 400	
Fig. 8. <i>Conchopsis carinata</i> , n. sp., . . . . .	× 150	1725
Lateral view, from the left side.		
Fig. 9. <i>Conchopsis lenticula</i> , n. sp., . . . . .	× 150	1726
Lateral view, from the right side. The two membranes of the central capsule are separated by a wide interval in this and the preceding figure. The nucleus contains numerous nucleoli.		
Fig. 9a. Two of the peculiar cells, which are contained in the green phæodium in large numbers, . . . . .		
	× 400	





F. Eschsch. and A. Sibirsk. Del.

Z. Sibirsk. Jena, Lithogr.

1-4. CONCHARIUM, 5, 6. CONCHASMA, 7. CONCHELLIUM, 8, 9. CONCHOPSIS.



PLATE 124.

Legion PHÆODARIA.

Order PHÆOCONCHIA.

Family CONCHARIDA.

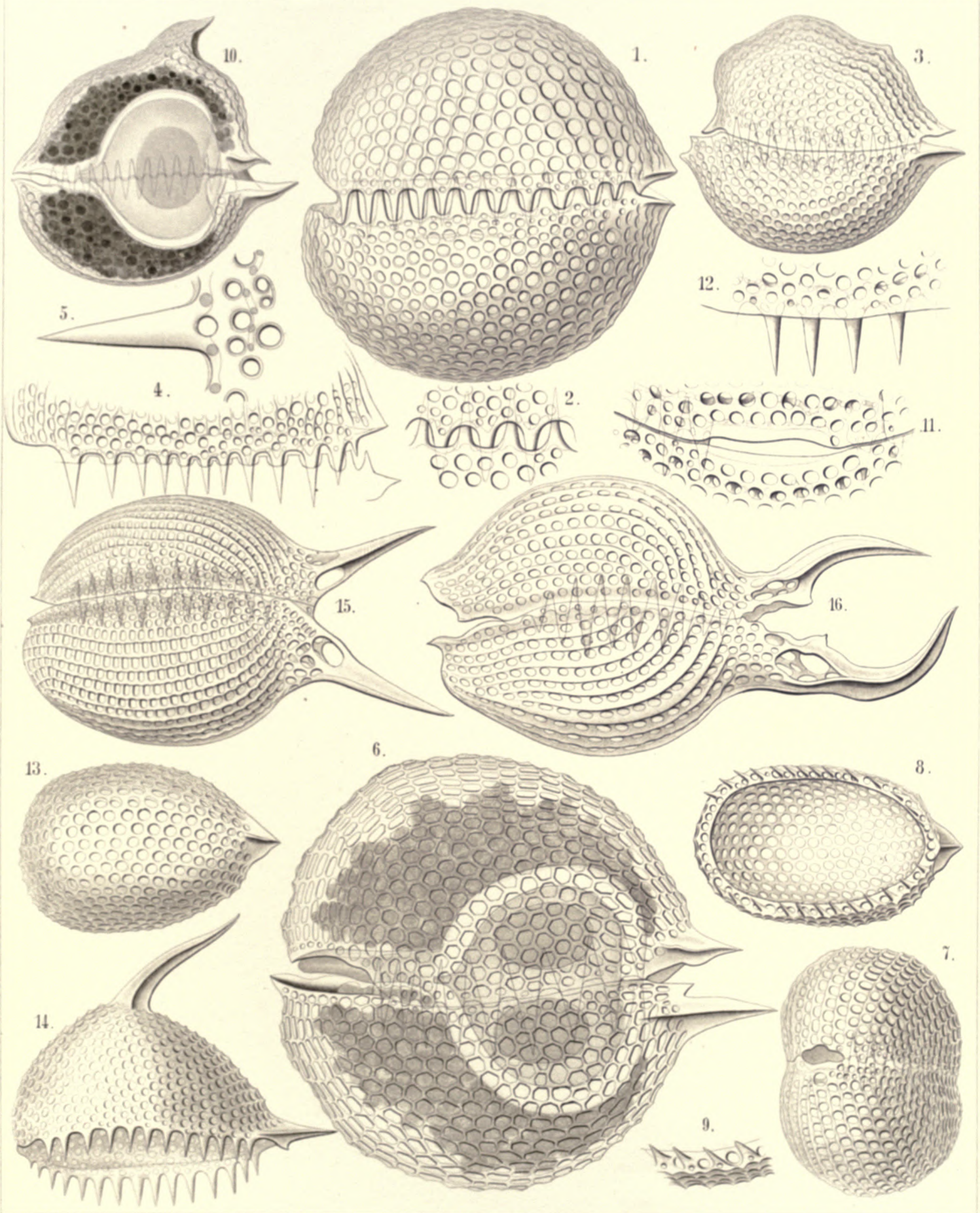


PLATE 124.

CONCHARIDA.

	Diam.	Page
Fig. 1. <i>Conchidium terebratula</i> , n. sp., Lateral view, from the left side.	× 400	1721
Fig. 2. <i>Conchidium terebratula</i> , n. sp., A piece of the frontal girdle-fissure, with the teeth of both valves catching into one another.	× 800	1721
Fig. 3. <i>Conchidium rhynchonella</i> , n. sp., Lateral view, from the left side.	× 200	1722
Fig. 4. <i>Conchidium leptæna</i> , n. sp., Girdle-fissure with the teeth, seen from the left side.	× 300	1722
Fig. 5. <i>Conchidium leptæna</i> , n. sp., A single tooth with its base.	× 800	1722
Fig. 6. <i>Conchidium thecidium</i> , n. sp., Lateral view, from the left side. In the oral part of the shell-cavity the dark phæodium, in the aboral part the central capsule with two nuclei (a dorsal and a ventral).	× 300	1721
Fig. 7. <i>Conchidium argiope</i> , n. sp., Oblique oral view (half from the anterior, half from the left side).	× 300	1722
Fig. 8. <i>Conchidium argiope</i> , n. sp., Dorsal valve, from below.	× 300	1722
Fig. 9. <i>Conchidium argiope</i> , n. sp., A piece of the valve margin, with four teeth.	× 600	1722
Fig. 10. <i>Conchonia diodon</i> , n. sp., Lateral view, from the left side. In the anterior part of the shell-cavity the dark phæodium, in the posterior part the central capsule with the nucleus. The two valves are connected at the posterior hinge by a ligament (to the right in the figure).	× 200	1723
Fig. 11. <i>Conchonia diodon</i> , n. sp., Mouth of the shell, with its two lips, seen from the oral pole.	× 400	1723
Fig. 12. <i>Conchonia diodon</i> , n. sp., A piece of the valve-margin, with four teeth.	× 400	1723
Fig. 13. <i>Conchonia triodon</i> , n. sp., Ventral valve, seen from the lower face.	× 300	1724
Fig. 14. <i>Conchonia triodon</i> , n. sp., Dorsal valve, seen from the left side.	× 300	1724
Fig. 15. <i>Conchoceras caudatum</i> , n. sp., Lateral view, from the left side.	× 300	1727
Fig. 16. <i>Conchoceras cornutum</i> , n. sp., Lateral view, from the left side.	× 200	1728





E. Ehrlich and A. Schmidt, Del.

E. Ehrlich, Jens. Lithogr.

1-14 CONCHIDIUM, 15, 16 CONCHOCERAS.



PLATE 125.

Legion PHÆODARIA.

Order PHÆOCONCHIA.

Family CONCHARIDA.

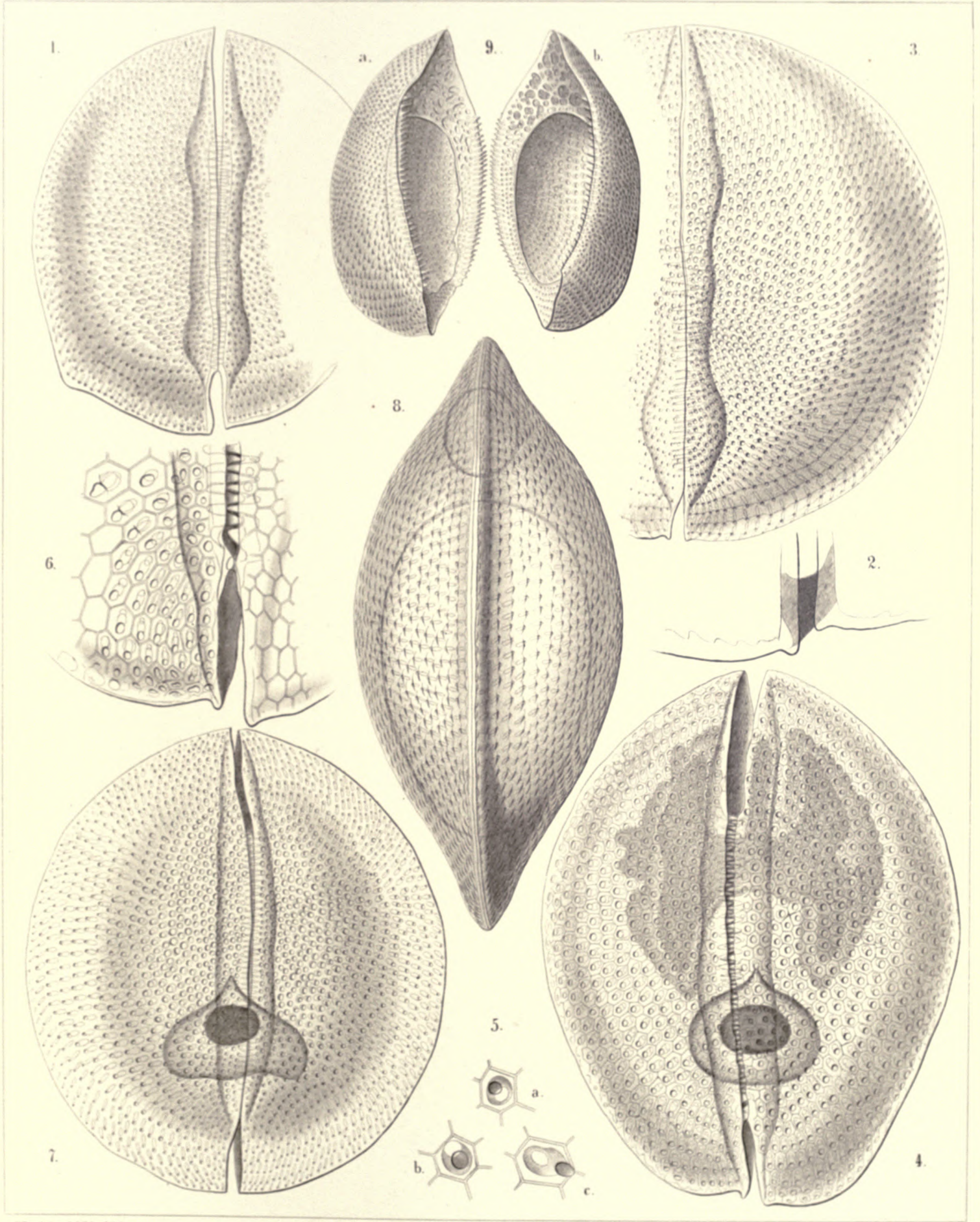


PLATE 125.

CONCHARIDA.

	Diam.	Page
Fig. 1. <i>Conchopsis aspidium</i> , n. sp., Lateral view, from the left side.	× 150	1726
Fig. 2. <i>Conchopsis aspidium</i> , n. sp., The hinge of another specimen, in which the two valves are connected by a ligament (as in figs. 8 and 9, Pl. 123).	× 300	1726
Fig. 3. <i>Conchopsis orbicularis</i> , n. sp., Lateral view, from the left side.	× 200	1725
Fig. 4. <i>Conchopsis navicula</i> , n. sp., Lateral view, from the right side. In the lower (posterior) half of the figure is visible the central capsule with its dark nucleus, in the upper (anterior) half the phæodium with two broad sagittal wings.	× 150	1727
Fig. 5. <i>Conchopsis navicula</i> , n. sp., Three single pores with their hexagonal external frame and the dilated internal ovate or ampullaceous channel.	× 400	1727
Fig. 6. <i>Conchopsis navicula</i> , n. sp., Hinge of the shell, from the right side.	× 400	1727
Fig. 7. <i>Conchopsis compressa</i> , n. sp., Lateral view from the left side. The triangular central capsule with the dark nucleus is visible.	× 150	1725
Fig. 8. <i>Conchopsis compressa</i> , n. sp., Dorsal view of the upper valve with its keel.	× 150	1725
Fig. 9. <i>Conchopsis pilidium</i> , n. sp., The two valves separated and seen obliquely, half from the lateral, half from the internal side. The inner opening of each valve is bordered and partly closed by a broad horizontal velum or diaphragm like the deck of a boat.	× 80	1726





E. Enekel and A. G. G. Del.

E. G. G. Jena. Lithogr.

CONCHOPSIS.



PLATE 126.

Legion PHÆODARIA.

Order PHÆOCONCHIA.

Family CÆLOGRAPHIDA.

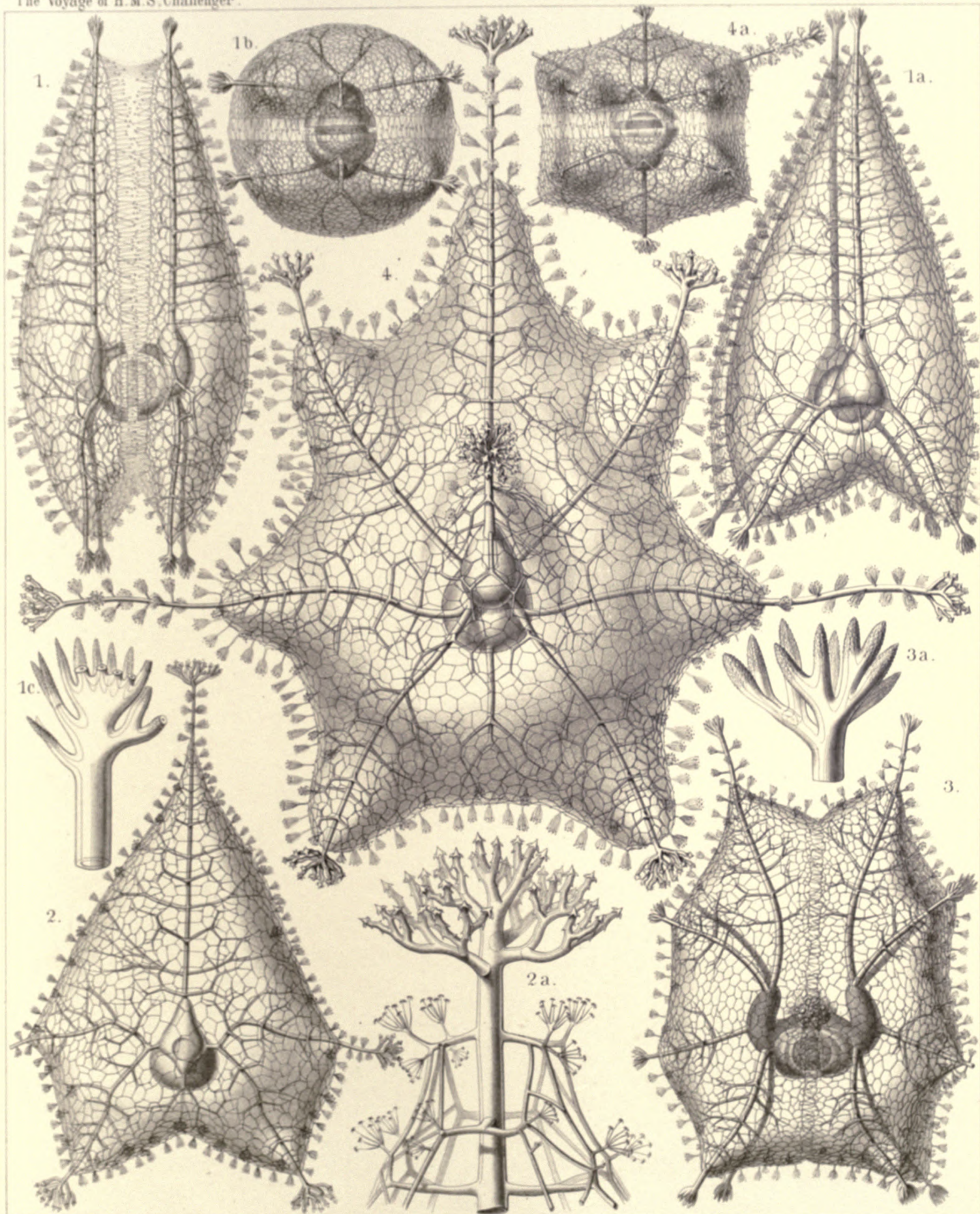


PLATE 126.

CÆLOGRAPHIDA.

	Diam.	Page
Figs. 1-1c. <i>Cælographis regina</i> , n. sp., . . . . .		1752
Fig. 1. Lateral view. The central capsule is visible between the two valves of the inner shell, the galeæ of which are filled by the phæodium, . . . . .	× 20	
Fig. 1a. Dorsal view (somewhat obliquely from the left side). The galeæ appear triangular, . . . . .	× 20	
Fig. 1b. Basal view, . . . . .	× 20	
Fig. 1c. Distal end of a style, . . . . .	× 300	
Figs. 2-2b. <i>Cælodecas sagittaria</i> , n. sp., . . . . .		1755
Fig. 2. One valve of the shell, seen from the outside, . . . . .	× 30	
Fig. 2a. Distal end of a style, . . . . .	× 300	
Figs. 3-3a. <i>Cælostylus bisenarius</i> , n. sp., . . . . .		1756
Fig. 3. Lateral view of the bivalved shell. The central capsule is visible between the two valves of the inner shell, the galeæ of which are filled by the phæodium, . . . . .	× 20	
Fig. 3a. Distal end of a style, . . . . .	× 300	
Figs. 4-4a. <i>Cælagalma mirabile</i> , n. sp., . . . . .		1759
Fig. 4. Dorsal view of the bivalved shell, . . . . .	× 30	
Fig. 4a. Basal view of the bivalved shell, . . . . .	× 10	





E. Haeckel and A. Giltach Del.

A. Giltach Jena, Lithogr.

1. COELOGRAPHIS. 2. COELODECAS. 3. COELOSTYLUS.  
4. COELAGALMA.



PLATE 127.

Legion PHÆODARIA.

Order PHLEOCONCHIA.

Family CÆLOGRAPHIDA.

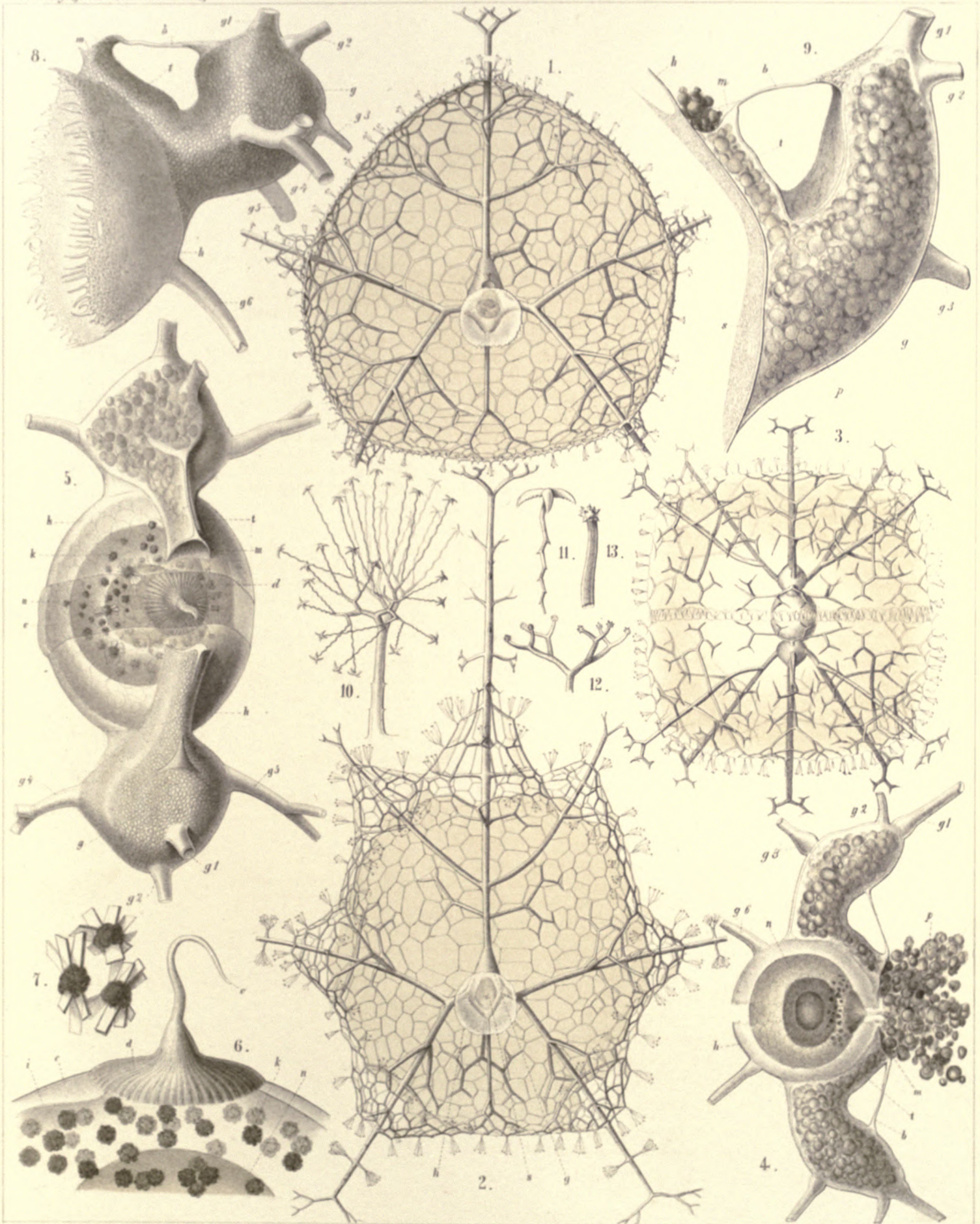


PLATE 127.

CÆLOGRAPHIDA.

		Diam.	Page
Fig. 1.	<i>Cæloplegma murrayanum</i> , n. sp., One valve of the bivalved shell, seen from the inside, of the usual ovate form.	× 40	1757
Fig. 2.	<i>Cæloplegma murrayanum</i> , n. sp., One valve of the bivalved shell, seen from the inside, of the rarer polyhedral form, which may be distinguished as a different species ( <i>Cæloplegma tritonis</i> , compare p. 1758). <i>h</i> , hemispherical inner valve; <i>g</i> , galea; <i>s</i> , its base.	× 40	1757
Fig. 3.	<i>Cæloplegma murrayanum</i> , n. sp., The entire shell, seen from the base or the aboral pole (dorsal and ventral valve connected by delicate teeth, catching into one another).	× 40	1757
Fig. 4.	<i>Cæloplegma murrayanum</i> , n. sp., <i>h</i> , The two hemispherical inner valves of the shell, seen from the right side; <i>n</i> , the central nucleus inside the central capsule; <i>d</i> , the astropyle; <i>g</i> , the galea; <i>t</i> , the nasal tube, arising from its base; <i>m</i> , its mouth; <i>p</i> , the phæodium, which is partly thrown out by the nasal openings, filling up the galea and nasal tube.	× 100	1757
Fig. 5.	<i>Cæloplegma murrayanum</i> , n. sp., <i>h</i> , The two hemispherical inner valves of the shell and the enclosed central capsule, seen from the oral side; <i>d</i> , the radiate operculum of the astropyle, seen in the frontal fissure between the two valves; <i>n</i> , the nucleus; <i>k</i> , the crystals; <i>g</i> , galea; <i>g</i> <sup>1</sup> - <i>g</i> <sup>5</sup> , the styles arising from the galea; <i>t</i> , nasal tube; <i>m</i> , mouth of it.	× 200	1757
Fig. 6.	<i>Cæloplegma murrayanum</i> , n. sp., Oral part of a central capsule, in profile. <i>o</i> , Opening of the proboscis; <i>d</i> , radiate operculum of the astropyle, which gives rise to the proboscis; <i>e</i> , the outer, <i>i</i> , the inner membrane of the capsule; <i>k</i> , groups of crystals; <i>n</i> , nucleus.	× 600	1757
Fig. 7.	<i>Cæloplegma murrayanum</i> , n. sp., Three single groups of crystals, taken from the central capsule.	× 1000	1757
Fig. 8.	<i>Cæloplegma murrayanum</i> , n. sp., One inner valve of the shell, in profile. <i>h</i> , hemispherical valve; <i>g</i> , galea; <i>g</i> <sup>1</sup> - <i>g</i> <sup>5</sup> , the tubes arising from it; <i>t</i> , rhinocanna or nasal tube; <i>m</i> , its mouth; <i>b</i> , frenulum.	× 300	1757
Fig. 9.	<i>Cæloplegma murrayanum</i> , n. sp., <i>g</i> , The galea; <i>t</i> , rhinocanna of one inner valve; <i>m</i> , its mouth; <i>p</i> , phæodella filling up both galea and rhinocanna; <i>b</i> , the sagittal frenulum connecting the galea and the mouth of the rhinocanna. <i>g</i> <sup>1</sup> - <i>g</i> <sup>5</sup> , the styles arising from the galea; <i>s</i> , sieve-plate, which separates the cavity of the galea from the hemispherical valve ( <i>h</i> ). View in profile.	× 400	1757
Fig. 10.	<i>Cæloplegma murrayanum</i> , n. sp., An anchor-pencil of the outer shell.	× 300	1757
Fig. 11.	<i>Cæloplegma murrayanum</i> , n. sp., A single anchor-thread of a pencil.	× 1000	1757
Fig. 12.	<i>Cæloplegma murrayanum</i> , n. sp., Terminal branches of a style.	× 300	1757
Fig. 13.	<i>Cæloplegma murrayanum</i> , n. sp., A single terminal branch of a style.	× 1000	1757





Haeckel and Müllersch. Del.

Köllsch. Jena. Lithogr.

(FAR-ÖER-CHANNEL) COELOPLEGMA. MURRAYANUM!



PLATE 128.

Legion PHÆODARIA.

Order PHÆOCONCHIA.

Family CÆLOGRAPHIDA.

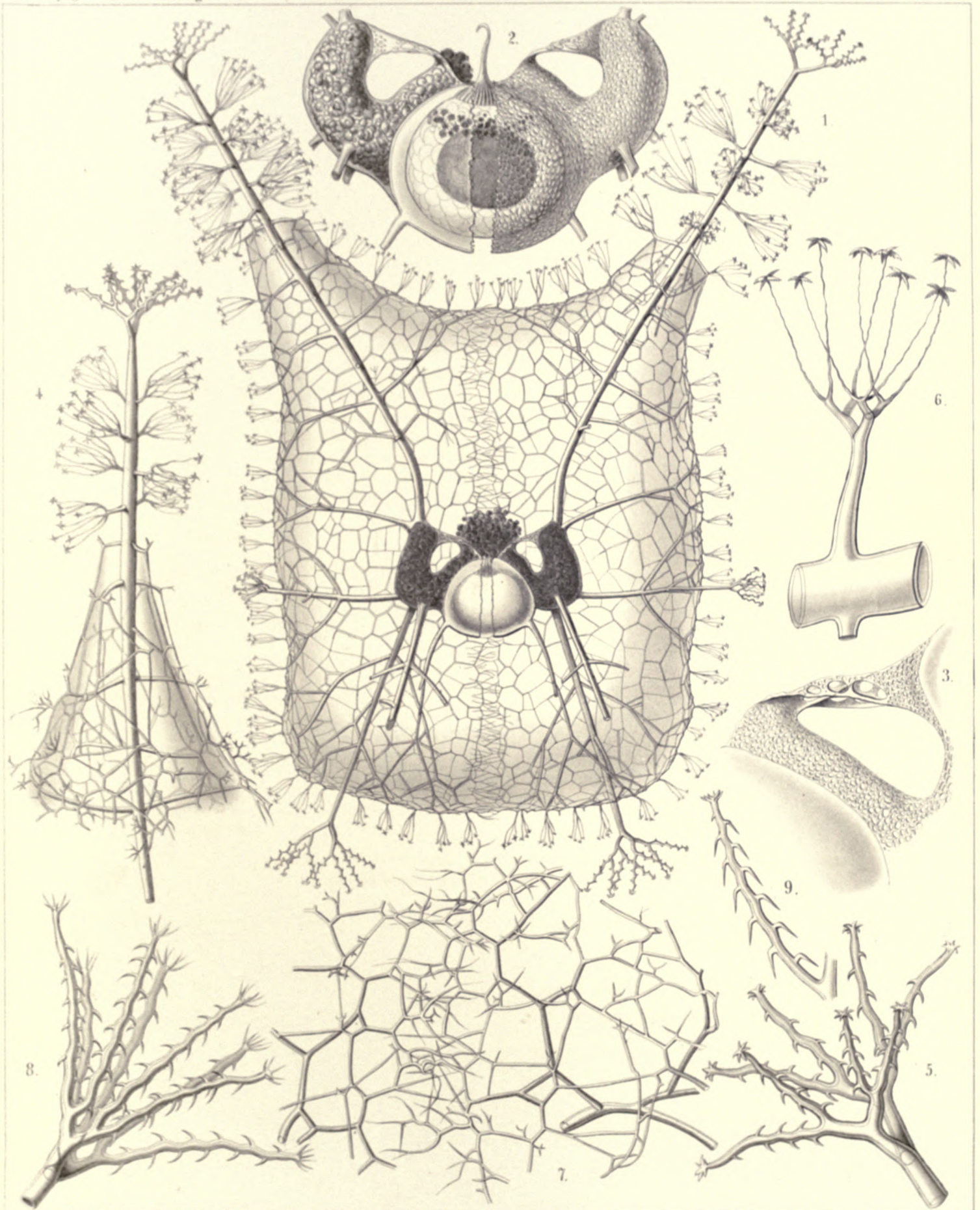


PLATE 128.

CÆLOGRAPHIDA.

	Diam.	Page
Fig. 1. <i>Cælospathis ancorata</i> , n. sp., . . . . .	× 50	1754
Lateral view of the entire shell. The central capsule is visible between the two valves of the inner shell. The galeæ and rhinocannæ of the two inner valves are filled up by the black phæodium.		
Fig. 2. <i>Cælospathis ancorata</i> , n. sp., . . . . .	× 100	1754
The two valves of the inner shell; the galeæ and rhinocannæ of which are filled up by the black phæodium. Between the mouth of the two rhinocannæ is prominent the proboscis of the astropyle, arising from the radiate operculum of the central capsule. The latter contains numerous crystals and a big dark nucleus. Lateral view.		
Fig. 3. <i>Cælospathis ancorata</i> , n. sp., . . . . .	× 200	1754
The rhinocanna or the nasal tube of one valve, and the latticed frenulum which connects its mouth with the top of the galea.		
Fig. 4. <i>Cælospathis ancorata</i> , n. sp., . . . . .	× 80	1754
Distal end of a style.		
Fig. 5. <i>Cælospathis ancorata</i> , n. sp., . . . . .	× 200	1754
Terminal branches of a style.		
Fig. 6. <i>Cælospathis ancorata</i> , n. sp., . . . . .	× 600	1754
Lateral branch of a style, with an anchor-pencil.		
Fig. 7. <i>Cælospathis ancorata</i> , n. sp., . . . . .	× 300	1754
The lateral margins of the latticed valves of the outer shell or mantle, catching into one another, without being connected directly.		
Fig. 8. <i>Cælospathis octostyla</i> , n. sp., . . . . .	× 300	1754
Terminal branches of a style.		
Fig. 9. <i>Cælospathis octodactyla</i> , n. sp., . . . . .	× 400	1755
A single terminal branch of a style.		





F. Hensel and A. G. Schmidt Del.

E. G. Ritzsch Jena Lithogr.

COELOSPATHIS.