Museum of Comparative Zoology Library
Harvard University

North American Crinoidea

WACHSMUTH AND SPRINGER

ATLAS.

Museum of Comparative Zoology Library
Harvard University

Memoirs of the Museum of Comparative Zoölogy
AT HARVARD COLLEGE.
Eighty-Three Plates to Accompany.
Vols. XX. and XXI.

THE NORTH AMERICAN
CRINOIDEA CAMERATA.

By CHARLES WACHSMUTH and FRANK SPRINGER.

EIGHTY-THREE PLATES.

CAMBRIDGE, U. S. A.:
Printed for the Museum.
May, 1897.

MEMOIRS

OF THE

MUSEUM OF COMPARATIVE ZOÖLOGY

AT

HARVARD COLLEGE.

EIGHTY-THREE PLATES TO ACCOMPANY.

VOLUMES XX. AND XXI.

CAMBRIDGE, U.S.A.
PRINTED FOR THE MUSEUM.
1897.

University Press:
John Wilson and Son, Cambridge, U. S. A.

CONTENTS.

THE NORTH AMERICAN CRINOIDEA CAMERATA. By Charles Wachsmuth and Frank Springer.

PLATES I. TO LXXXIII.

Together with the accompanying Explanation.

Memoirs of the Museum of Comparative Zoölogy
AT HARVARD COLLEGE.
Eighty-Three Plates to Accompany.
Vols. XX. and XXI.

THE NORTH AMERICAN
CRINOIDEA CAMERATA.

By CHARLES WACHSMUTH and FRANK SPRINGER.

EIGHTY-THREE PLATES.

CAMBRIDGE, U. S. A.:
Printed for the Museum.
May, 1897.

PLATES AND EXPLANATION OF THE PLATES.

PLATE I.

PAGE

Fig. 1. A long stem with a finely preserved Root, probably belonging to *Poteriocrinus*. From the Burlington Limestone 44

2. Stem with enormous Cirri, probably of *Batocrinus grandis*, with large cysts on two of the cirri. From the Keokuk group at Crawfordsville 43

3. Stem fragment from the Upper Devonian of Kentucky, with five rows of large cirri, longitudinally arranged 43

4. Terminal end of a Stem, apparently of *Barycrinus*, attached by a flat surface. From the Lower Burlington Limestone.

a. Profile view of the same.

b. Surface of attachment of same, showing open grooves passing out from the axial canal of the stem 46

5. Terminal end of Stem of *Barycrinus*, showing the large asteriform canal of stem, and the linear canal of the cirri 46

6. The quinquepartite Stem of a *Barycrinus*, somewhat weathered, showing the longitudinal divisions, and two series of pores to each segment 46

7. Terminal end of Stem of *Barycrinus*, showing the large axial canal, with the laminated structures 46

8*a*, *b*. Sections of stem fragments of *Barycrinus*, showing slits and pores through the walls 46

9, 10. Dorso-central Plates, supposed to belong to a species of *Heterocrinus*. From the Hudson River group at Cincinnati 49, 51

(All specimens are in the collection of Wachsmuth and Springer.)

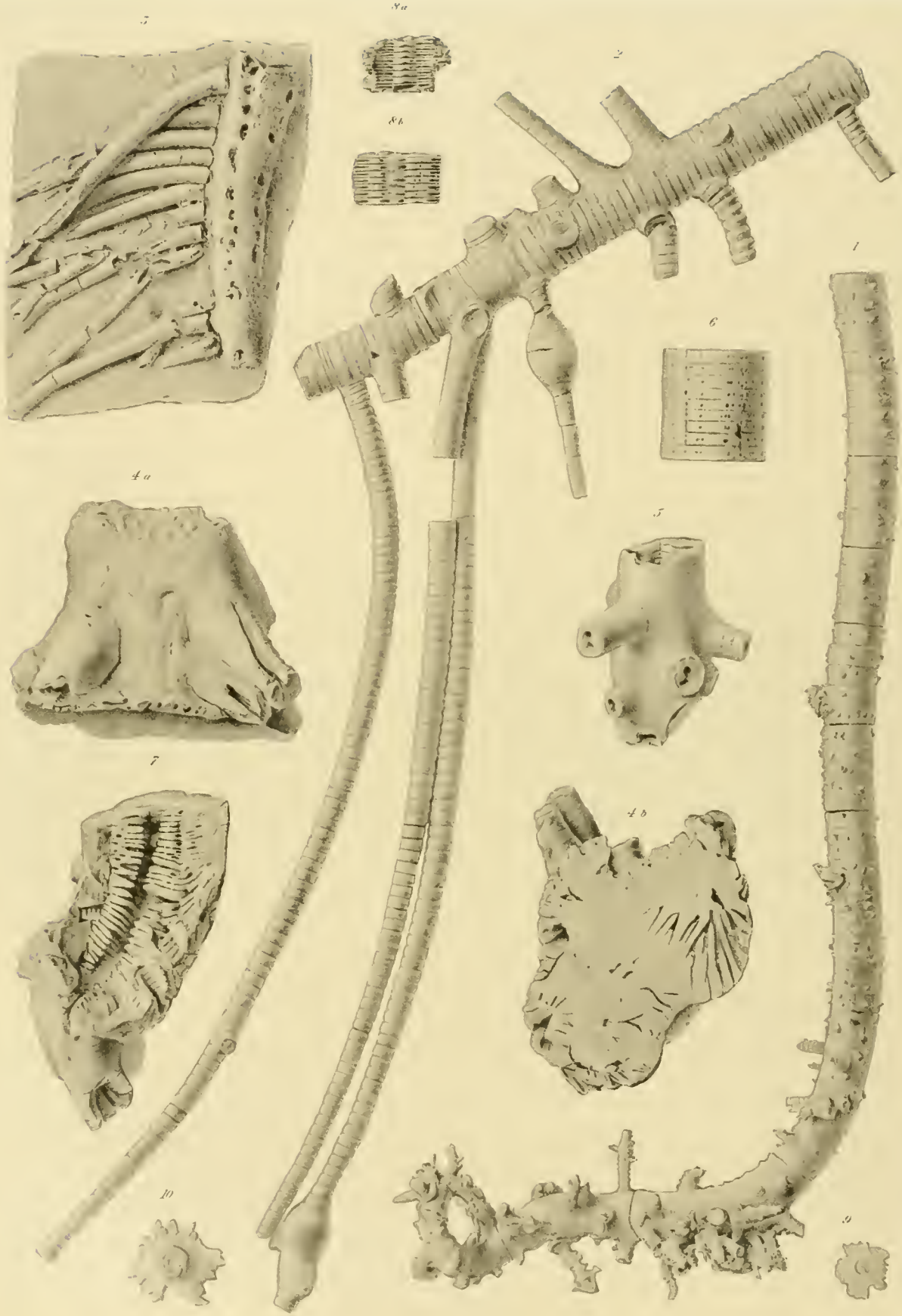

3
8a
8b
2
1
6
4a
5
7
4b
10
9

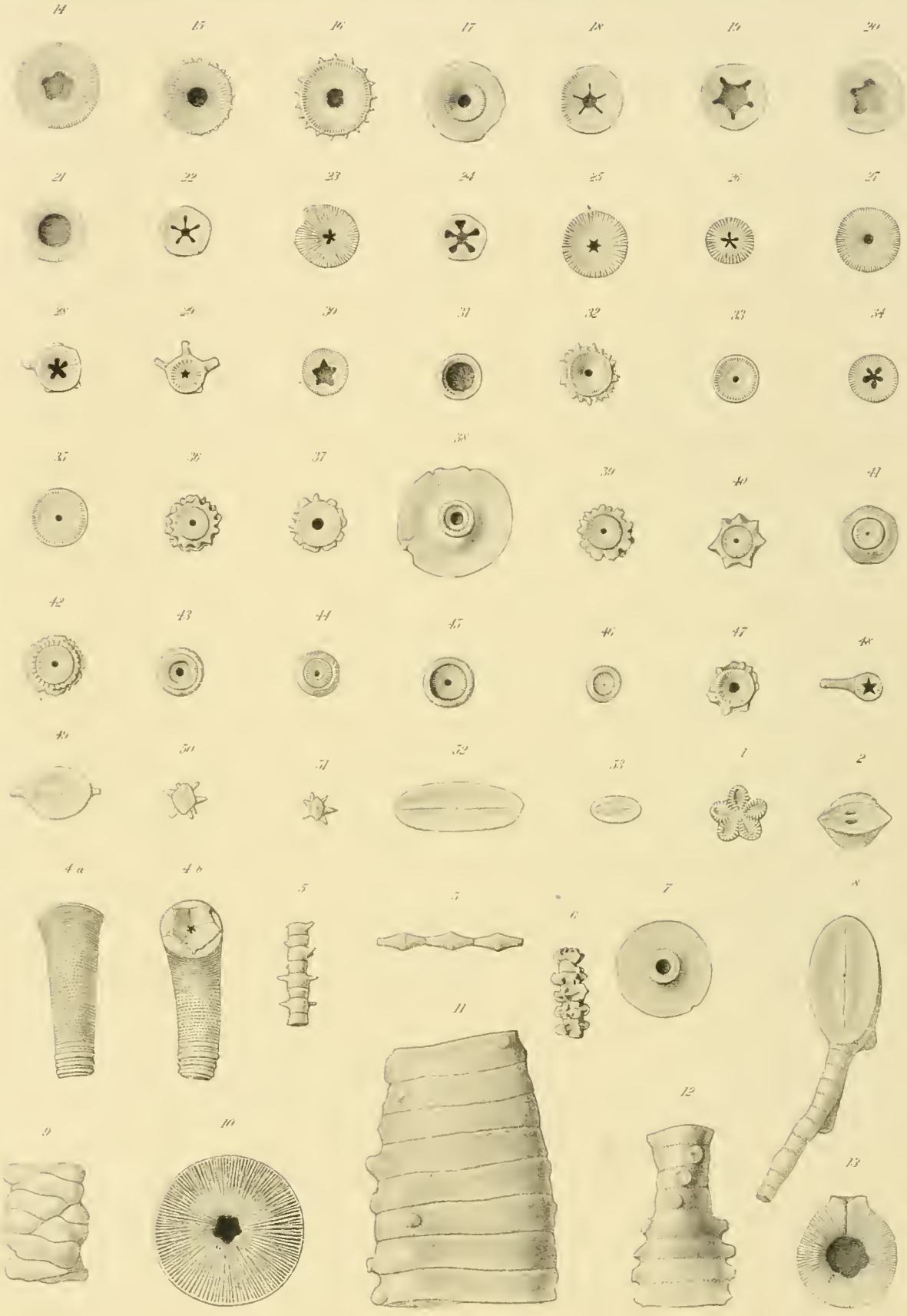
PLATE II.

Detached Stem Joints of various fossil Crinoids.

Fig. 1 is a joint of *Pentacrinus;* fig. 2 of *Rhizocrinus.* The stem fragment, fig. 3, belongs to *Mespilocrinus;* figs. 5, 8, 9, 11, and 12 to *Platycrinus;* fig. 6 to *Teleiocrinus,* and fig. 7 to *Cactocrinus.* The specimen fig. 10, which probably belongs to an *Actinocrinus,* shows beautifully the striations at its upper face, and fig. 13 the connection of the cirrus canal with the stem canal.

4*a* and *b* represent the proximal end of the stem of an *Onychocrinus,* — 4*b* showing the infrabasals coalesced with the top stem joint (pp. 62, 65).

17 and 38 represent wide nodal joints to which extremely narrow internodal ones are attached. Figs. 39 to 41 are nodal joints, with or without internodals; figs. 42 to 48 nodals, followed by internodals resting wholly or partly between the projecting margins of the nodals. Traces of new joints occur in figs. 33 and 35. The joints in figs. 14 and 20 probably belong to *Megistocrinus Evansi;* fig. 21 to *Periechocrinus Whitei;* figs. 32, 36, and 39 to *Cactocrinus;* fig. 40 to *Teleiocrinus;* to the five oval pieces shown by figs. 49 to 53 to *Platycrinus.*


14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
1
2
4a
4b
5
3
6
7
8
11
9
10
12
13

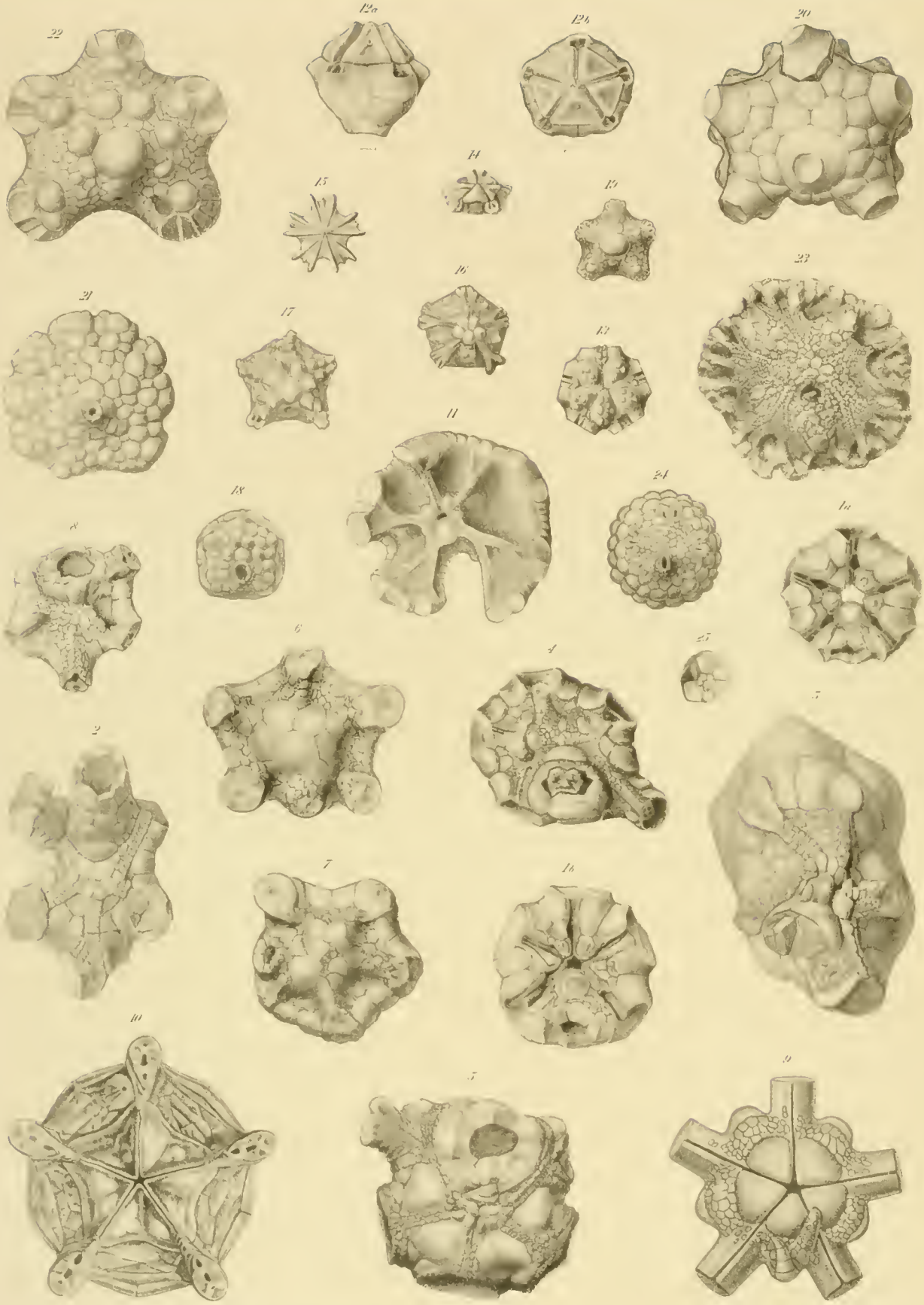

22
12a
12b
20
14
15
19
16
23
21
17
13
11
24
18
1a
8
6
25
4
3
2
7
1b
10
5
9

PLATE III.

THE PLATES SURROUNDING AND CLOSING THE PERISTOME.

PAGE

Fig. 1*a*. CYATHOCRINUS GILESI W. and Sp. The interradial plates abutting upon the radials preserved, but those covering the peristome removed. (Coll. W. and Sp.) 95, 114

1*b*. Another specimen of the same species, with the interradial plates partly covered by small marginal pieces; — otherwise in the same condition as fig. 1*a*. (Same collection.) 95

2. CYATHOCRINUS BREVISACCULUS W. and Sp. (Ms.). Showing the disk ambulacra and the madreporite; the large interradial plates exposed to view. (The figure is drawn with the anal side up. Same collection.) 96, 114

3. CYATHOCRINUS NODOSUS W. and Sp. (Ms.). Like fig. 2; but the orals still more asymmetrical, and the interradial plates covered by marginal pieces. (Same collection.) 96, 114

4. CYATHOCRINUS MULTIBRACHIATUS Hall. Like fig. 3; but with the orals resorbed. (Same collection.) 96, 114

5. EUSPIROCRINUS SPIRALIS Angel. Interradial plates exposed, very large, enclosing large covering pieces which close the peristome. (Drawn with anal side up. Zoöl. Riks Mus., Stockholm.) 96

6. CYATHOCRINUS ALUTACEUS Angel. Arrangement of orals as in *Platycrinus*, asymmetrical; surrounded by small perisomic pieces. (Same collection.) 96, 114

7. The same species. The oral apparently in process of resorption. (Drawn with anal side to the left. Same collection.) 98, 114

8. CYATHOCRINUS LÆVIS Angel. The orals partly resorbed. (Drawn with anal side up. Same collection.) 96, 114

9. THAUMATOCRINUS RENOVATUS P. H. Carpenter. Having large symmetrical orals surrounded by perisome. (After Carpenter.) 88

10. The ventral disk of *Hyocrinus bethellianus* W. Thom. The orals surrounded by a narrow band of perisome. (After Carpenter.) 88, 99

11. TAXOCRINUS INTERMEDIUS W. and Sp. Ventral disk formed of small movable plates; the orals consisting of four small plates and a larger one, separated by the ambulacra; the mouth opened out. (Coll. W. and Sp.) 88, 89, 101

12. HAPLOCRINUS MESPILIFORMIS Goldf. The orals resting upon the radials.

12*a*. Posterior side of the oral pyramid.

12*b*. Ventral aspect of the same. (Coll. W. and Sp.) 92, 93

13. MYRTILLOCRINUS AMERICANUS Hall. Orals as in the preceding genus. (Amer. Mus. Nat. Hist. New York.) 89

14. COCCOCRINUS ROSACEUS F. Roemer. The orals symmetrical; separated from the radials by a single interradial plate. (Coll. W. and Sp.) 89, 90

PLATE IV.

PAGE

Fig. 1. Ventral aspect of the internal cast of a specimen of *Teleiocrinus*, with subtegminal ambulacra resting against the inner floor ($\frac{2}{1}$) 102

2. The same aspect in a natural cast of *Physetocrinus ventricosus* 102

3. The same in a cast of *Physetocrinus ornatus* 102

4. The same in a cast of *Strotocrinus regalis* 102

5. Internal cast of a *Dorycrinus*, of which the median part of the ambulacral skeleton, contrary to the case of the four preceding species, does not touch the inner floor of the tegmen 102

6. Cast of a *Platycrinus*, in which the ambulacra are subtegminal to the arm bases, being placed at some distance from the inner floor of the disk . . 102

7. Cast of an *Eutrochocrinus Christyi*, showing impressions of the lining covering the inner floor of the disk 102

8. *Cactocrinus glans*, showing fragments of the convoluted (digestive) organ, and to the left the subtegminal ambulacra of one ray ($\frac{2}{1}$) 102

(In the following specimens — Figs. 9 to 17 — a second anal opening is introduced at various parts of the calyx, the regular aperture having probably been obstructed.)

9. A specimen of *Batocrinus*, in which a new opening has been formed between the basals toward the anterior side 136

10. A specimen of *Batocrinus subæqualis*, with an abnormal opening directly above the basals, involving the whole of the right posterior side of the dorsal cup (slightly enlarged) 136

11. A small specimen of *Teleiocrinus umbrosus*, with a second tube passing out from the tegmen 136

12. A *Steganocrinus pentagonus*, with a second anal tube given off near the base of the regular one 136

13. A malformed specimen of *Eutrochocrinus Christyi*, with a second tube formed above the arm bases 136

14. A *Batocrinus laura*, with a second tube given off from the base of the original one and a third tube apparently in process of formation 135

15. A specimen of *Macrocrinus jucundus*, in which a small tube branches from the regular one 136

16. The anal tube of *Eutrochocrinus Christyi* with a transverse lateral branch . 135

17. Another tube of the same species bifurcating above the tips of the arms . . 136

18. The base of a *Platycrinus*, showing irregular, wart-like protuberances, dotted with small circular pits.

19. A radial plate with similar pits, surrounded by a circular rim.

20. A piece of a column affected in a similar manner.

(All specimens are in the collection of Wachsmuth and Springer, except that of Fig. 6, which is in the collection of Mr. R. R. Rowley.)

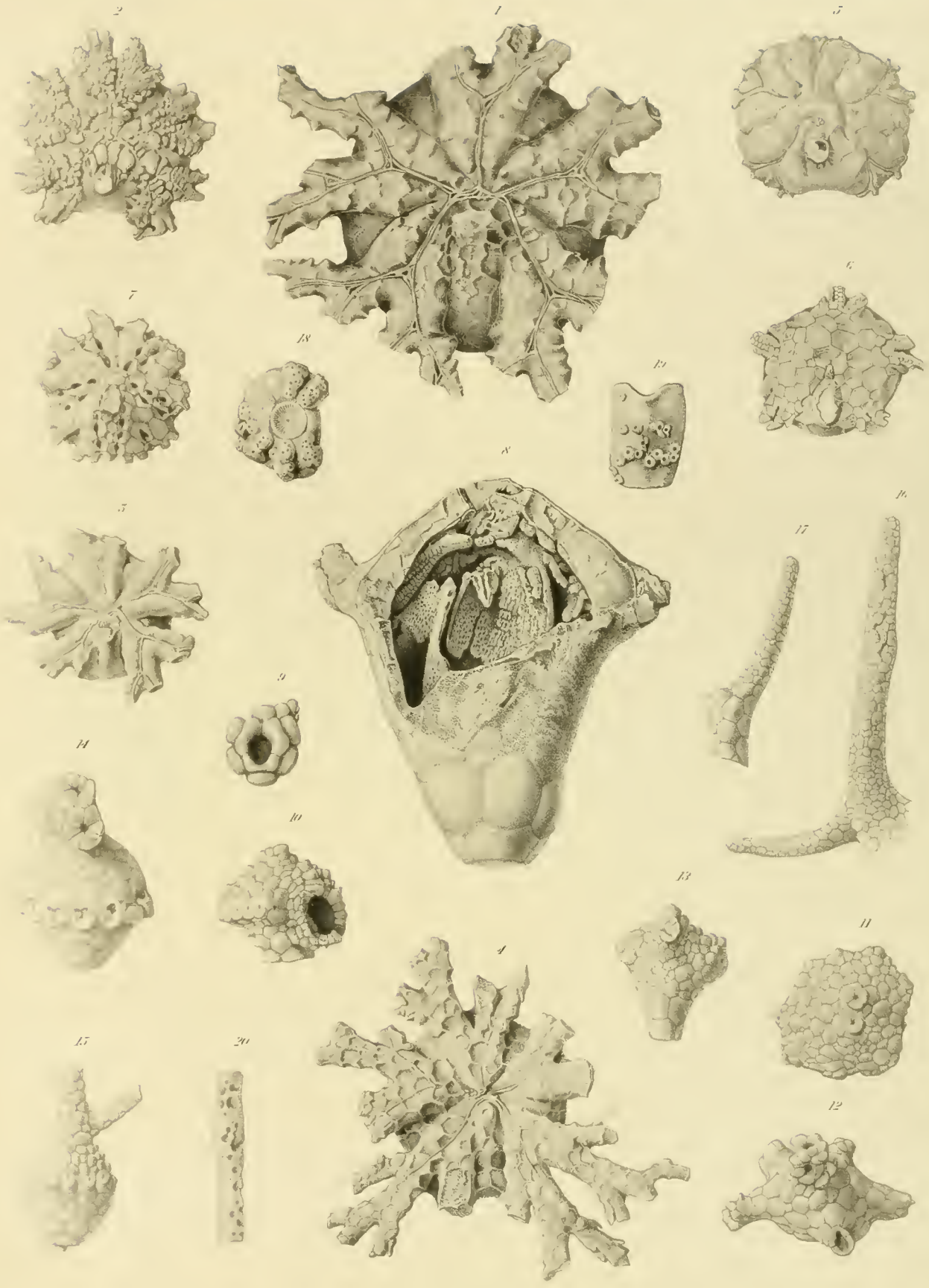

2
1
3
7
18
19
6
8
5
16
17
9
14
10
13
11
4
15
20
12

PLATE V.

THE CONVOLUTED ORGAN, AND THE STRUCTURE BENEATH THE TEGMEN.

PAGE

Fig. 1. A specimen of *Teleiocrinus*, showing the convoluted organ, and portions of the ambulacral skeleton, both heavily coated with silicious matter ($\frac{2}{1}$) . 106, 143

2. The same organ in *Cactocrinus*, showing the partition which forms the second convolution, the outer wall being removed 106

3. A *Teleiocrinus umbrosus*, with the whole convoluted organ intact (slightly enlarged 143

4. Another specimen of the same species, exposing the walls forming the third convolution, the two outer ones removed (slightly enlarged) . . . 106, 143

5. The convoluted organ of an *Agaricocrinus*, seen from above 106

6. Cross section of the same organ in a specimen of *Batocrinus* 106

7. Dorsal aspect of the same organ in a specimen of *Macrocrinus verneuilianus* . 106

8. Lateral view of the organ in *M. verneuilianus;* its upper end surrounded by an annular vessel 105, 143

9. The convoluted organ in a specimen of *Strotocrinus* 143

10. *Cactocrinus proboscidalis*, showing a portion of the ambulacral skeleton, and the convoluted organ beneath 107

11. *Cactocrinus thetis*, showing the delicate network of the convoluted organ . . 143

12. Dorsal aspect of the organ in *Eutrochocrinus Choistyi* (enlarged) 143

13. A broken specimen of *Dorycrinus*, showing the internal lining and covered galleries along the inner floor of the tegmen 106, 107

14. The inner floor of the tegmen in a *Physetocrinus ventricosus* 120

15. A broken specimen of *Lobocrinus longirostris*, showing the lining within the dorsal cup 106

16. The inner floor of the tegmen of a specimen of *Teleiocrinus rudis;* heavily coated with silicious matter 106, 107

17. The inner floor of *Batocrinus inornatus*, formed into open galleries for the reception of the ambulacra 106

(All specimens are in the collection of Wachsmuth and Springer, except those of Figs. 10, 11, and 15, which are in the Museum of Comparative Zoölogy.)

2
14
5
13
7
6
1
11
10
8
12
15
17
4
16
3
9

3
1b
1a
2b
4a
11
2a
8
12
7a
10
9
5
13
14
15
4b
6
16
17
7b
19
20
18

PLATE VI.

(Figs. 1 to 12 are represented to show the orientation of the stem and axial canal among Neozoic Crinoids; figs. 13 to 20 the close affinities between the Ichthyocrinidæ and Comatulæ.)

PAGE

MILLERICRINUS ORBIGNYI de Loriol 61

Fig. 1*a*. The crown with a portion of the stem; the angles of the latter interradially disposed. (After de Loriol; Crinoïdes de la France, Pl. 116, fig. 1.)

1*b*. Inner aspect of the base; the space which is empty in most species of *Millericrinus* occupied in this specimen by small infrabasals. (After de Loriol; *ibid.*, fig. 1*c*.)

MILLERICRINUS POLYDACTYLUS de Loriol 61

2*a*. The infrabasals attached to the truncated upper end of the stem (lateral view).

2*b*. Ventral aspect of the same. (Both after de Loriol; *ibid.*, Pl. 110, figs. 1*a*, 2*a*.)

MILLERICRINUS ICAUNENSIS de Loriol 61

3. The dorsal cup with the proximal joint of the stem attached; the angles of the latter corresponding with the angles of the basals; the axial canal quite small. (After de Loriol; *ibid.*, Pl. 61, fig. 5*d*.)

MILLERICRINUS MILLERI d'Orbigny 61

4*a*. Ventral aspect of the dorsal cup; the diameter of the open space between the basals almost as great as that of the whole stem. (After de Loriol; *ibid.*, Pl. 96, fig. 3.)

4*b*. Dorsal aspect of the cup, showing the small size of the axial canal. (*Ibid.*, Plate 96, fig. 2*a*.)

MILLERICRINUS CARABOEUFI de Loriol 61

5. Showing in a side view the angularities upon the proximal face of the top stem joint. Being radially disposed, they conform to the depressions upon the outer face of the basal disk; whereas the angles along the sides of the stem are directed interradially, in accordance with the rule governing dicyclic Crinoids. (*Ibid.*, Pl. 59, fig. 3*c*.)

MILLERICRINUS MUNSTERIANUS d'Orbigny 62

6. Top stem joint, showing the angular ridges upon the upper surface. (After de Loriol; *ibid.*, Pl. 83, fig. 2.)

Page

Rhizocrinus Rawsoni Pourtales 63

Fig. 7*a*. Dorsal aspect of the cup; the vacant space between the basals of different form, and larger than the axial canal of the stem. (After P. H. Carpenter; Challenger Rep. on Stalk. Crin., Pl. X., fig. 5.)

7*b*. Distal face of a stem joint. (*Ibid.*, fig. 14.)

Pentacrinus asterias W. Thomson 65

8. Dorsal aspect of the cup; the empty space within the basal ring interradially disposed. (Carpenter, *ibid.*, Pl. XII., fig. 16.)

Metacrinus angulatus P. H. Carpenter 65

9. The space within the basal ring, contrary to preceding figure, radially disposed. (After Carpenter; *ibid*, fig. 2.)

Bathycrinus aldrichianus P. H. Carpenter 65

10. Horizontal section of the basal ring. (After Carpenter; *ibid.*, Pl. VII*b*. fig. 2.)

11. The infrabasals of Onychocrinus, coalesced with the top stem joint. (Coll. W. and Sp.) 65

12. Dorsal aspect of the Base of Glyptocrinus decadactylus; the interradial outline of the upper stem joint taking its form from the basal concavity. (Same collection.) 66

13, 14, and 15. Pentacrinoid larvæ of Antedon. (After P. H. Carpenter; Chall. Rep. on the *Comatulæ*, Pl. XIV.) 152

16. A young Taxocrinus from the Burlington Limestone. (Coll. W. and Sp.) 152

17. A young Onychocrinus from the Keokuk Group. (Same collection.) . . 152

Antedon Rosacea Lamarck 152

18. In its young stage; the centro-dorsal and succeeding stem joints interradially disposed, the primary cirri radially. (After W. B. Carpenter; Philos. Trans. 1866, Pl. XLI.)

19. In its adult state. (*Ibid.*, Pl. XXXVIII.)

Onychocrinus Ulrichi S. A. Miller 152

20. In its general structure resembling a young Antedon.

(Figs. 2*b*, 4*a*, 7*a*, 8, 9, 10, 11, 12, 18, are drawn with the interradial side up; Figs. 1*b*, 3, 4*b*, 6, 19, 20 with the radial side up.)

PLATE VII.

PAGE

SCAPHIOCRINUS ELEGANS W. and Sp. (MS.) 138

Fig. 1*a*. Anterior side of the specimen, showing the ventral sac and the anal opening low down in the sac. (Only the lower half of the specimen is drawn.)

1*b*. Posterior side of the specimen. (Kaskaskia group, Kentucky.)

SCYTALOCRINUS VALIDUS W. and Sp. (MS.) 138

2*a*. Lateral aspect of a specimen with arms; the anal opening located anteriorly in the lower part of the ventral sac.

2*b*. The ventral sac somewhat enlarged.

3. Anterior side of the sac of another specimen. (Both from the Keokuk group, Indiana.

DECADOCRINUS GRANDIS W. and Sp. 138

4. Anal opening occupying the anterior side of the sac a little above midway; the pores at the lower part of the sac passing through the test, as shown upon the lateral edges of the plates.

5. A specimen showing the posterior side of the sac. (Keokuk group, Crawfordsville, Ind.)

SCAPHIOCRINUS UNICUS Hall 138

6. Posterior side of a specimen, showing the ventral sac to its full length. (Locality and position same as last.)

SCYTALOCRINUS (sp. undet.) 138

7. Anterior view of ventral sac, showing the pores along the sides of the plates, and the position of the anus. (Kaskaskia group, Kentucky.)

SCAPHIOCRINUS SWALLOVI Meek and Worthen 138

8. Portion of the ventral sac; composed of stellate plates with pores around their edges. The ducts of the pores plainly visible in places where the plates are slightly pushed out of position

AULOCRINUS AGASSIZI W. and Sp. (MS. Nov. gen. and n. sp.) . . 138

(*αὐλός* a small tube, *κρίνον* a lily.)

9. Right postero-lateral aspect. Anus at the end of a special tube, given off half way down from the anterior side of the ventral sac. Sac and tube profusely perforated by pores. (Keokuk group, Indiana.)

CŒLIOCRINUS VENTRICOSUS (Hall) 138

10*a*. Posterior side of the ventral sac.

10*b*. Anterior side of it.

CYATHOCRINUS NODOSUS W. and Sp. (MS.) 137

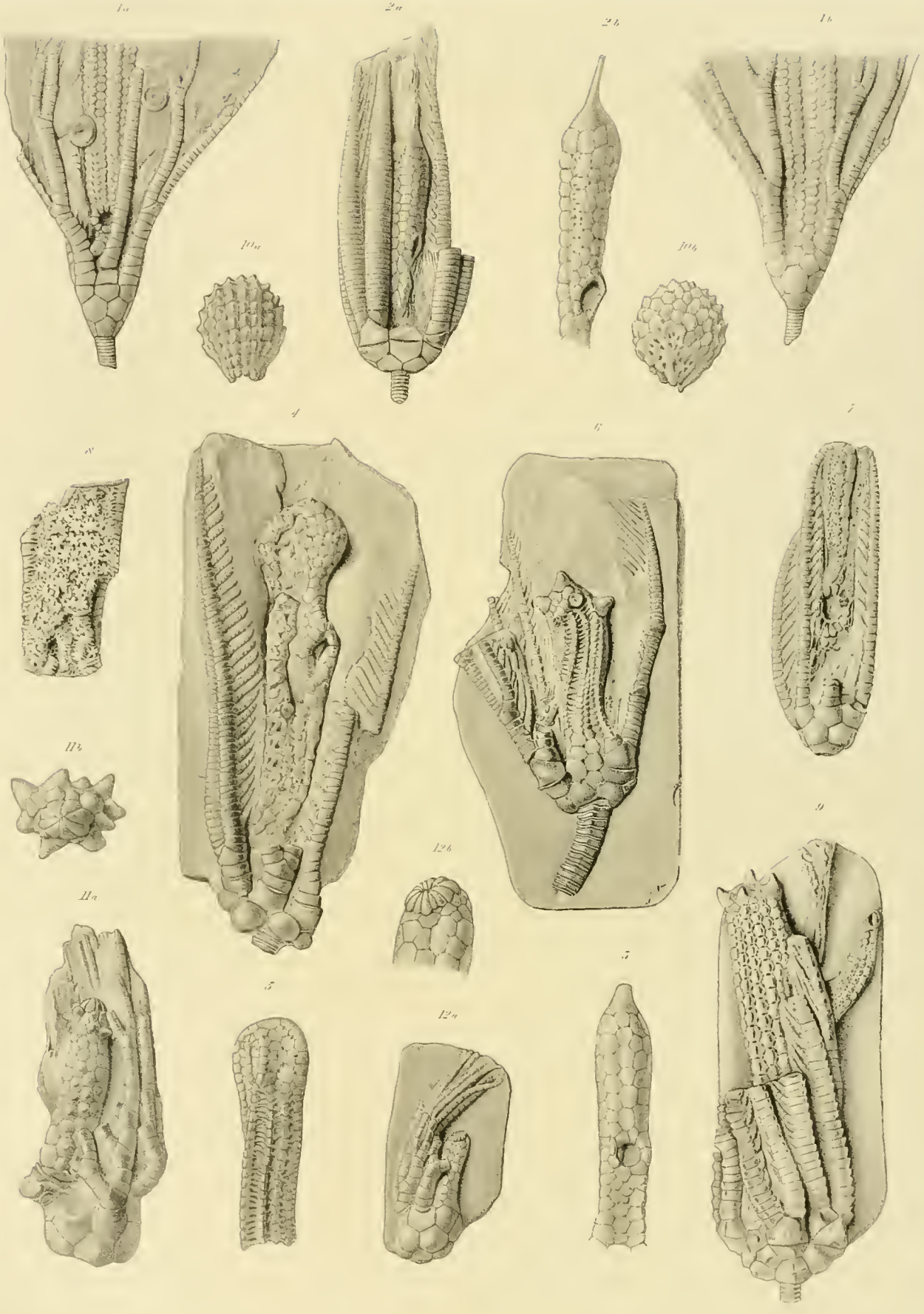
11*a*. The anus at the end of the ventral sac slightly excentric in position, and closed by eight or nine plates forming a pyramid.

11*b*. Distal end of the ventral sac enlarged.

CYATHOCRINUS BREVISACCULUS W. and Sp. (MS.) 137

12*a* and *b*. The ventral sac with the anus in the same condition as in the preceding species.

(All specimens are in the collection of Wachsmuth and Springer.)


1a
2a
2b
1b
10a
10b
4
6
7
8
11b
11a
12b
12a
5
3
9

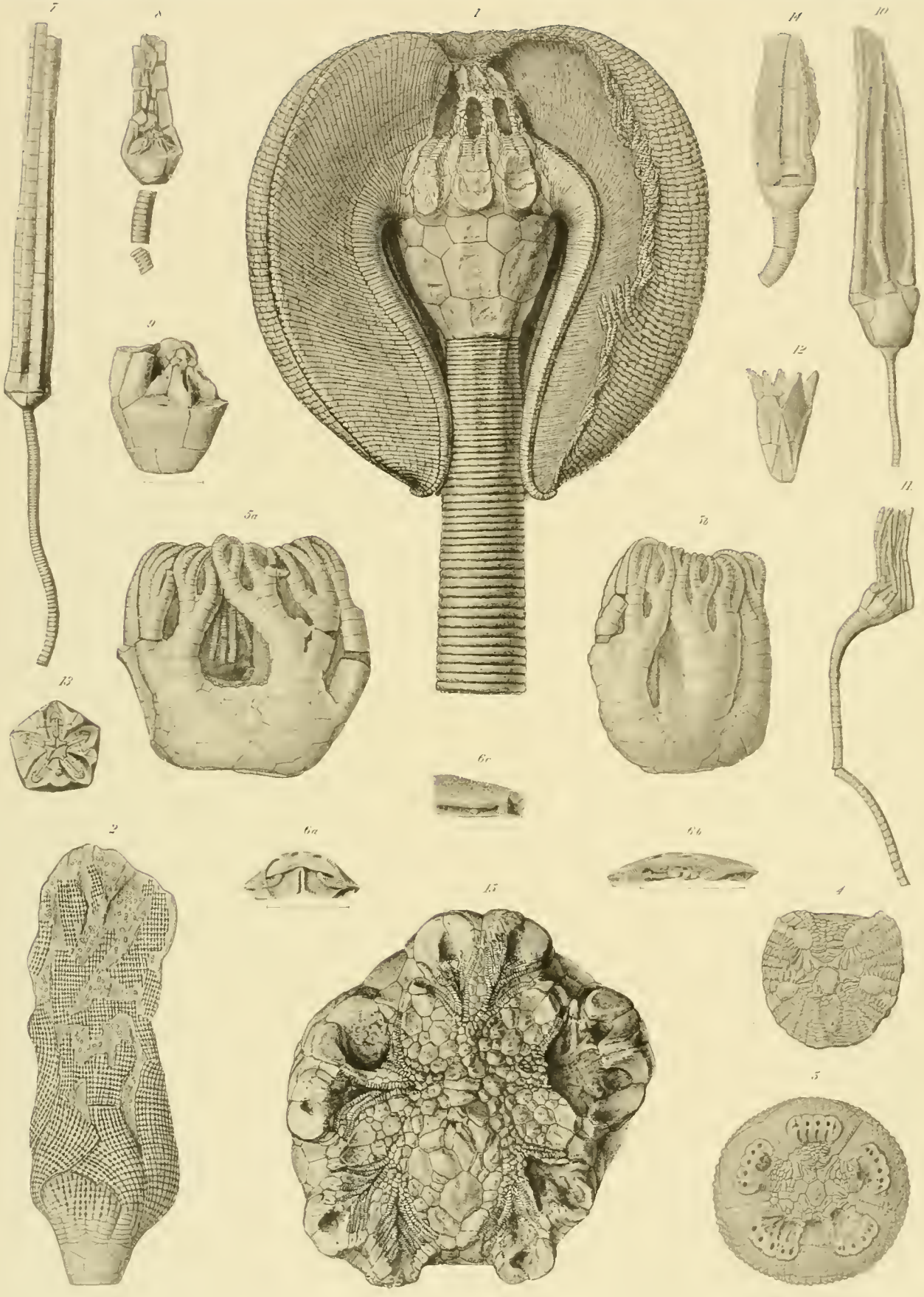

7
8
1
14
10
9
12
5a
5b
11
13
6c
2
6a
6b
15
4
3

PLATE VIII.

Page

Barrandeocrinus sceptrum Angel 484

Fig. 1. Showing arrangement of the plates in the calyx, and structure of arms and pinnules. (Drawn by Mr. G. Liljevall from a specimen from Gotland in the Zoöl. Riks Mus. at Stockholm) ($\frac{2}{1}$).

Crotalocrinus pulcher (Hisinger) 164

2. A specimen from Gotland, showing the net formed arms. (Coll. W. and Sp.)

Crotalocrinus n. sp. 164

3. The tegmen of a specimen from Gotland; drawn by Mr. G. Liljevall (Zoöl. Riks Mus., Stockholm) ($\frac{2}{1}$).

Crotalocrinus rugosus (J. S. Miller) 164

4. Tegmen of a fine specimen from Dudley, Eng. ($\frac{1}{1}$). (Coll. W. and Sp.)

Taxocrinus intermedius W. and Sp. 118, 123

5*a*. Showing the pavement of the ventral disk, and the pouches along the free rays. Antero-lateral view.
5*b*. Posterior view. (Coll. W. and Sp.)

Forbesiocrinus nobilis de Kon. and le Hon. 87, 88

(Plates showing the fossæ along the edges.)
6*a*. Distal face of the axillary costal ($\frac{1}{1}$).
6*b*. Proximal face of the same ($\frac{1}{1}$).
6*c*. Lateral face of an interradial plate ($\frac{1}{1}$). (Same collection.)

Symbathocrinus Swallovi Hall. 136

7. A specimen with arms, from the Keokuk group of Canton, Ind. (Coll. W. and Sp.)

Symbathocrinus Wachsmuthi M. and W. 89

8. A specimen with the arms removed at the posterior side, exposing some of the plates of the anal tube, and the asymmetrical orals. (Coll. W. and Sp.)
9. Another specimen also showing the orals, and the base of the anal tube ($\frac{2}{1}$). (Same collection.)

Pisocrinus (sp. undet.) 136

10. Lateral view of a specimen with arms from Tennessee. ($\frac{1}{1}$) (Coll. W. and Sp.)
(This figure was drawn by Mr. Keyes in 1886, from a specimen found by us in Western Tennessee in 1883. Mr. S. A. Miller, in the 17th Report of

the Indiana Geological Survey for 1891, p. 637, took the liberty of stating, most unwarrantably, that we had described, in the third part of the Revision of the Palæocrinoidea, p. 173 (1885) the arms of *Pisocrinus*, which we "knew nothing whatever about." The tone of his article was such as to preclude any notice from us, except to publish this figure in refutation of his statement. Angelin figured the arms of *Pisocrinus* as early as 1877.)

ALLAGECRINUS CARPENTERI W. and Sp. 78

Fig. 11. The type specimen, with two arms in one or more of the rays. (Illinois State Collection.)

STEPHANOCRINUS ANGULATUS Hall 46

12. A very elongate specimen. (Amer. Mus. Nat. Hist. New York.)
13. The disk in perfect preservation; the centre closed by five symmetrical orals. (Same collection.)

CATILLOCRINUS WACHSMUTHI M. and W. 72

14. Specimen with arms, ventral tube and stem. (Coll. W. and Sp.)

MARSUPIOCRINUS RADIATUS Angel 103

15. The tegmen, with small, regularly arranged covering pieces ($\frac{2}{1}$). (Drawn from a specimen in the Zoöl. Riks Mus., Stockholm, by Mr. G. Liljevall).

PLATE IX.

PAGE

RETEOCRINUS ONEALLI (Hall) 179

Fig. 1*a*. Anterior view of a specimen with arms ($\frac{2}{1}$). (Coll. I. H. Harris.)
1*b*. Posterior view of another specimen with arms. (Coll. W. and Sp.)
1*c*. Lateral view, showing ventral disk. (Same collection.)
1*d*. A portion of the ventral disk enlarged. (Same collection.)
1*e*. Inner floor of the calyx, showing the small supplementary plates which surround the primary interbrachials ($\frac{2}{1}$). (Same collection.)
1*f*. The type of "*Glyptocrinus cognatus*." (After Miller.)

RETEOCRINUS MAGNIFICUS S. A. Miller 181

2. Side view of a specimen with arms and portions of stem. (Col. I. H. Harris.)

RETEOCRINUS STELLARIS Billings 178

3*a*. One of the type specimens, posterior view. (Museum Geol. Surv., Canada.)
3*b*. Anterior view of another type specimen. (Same collection.)
3*c*. Part of the calyx, showing the fixed brachials. (Same collection.)

RETEOCRINUS FIMBRIATUS Billings 179

4. The type specimen in a lateral view. (Museum Geol. Surv., Canada.)

XENOCRINUS BAERI (Meek) 185

5*a*. Posterior view of a specimen with arms. (Coll. I. H. Harris.)
5*b*. Lateral view of another specimen with arms. (Coll. W. and Sp.)
5*c*. Inner floor of calyx ($\frac{3}{1}$). (Coll. I. H. Harris.)
5*d*. Section of an arm, greatly enlarged.

XENOCRINUS PENICILLUS S. A. Miller 183

6*a*. Lateral view of one of the types ($\frac{2}{1}$). (Same collection.)
6*b*. Posterior view of another type specimen ($\frac{2}{1}$). (Same collection.)

TANAOCRINUS TYPUS W. and Sp. 186

7*a*. Posterior view of a type specimen ($\frac{2}{1}$). (Coll. W. and Sp.)
7*b*. Anterior view of another type specimen ($\frac{2}{1}$). (Same collection.)
7*c*. The stem, enlarged.

1a
1c
1d
2
1b
1e
6b
5b
5a
6a
7c
3c
7b
7a
3b
5d
4
1f
1e
3a

PLATE X.

Page

Archæocrinus lacunosus (Billings) 255

Fig. 1. Posterior view of the type specimen. (Museum Geol. Surv., Canada.)

Archæocrinus microbasalis (Billings) 256

2*a*. Specimen with arms and stem. (Coll. John Stewart.)
2*b*. Another specimen. (Same collection.)
2*c*. Basal aspect. (Same collection.)

Archæocrinus pyriformis (Billings) 255

3*a*. The type specimen. (Museum Geol. Surv., Canada.)
3*b*. A crushed specimen, showing the arms. (Same collection.)

Archæocrinus desideratus W. R. Billings 257

4*a*. The type specimen with arms; the left posterior radius in front. (Coll. W. R. Billings.)
4*b*. Dorsal aspect of the calyx. (Coll. W. and Sp.)

Diabolocrinus hieroglyphicus W. and Sp. 252

5*a*. Dorsal aspect of a large specimen. (Coll. W. and Sp.)
5*b*. Side view of the same.
5*c*. Anal side of a small specimen. (Same collection.)
(Figs. 2*c* and 5*a* are drawn with anal side up.)

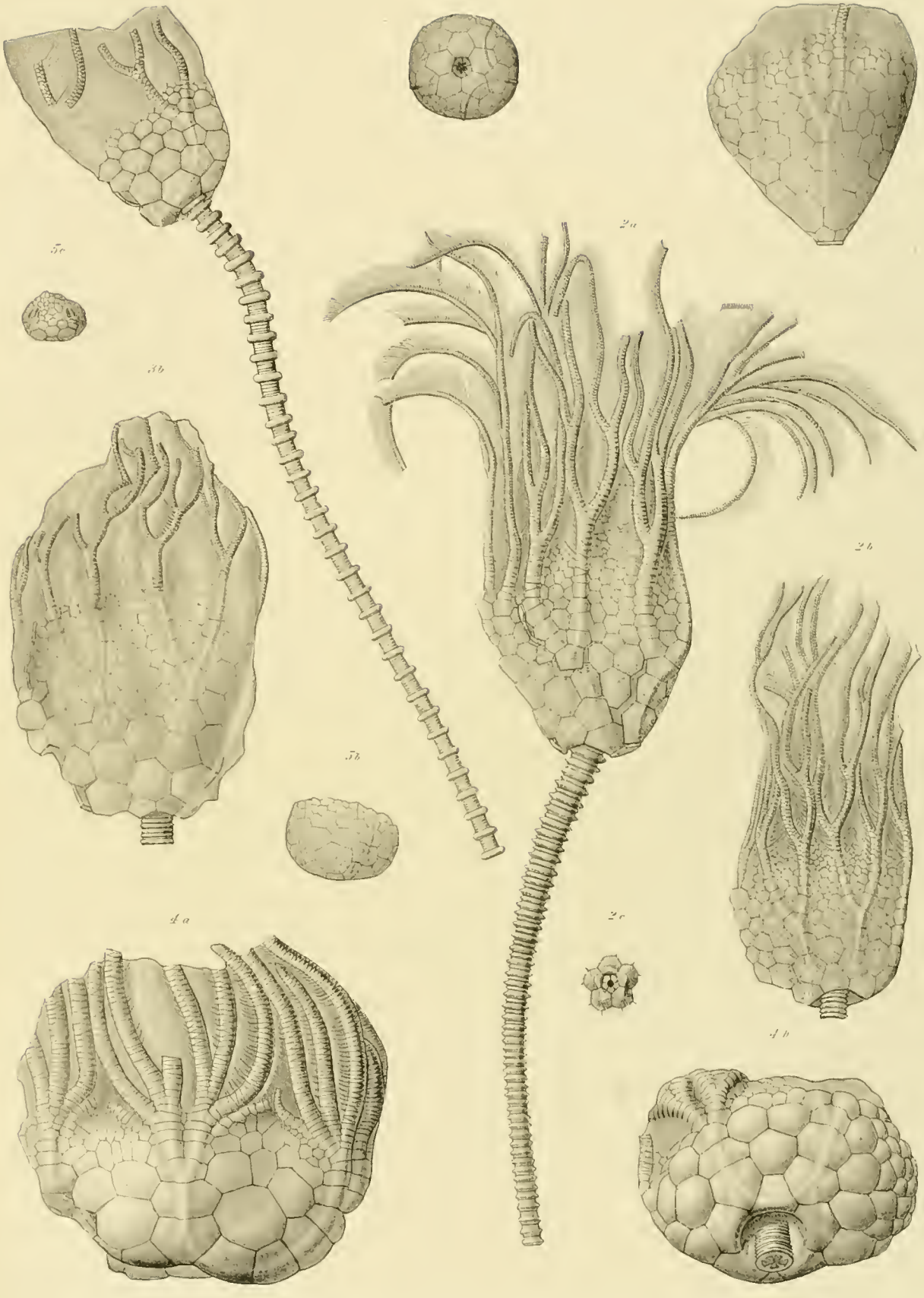

1
3a
3c
2a
5c
3b
2b
5b
4a
2c
4b

PLATE XI.

Page

Diabolocrinus perplexus W. and Sp. 250

Fig. 1*a*. Dorsal view of a large calyx, showing very small supplementary pieces along the sides of the radials and between the interradials.

1*b*. Ventral aspect of the same.

Diabolocrinus vesperalis White. 251

1*c*. Lateral view of a specimen in which no supplementary pieces are developed.

1*d*. Lateral view of a specimen in which the primary interradials are completely separated from the radials by supplementary pieces. (All in Coll. W. and Sp.)

Rhaphanocrinus subnodosus (Walcott) 259

2. The type specimen. (Mus. Comp. Zoöl.)

Rhaphanocrinus sculptus (Miller) 260

3 A specimen with arms. (Coll. I. H. Harris.)

Lyriocrinus melissa (Hall). 263

4*a*. A specimen with arms. (After Hall.)

4*b*. Dorsal aspect of a large specimen. (Coll. W. and Sp.)

4*c*. Ventral aspect, showing portion of the tegmen. (Coll. W. F. E. Gurley.)

4*d*. A smaller specimen, with the tegmen preserved, and showing the anus. (Coll. W. and Sp.)

4*e*. Lateral view of the calyx. (Coll. W. F. E. Gurley.)

4*f*. A young specimen with arms. (Coll. W. and Sp.)

Lyriocrinus dactylus Hall 262

5*a* and *b*. The types. (Amer. Mus. Nat. Hist., New York.)

5*c*. Specimen showing the pinnules. (Mus. Comp. Zoöl.)

Rhodocrinus Wortheni Hall 220

6. A slightly crushed specimen with arms. (Mus. Comp. Zoöl.)

Rhodocrinus nanus M. and W. 228

7*a*. The type specimen, lateral view; from the Burlington Limestone.

7*b*. Ventral aspect of the same. (Mus. Comp. Zoöl.)

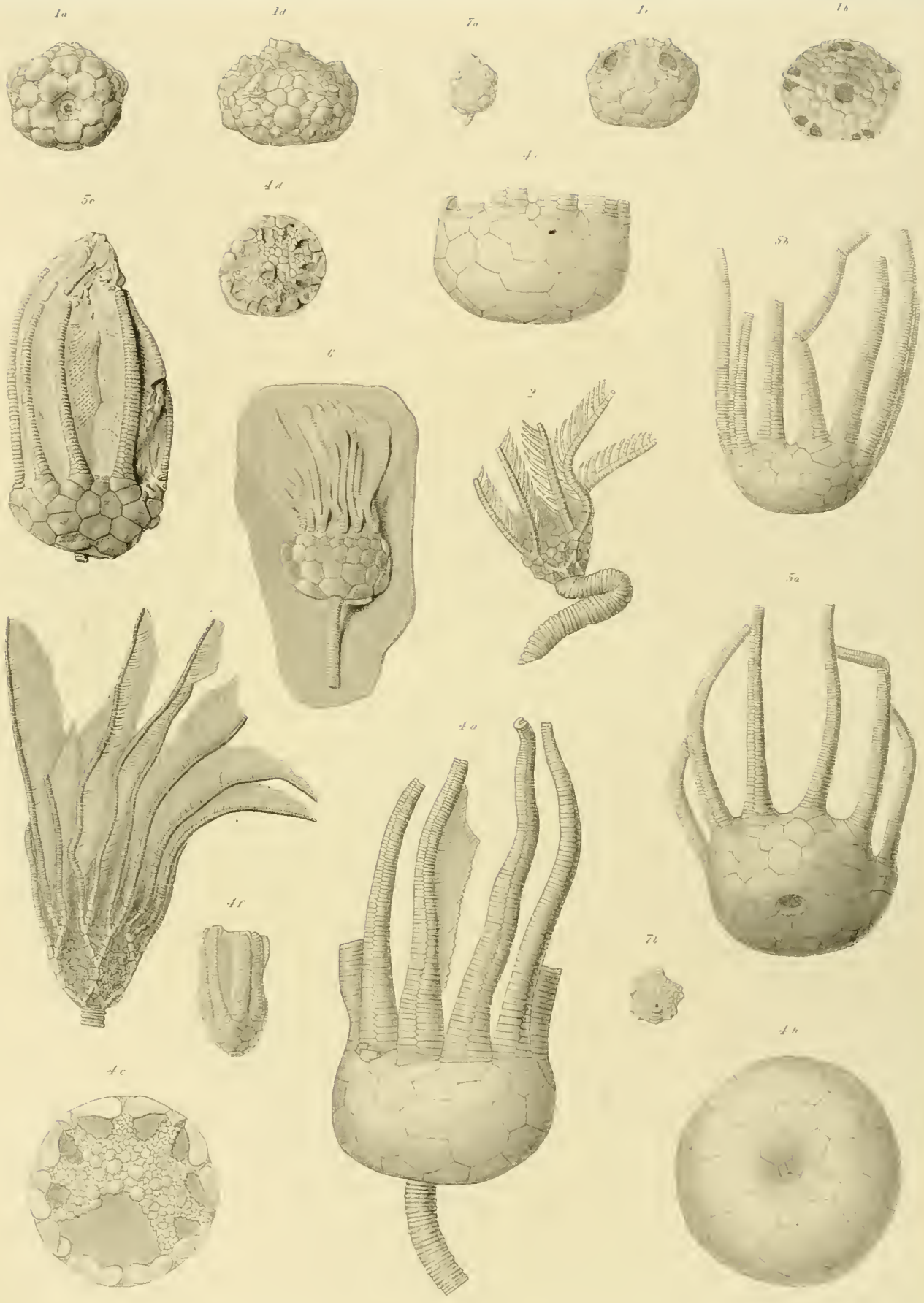

1a
1d
7a
1c
1b
4c
4d
5c
5b
6
2
5a
4a
4f
7b
4b
4c

PLATE XII.

PAGE

RHODOCRINUS KIRBYI W. and Sp. 226

Fig. 1*a*. Specimen with spreading arms.
1*b*. Another specimen with arms and column, anterior view.
1*c*. Posterior view of another specimen.
1*d*. The calyx, posterior view.

RHODOCRINUS NANUS M. and W. 228

2*a*. Anterior view of a specimen with stem.
2*b*. Posterior view of another specimen.
(Both from the Kinderhook group.)

RHODOCRINUS BARRISI Hall 230

3. A small specimen with arms.
4*a*. A very large, nodose specimen; dorsal aspect of the calyx.
4*b*. Side view of same specimen.
4*c*. Posterior view of same.
4*d*. Ventral aspect of same.
5*a*. Lateral view of another specimen.
5*b*. Dorsal aspect of same.

RHODOCRINUS BARRISI, var. STRIATUS W. and Sp. 231

6. Lateral view of dorsal cup.

RHODOCRINUS WORTHENI Hall 220

7*a*. Specimen with arms.
7*b*. Dorsal aspect of calyx.
7*c*. Ventral aspect of same specimen.

RHODOCRINUS WORTHENI, var. URCEOLATUS W. and Sp. 221

8*a*. Posterior view of the calyx.
8*b*. Ventral aspect of same specimen.

RHODOCRINUS WATERSIANUS W. and Sp. 221

9. Specimen with arms and stem.

(All the specimens are in the collection of Wachsmuth and Springer.)

2a
1c
5b
9
1d
6
5a
1b
4c
7c
8a
4d
8b
4b
4a
7b
7a
2b
1c
3

PLATE XIII.

PAGE

RHODOCRINUS WHITEI Hall 223

Fig. 1*a*. Dorsal aspect of calyx. (Coll. W. and Sp.)
1*b*. Ventral aspect of same specimen.
1*c*. Posterior side of same.

RHODOCRINUS TRUNCATUS W. and Sp. 231

2*a*. The type specimen, lateral view. (Coll. W. and Sp.)
2*b*. Posterior view of same.
2*c*. Dorsal aspect of same.
2*d*. Ventral aspect of another specimen. (Same collection.)
2*e*. Side view of same specimen.
2*f*. Side view of a very large specimen. (Same collection.)

RHODOCRINUS TUBERCULATUS W. and Sp. 232

3. Side view of the type. (Coll. W. and Sp.)
4. Side view of a larger and more nodose specimen. (Same collection.)

RHODOCRINUS WACHSMUTHI Hall 222

5*a*. A large specimen with arms. (Coll. W. and Sp.)
5*b*. Posterior view of calyx. (Same collection.)
5*c*. Side view of same specimen.
5*d*. Dorsal aspect of another specimen. (Same collection.)

RHODOCRINUS COXANUS Worthen 222

6. The type specimen; lateral view. (Coll. L. A. Cox.)
7. Another specimen of this species, described as *Rhodocrinus polydactylus*. (Same collection.)

RHODOCRINUS NODULOSUS Hall 225

8. The type specimen. (After Hall.)

THYSANOCRINUS HALLI Lyon 196

9*a*. Dorsal aspect of calyx. (Coll. Borden Institute, New Providence, Indiana.)
9*b*. An abnormal specimen. (Same collection.)

LAMPTEROCRINUS TENNESSEENSIS Roemer 208

10*a*. Posterior view of the calyx. (Coll. W. and Sp.)
10*b*. Ventral aspect of same.
10*c*. Anterior view of another specimen. (Same collection.)
10*d*. Portion of the stem.

THYLACOCRINUS CLARKEI W. and Sp. 248

11*a*. The type specimen, lateral view. (State Cabinet Nat. Hist. N. Y.)
11*b*. Infrabasal disk, showing the stellate column facet.

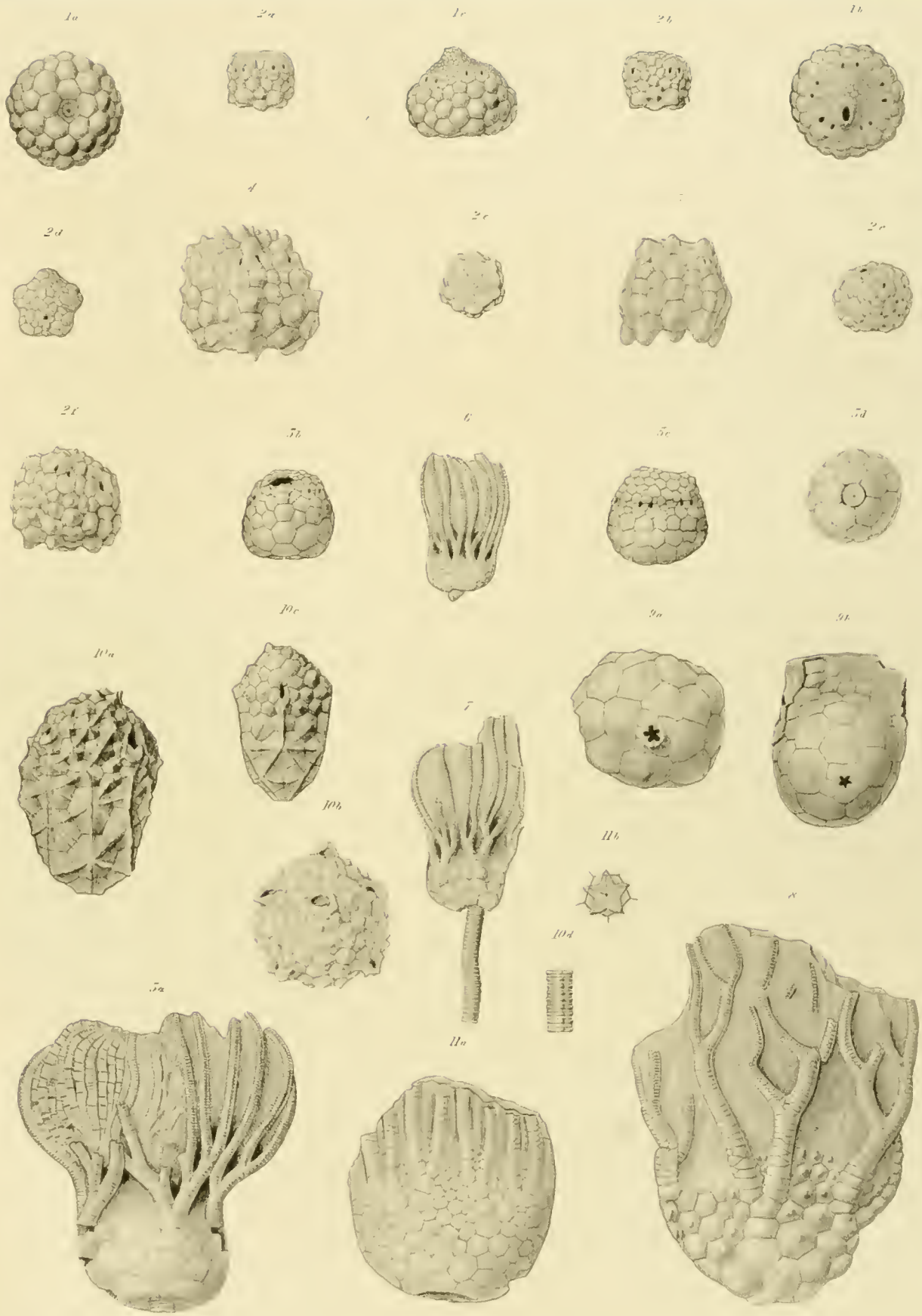

1a
2a
1c
2b
1b
4
2d
2e
2c
2f
5b
6
5c
5d
10c
9a
9b
10a
7
10b
11b
8
10d
5a
11a

PLATE XIV.

Page

Gilbertsocrinus typus (Hall) 242

Fig. 1. Dorsal aspect of a large specimen with the appendages preserved nearly entire. From the Burlington and Keokuk Transition Bed.

2. Another specimen from the same horizon; side view.

3. A specimen from the Upper Burlington Limestone with the appendages and portions of the arms preserved.

(All specimens in the collection of Wachsmuth and Springer.)

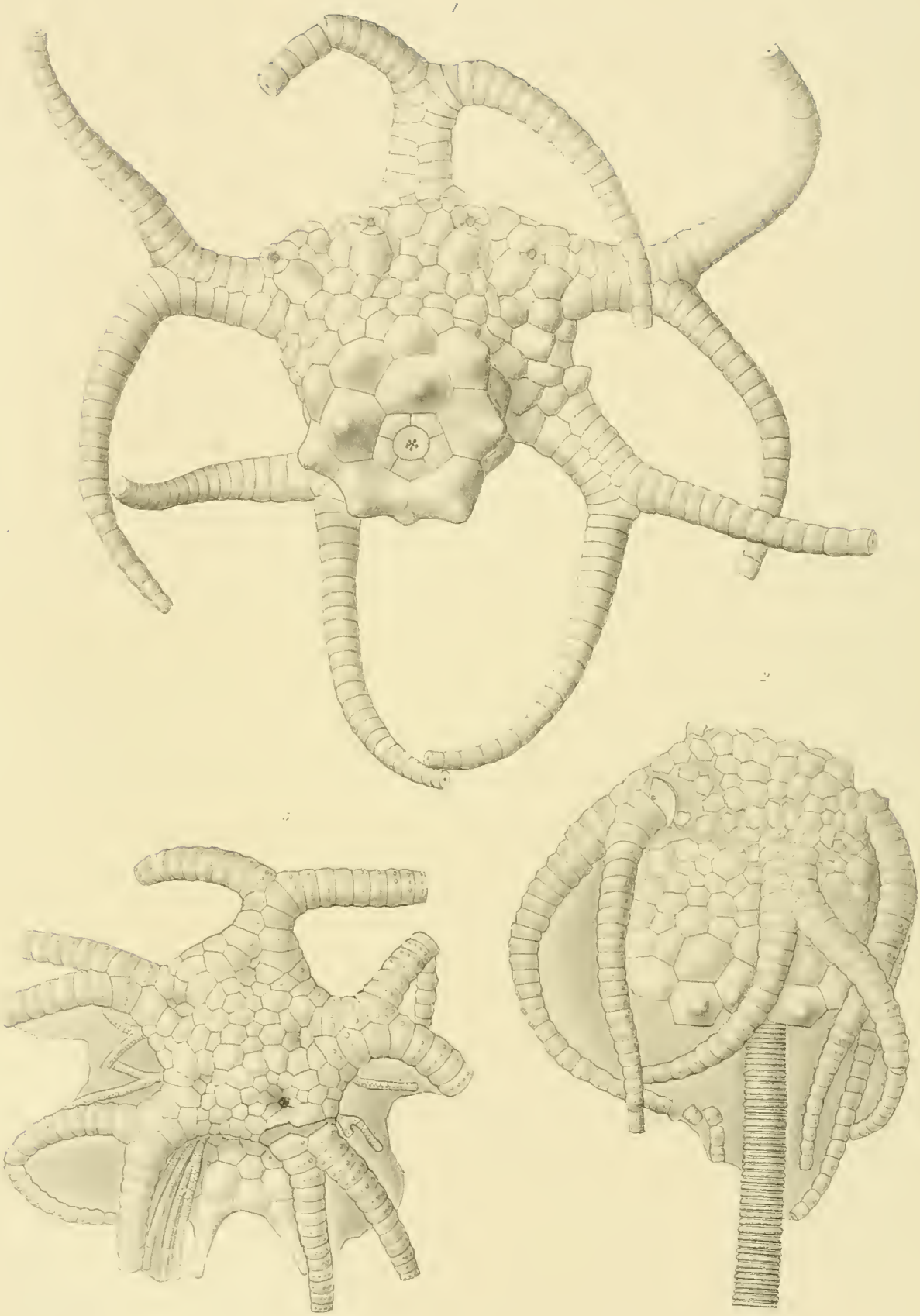

1
2
3

PLATE XV.

Page

Gilbertsocrinus tuberosus (Lyon and Cass) 239

Fig. 1*a*. A large specimen showing the calycine appendages.
1*b*. Another specimen, showing the appendages and arms.

Gilbertsocrinus dispansus W. and Sp. 240

2*a*. Ventral aspect of a specimen, with calycine appendages and arms preserved.
2*b*. Dorsal aspect of the same specimen.
2*c*. Lateral view of the calyx.
2*d*. Ventral aspect of the same specimen.

Gilbertsocrinus spinigerus (Hall) 247

3*a*. The type specimen, dorsal aspect of the calyx.
3*b*. Lateral view of the same specimen.
3*c*. Ventral aspect of the same.

Gilbertsocrinus stellaris De Kon. and Le Hon 236

4. Side view of a slightly enlarged specimen from Belgium. (In this species, and the succeeding one from England, the appendages are arranged in five pairs of separate tubes; differing from most of the American species, in which those of adjoining interradii are coalesced for some distance beyond the calyx.)

Gilbertsocrinus calcaratus Phillips 236

5. Figured to illustrate the differences in the structure of the genus between European and American forms. Mountain Limestone, England.

Rhodocrinus Whitei Hall 223

6*a*. Side view of a large and very perfect specimen.
6*b*. Dorsal aspect of same specimen.

Rhodocrinus Wachsmuthi Hall 222

7. Anterior side of the calyx.
(All the specimens are in the collection of Wachsmuth and Springer except that illustrated by figs. 3*a*, *b*, *c*, which is in the Canada Survey Museum at Ottawa.)

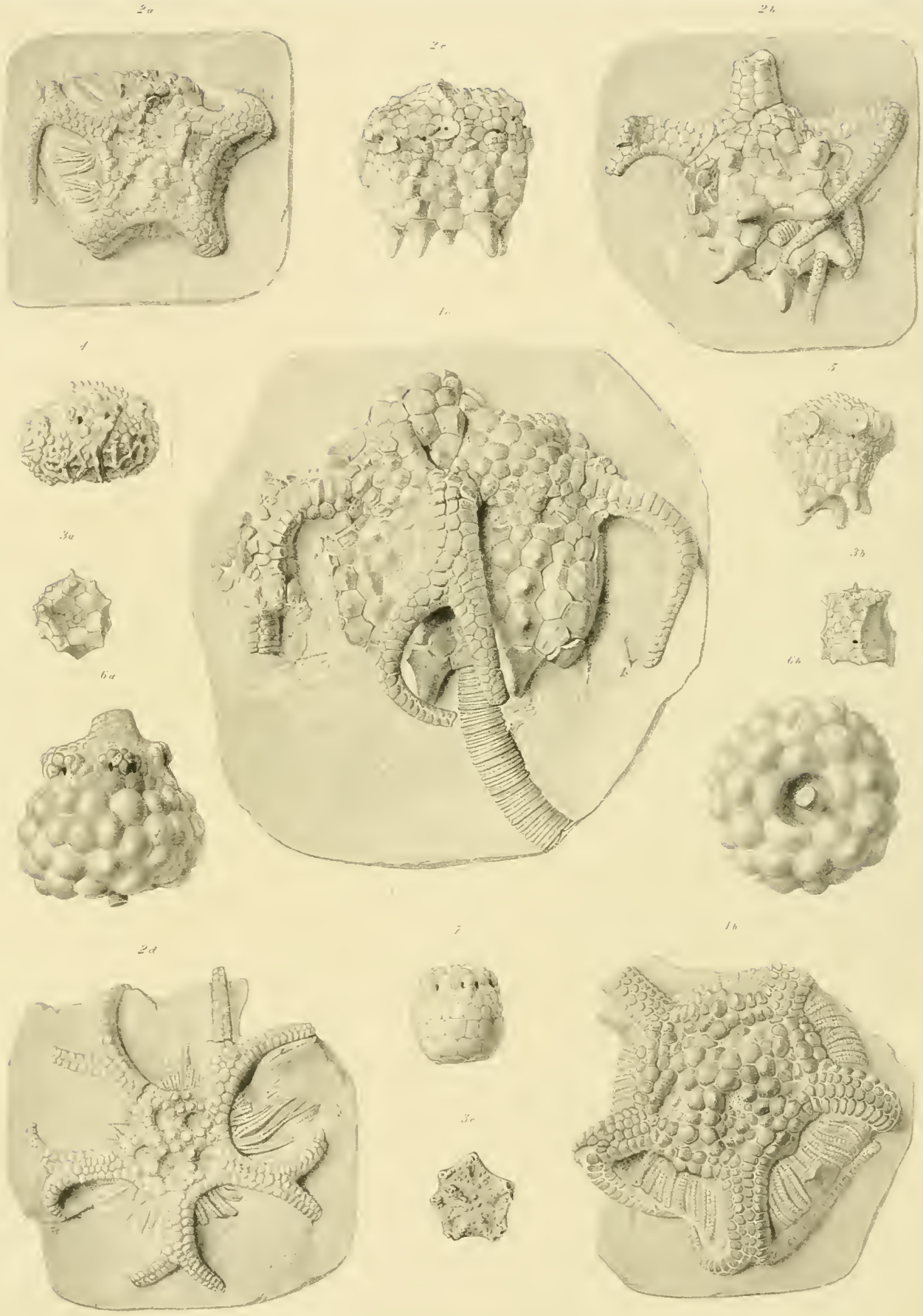

2a
2b
2c
1c
4
5
3a
3b
6a
6b
7
1b
2d
3c

PLATE XVI.

PAGE

GILBERTSOCRINUS TUBEROSUS (Lyon and Cass) 239

Fig. 1. Specimen with stem.
2. Another specimen; ventral aspect.
3. Ventral aspect of another specimen with additional branches in the appendages. The anal opening covered over by a *Platyceras equilaterum*.
4. Ventral aspect of another specimen.
5. Dorsal aspect of calyx, showing the bases of the arms.
6. A crushed specimen with appendages, arms, and pinnules.

(All specimens in the collection of Wachsmuth and Springer.)

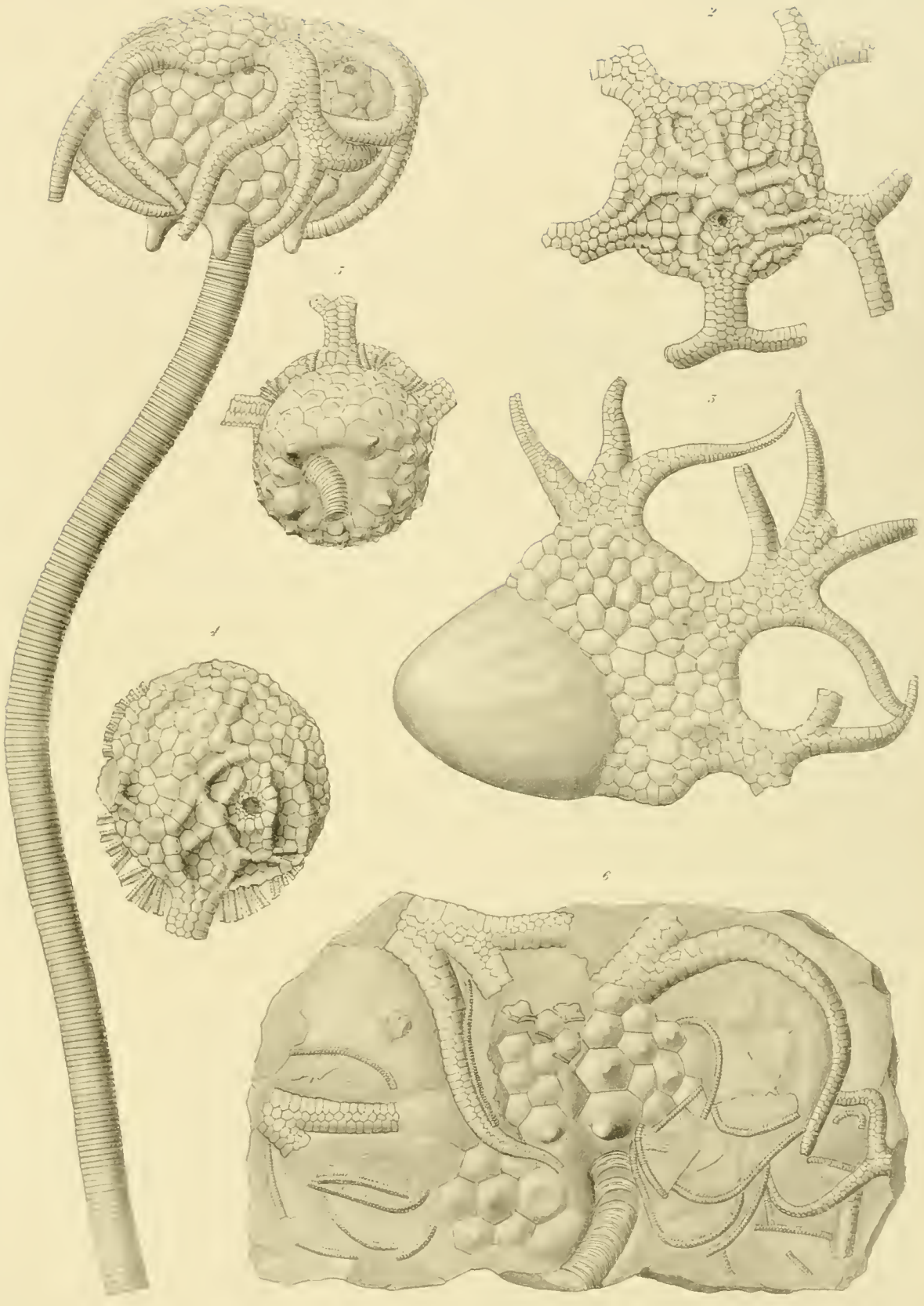

1
2
3
4
5
6

PLATE XVII.

PAGE

GILBERTSOCRINUS RETICULATUS (Hall) 244

Fig. 1*a*. Dorsal aspect of the calyx.
1*b*. Lateral view of another specimen.

GILBERTSOCRINUS FISCELLUS (M. and W.) 245

2*a*. Anterior view of calyx.
2*b*. Posterior view of same.
2*c*. Ventral aspect of same.
2*d*. Posterior view of another specimen, in which the appendages next to the posterior side separate within the calyx.

GILBERTSOCRINUS TENUIRADIATUS (M. and W.) 246

3. Dorsal aspect of a crushed specimen, showing parts of the appendages.

GILBERTSOCRINUS OBOVATUS (M. and W.) 241

4*a*. Side view of calyx.
4*b*. Ventral aspect of same. (Figure drawn anal side up.)

GILBERTSOCRINUS TUBERCULOSUS (Hall) 243

5*a*. A specimen with arms, appendages, and stem.
5*b*. Dorsal aspect of another specimen.
5*c*. Ventral aspect of same.

GILBERTSOCRINUS TUBEROSUS (Lyon and Cass) 239

6. Dorsal aspect of calyx.

GILBERTSOCRINUS TYPUS (Hall) 242

7*a*. A large specimen from the Upper Burlington Limestone.
7*b*. Portion of the arms, showing mode of bifurcation.

(All specimens in the collection of Wachsmuth and Springer.)

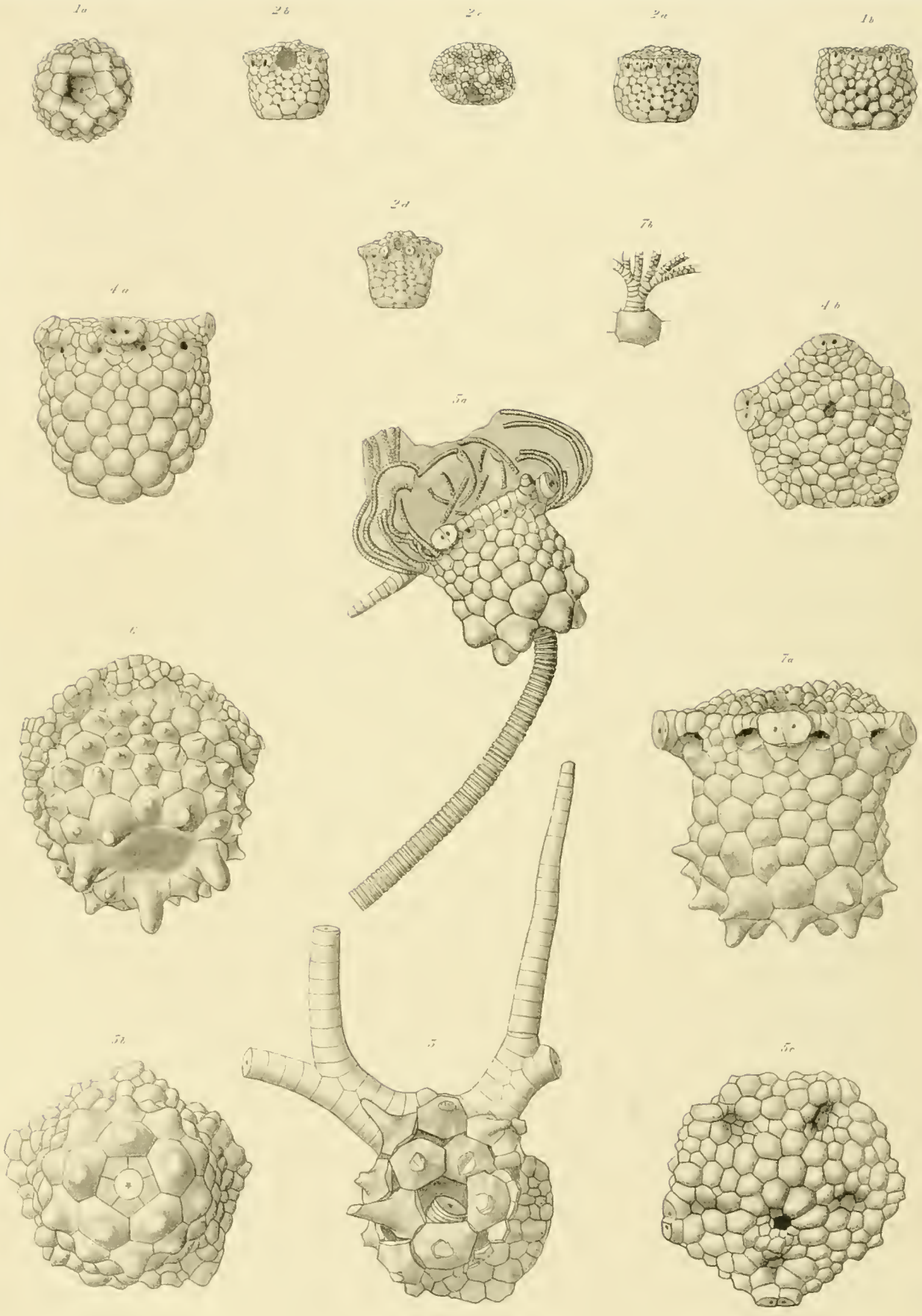

1a
2b
2c
2a
1b
2d
7b
4a
4b
5a
6
7a
5b
5
5c

PLATE XVIII.

PAGE

PTYCHOCRINUS PARVUS (Hall) 199

Fig. 1*a*. View of the specimen described by S. A. Miller as *Glyptocrinus angularis* ($\frac{2}{1}$). (Coll. S. A. Miller.)

1*b*. Another specimen with the arms better preserved ($\frac{2}{1}$). (Same collection.)

2. The specimen described by Wetherby as *Glyptocrinus* (*Reteocrinus*) *gracilis* ($\frac{2}{1}$). (Coll. Mr. Vaupel.)

PTYCHOCRINUS SPLENDENS (Miller) 198

3*a*. The type specimen ($\frac{3}{1}$). (Coll. S.A. Miller.)

3*b*. Another specimen ($\frac{2}{1}$). (Same collection.)

THYSANOCRINUS LILIIFORMIS Hall 192

4. The type specimen. (Museum of Cornell University.)

THYSANOCRINUS OCCIDENTALIS (Hall) 194

5*a*. Side view of calyx ($\frac{2}{1}$). (After Hall.)

5*b*. Posterior view of calyx. (After Hall.)

5*c*. Dorsal aspect of calyx ($\frac{2}{1}$). (After Hall.)

THYSANOCRINUS INORNATUS (Hall) 193

6*a*. Anterior view of calyx. (Coll. W. F. E. Gurley.)

6*b*. Posterior view of same specimen.

6*c*. Ventral aspect of same ($\frac{2}{1}$).

6*d*. A young specimen, probably of this species. (Same collection.)

THYSANOCRINUS BRACHIATUS (Hall) 195

7. Dorsal aspect of the type specimen; the matrix removed so as to show the pinnules and the arrangement of the plates. (Am. Mus. Nat. Hist. N. Y.)

IDIOCRINUS ELONGATUS W. and Sp. 203

8*a*. The type specimen; side view. (Coll. W. and Sp.)

8*b*. Ventral aspect of same ($\frac{1}{1}$).

8*c*. Another view of the ventral disk ($\frac{2}{1}$). (Anal side to the right. Coll. W. and Sp.)

IDIOCRINUS VENTRICOSUS W. and Sp. 205

9*a*. The type specimen; side view. (Same collection.)

9*b*. Dorsal aspect of the dorsal cup. (Anal side to the left. Same collection.)

IDIOCRINUS IMMATURUS (Hall) 206

10*a*. The type specimen; anterior view. (Am. Mus. Nat. Hist. N. Y.)

10*b*. Posterior view of same.

10*c*. Dorsal aspect of same. (After Hall.)

IDIOCRINUS TENNESSEENSIS (Worthen) 206

11. The type specimen. (Illinois State Collection.)

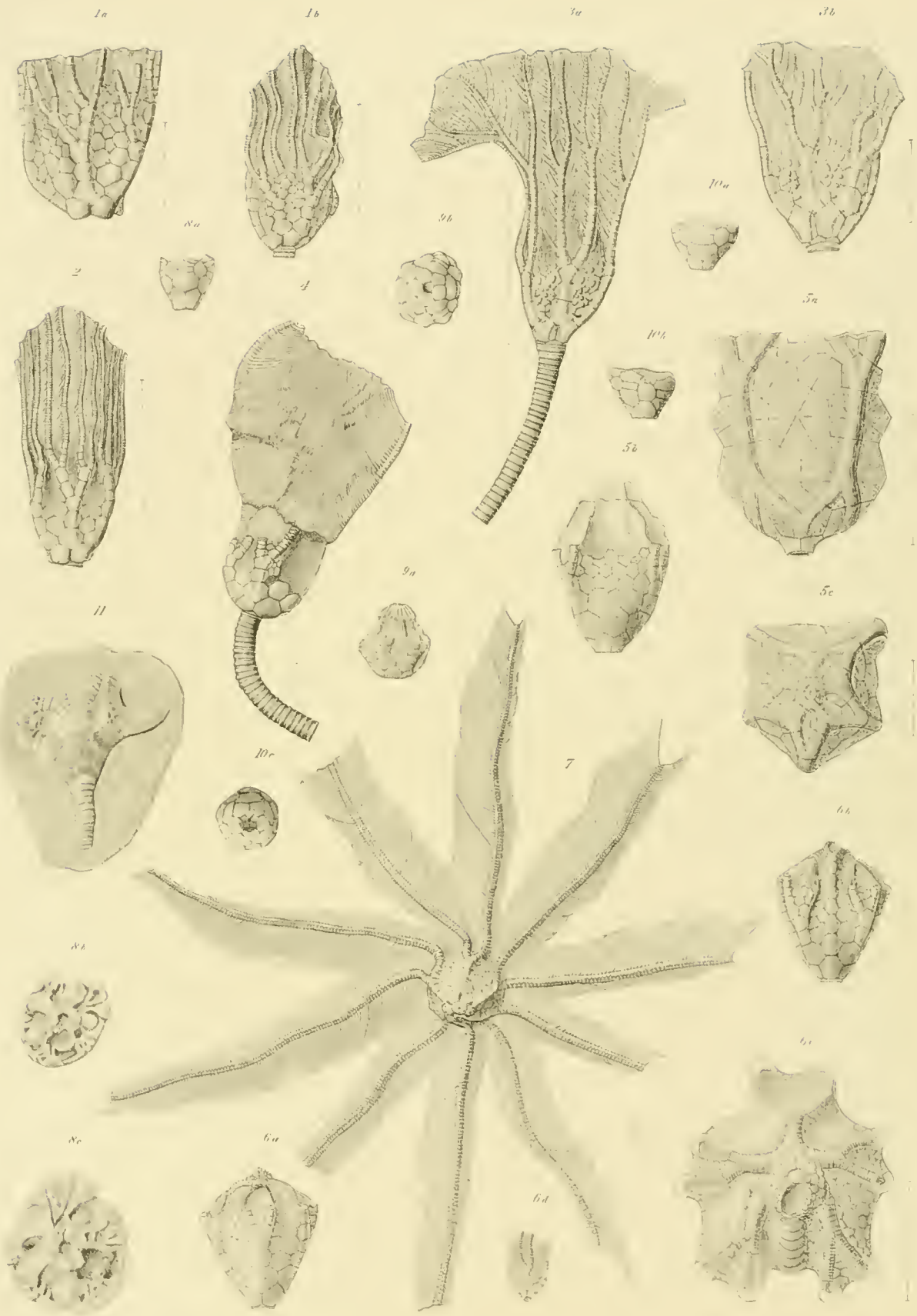

1a
1b
3a
3b
8a
9b
10a
2
4
5a
10b
5b
9a
11
5c
10c
7
6b
8b
6c
8c
6a
6d

PLATE XIX.

PAGE

SIPHONOCRINUS NOBILIS (Hall) 212

Fig. 1*a*. Gutta percha cast made from a natural mould. (After Hall.)
1*b*. The quinquepartite infrabasal disk.
2*a*. Internal cast, showing the arrangement of the ambulacra upon the left side. (Coll. T. A. Green.)
2*b*. Lateral view of a similar cast, showing their arrangement at the right side. (Same collection.)
2*c*. Ventral aspect of another cast. (Same collection.)

SIPHONOCRINUS ARMOSUS McChesney 211

3*a*. Left side of an internal cast; the anal tube overlying the ambulacra, and passing over to the anterior side of the calyx, being subtegminal to the arm regions. (Same collection.)
3*b*. Another specimen, showing the right side of the calyx. (Same collection.)
3*c*. Ventral aspect of another cast. (Same collection.)

SIPHONOCRINUS PENTAGONUS W. and Sp. 213

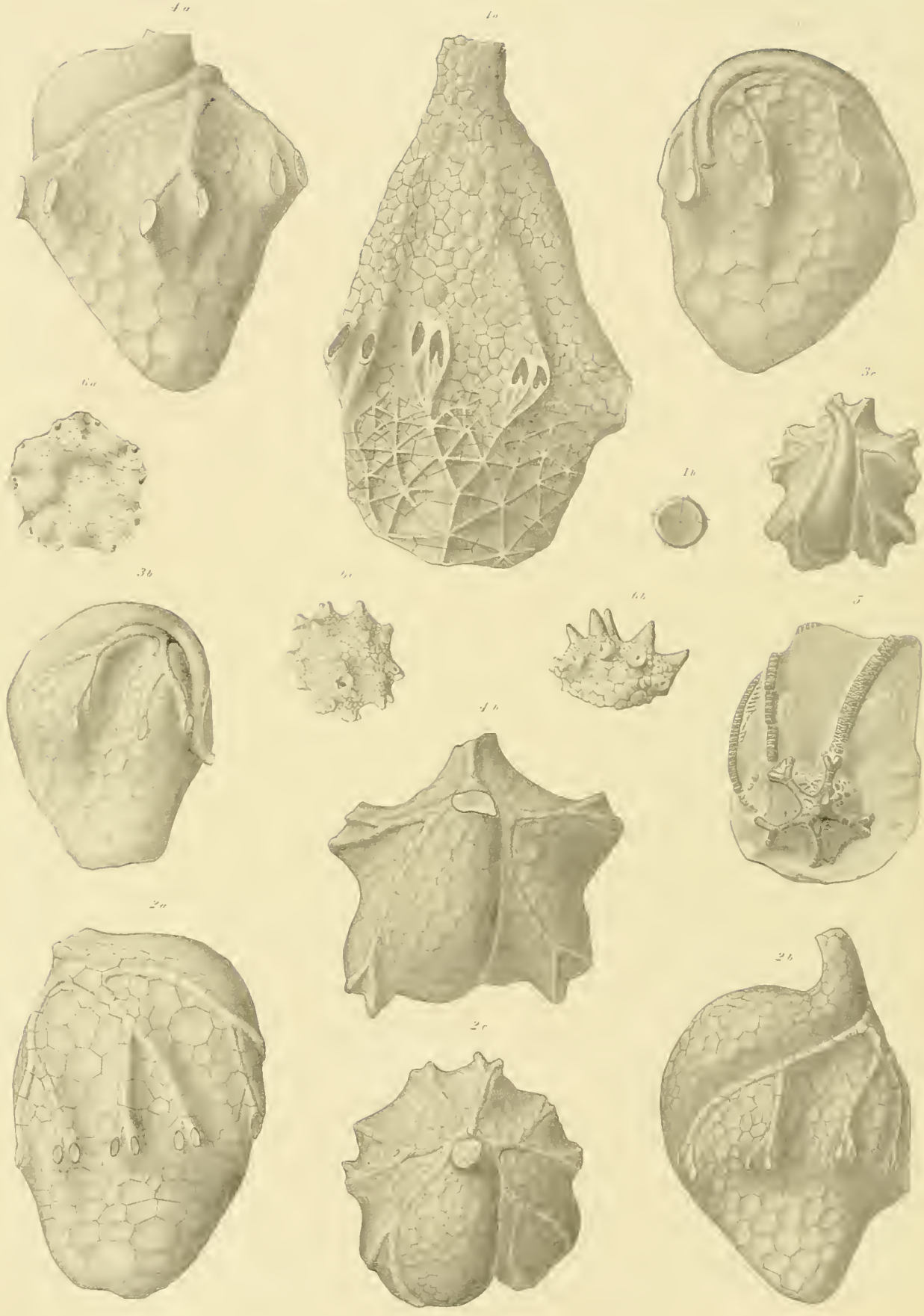
4*a*. The type specimen; lateral view. (Same collection.)
4*b*. Ventral aspect of another specimen. (Same collection.)

THYSANOCRINUS INORNATUS (Hall) 193

5. Dorsal aspect of specimen with portions of arms. (Coll. W. and Sp.)

HYPTIOCRINUS TYPUS W. and Sp. 201

6*a*. Dorsal aspect of the specimen described by Miller as *Cyphocrinus Gorbyi*. (After Miller, drawn with the anal side down.)
6*b*. Lateral view of calyx. (Coll. W. and Sp.)
6*c*. Ventral aspect of calyx. (Same collection.)



Chas. F. Keve A. M. Westergren del.

Heliotype Printing Co. Boston

PLATE XX.

Page

Glyptocrinus Dyeri (Meek) 271

Fig. 1*a*. A large specimen with arms. (Coll. I. H. Harris.)
1*b*. Posterior view of a large, flattened specimen of the type of *Gl. Richardsoni* Wetherby, showing the fixed pinnules. (Coll. W. and Sp.)
1*c*. The base, showing the angles of the axial canal to be interradial. (Coll. Mr. E. H. Vaupel.)

Glyptocrinus marginatus Billings 275

2. The type specimen; postero-lateral view. (Mus. Geol. Surv., Canada.)

Glyptocrinus Fornshelli Miller 276

3. The calyx and part of the stem. (Coll. I. H. Harris.)

Glyptocrinus decadactylus Hall 270

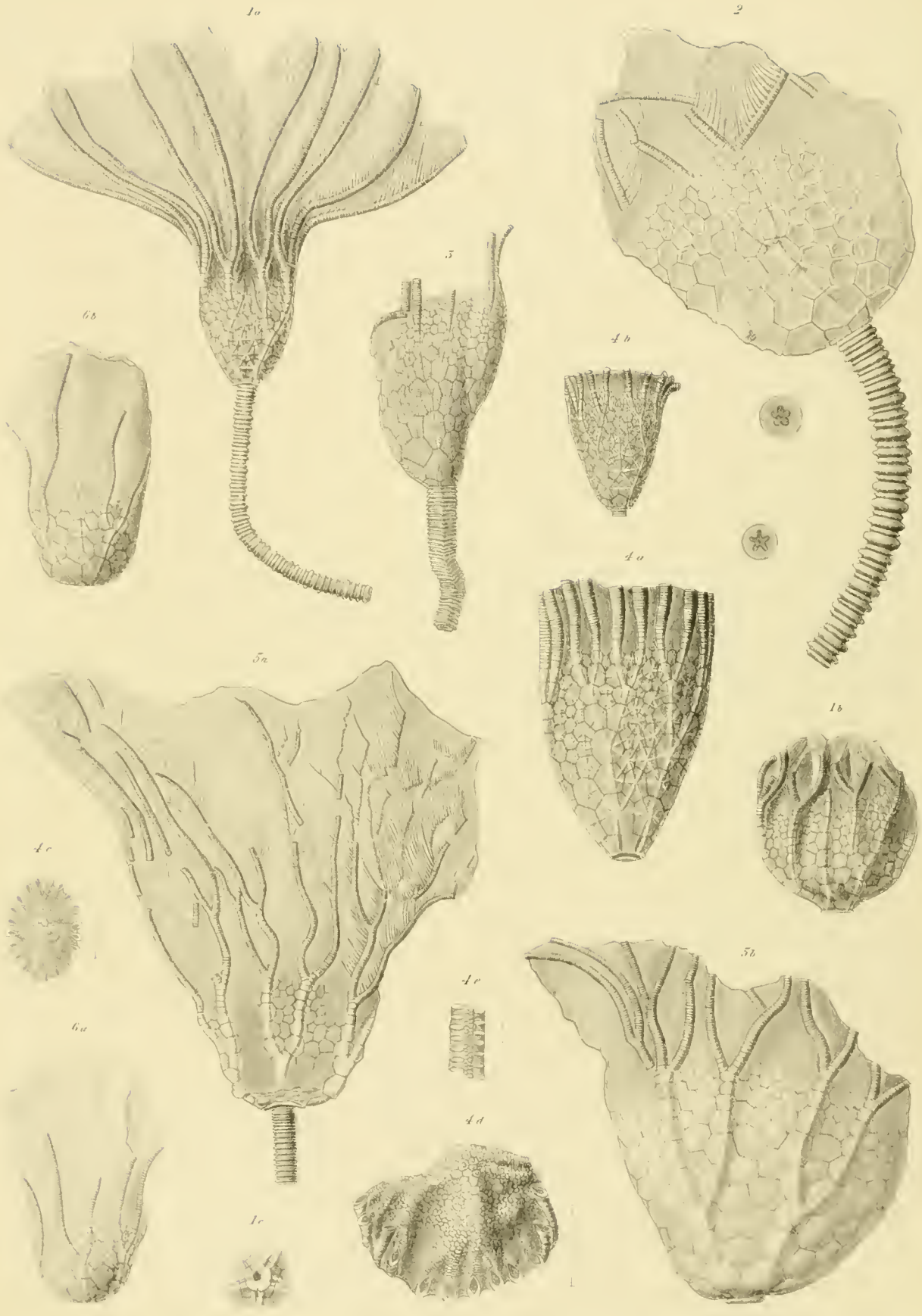
4*a*. A very large specimen. (After Meek.)
4*b*. Posterior view of calyx. (Coll. I. H. Harris.)
4*c*. Ventral aspect of a rather small specimen ($\frac{2}{1}$). (Coll. E. O. Ulrich.)
4*d*. Ventral aspect of an older specimen ($\frac{2}{3}$). (Coll. W. and Sp.)
4*e*. Portions of the arms, showing covering-plates ($\frac{4}{1}$). (Same collection.)

Glyptocrinus ramulosus Billings 273

5*a*. One of the type specimens; lateral view. (Mus. Geol. Surv., Canada.)
5*b*. Another type specimen, showing the ramifications of the arms. (Same collection.)

Glyptocrinus ornatus Billings 274

6*a*. The type specimen; anterior view. (Mus. Geol. Surv., Canada.)
6*b*. Posterior view of same specimen.



Heliotype Printing Co. Boston

PLATE XXI.

Page

Periglyptocinus Billingsi W. and Sp 277

Fig. 1*a*. Posterior view of a specimen with arms and stem. (Coll. John Stewart, now in the Canada Survey Museum at Ottawa.)

1*b*. Another specimen in the same collection, showing the left postero-lateral ray and anal interradius.

Periglyptocrinus priscus (Billings) 278

2. The type specimen. (Museum Geol. Surv., Canada.)

Glyptocrinus Dyeri (?) 271

3*a–c*. Young specimens, probably of *G. Dyeri* ($\frac{2}{1}$).

3*d*. Type of Miller's *Pycnocrinus Shafferi* ($\frac{2}{1}$). (Coll. S. A. Miller.) 272

3*e*. Type of Miller's *Pycnocrinus Shafferi*, var. *germanus* ($\frac{2}{1}$). (Same collection.)

3*f*. A somewhat larger specimen ($\frac{2}{1}$). (Coll. W. and Sp.)

Glyptocrinus decadactylus Hall 270

4*a*. Inner floor of the dorsal cup ($\frac{2}{1}$). (Coll. E. O. Ulrich.)

4*b*. Interior view of the basal cup ($\frac{2}{1}$). The angles of the axial canal directed interradially. (Coll. W. and Sp.)

Glyptocrinus Fornshelli Miller 276

5. Interior view of the basal cup ($1\frac{1}{1}$). The angles of the axial canal directed radially. (Coll. I. H. Harris.)

Glyptocrinus Dyeri Meek 271

6. Calyx, showing the posterior side of a large, highly ornamented specimen. (Coll. E. O. Ulrich.)

Compsocrinus miamiensis S. A. Miller 518

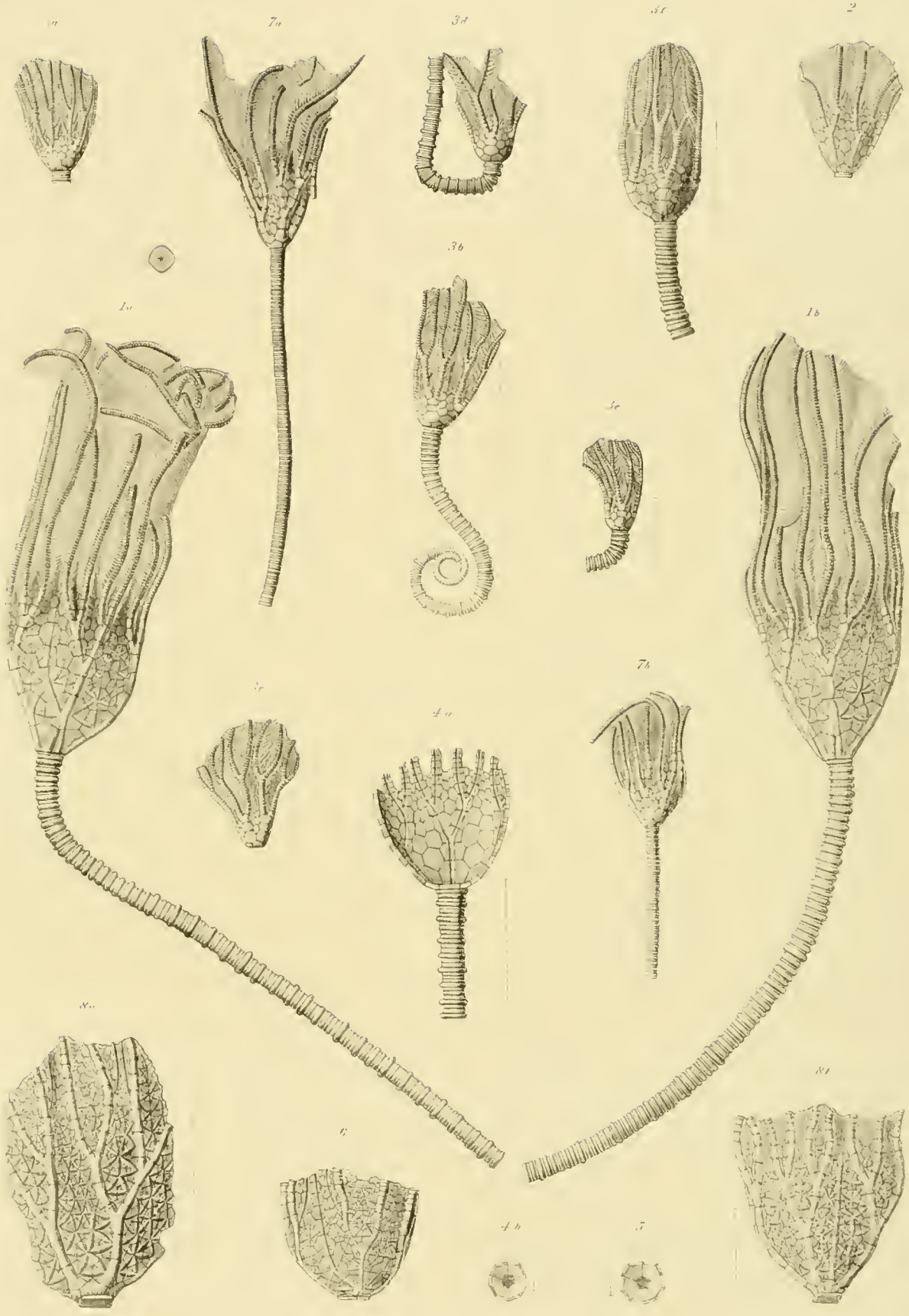
7*a*. The type specimen; posterior side. (Coll. I. H. Harris.)

7*b*. Anterior view of another specimen. (Coll. W. and Sp.)

Compsocrinus Harrisi S. A. Miller 517

8*a*. One of the type specimens; lateral view ($\frac{2}{1}\frac{1}{2}$). (Coll. I. H. Harris.)

8*b*. Posterior view of another type specimen ($\frac{2}{1}$). (Same collection.)


7a
3d
2
3b
1a
1b
7b
4a
6
4b
7

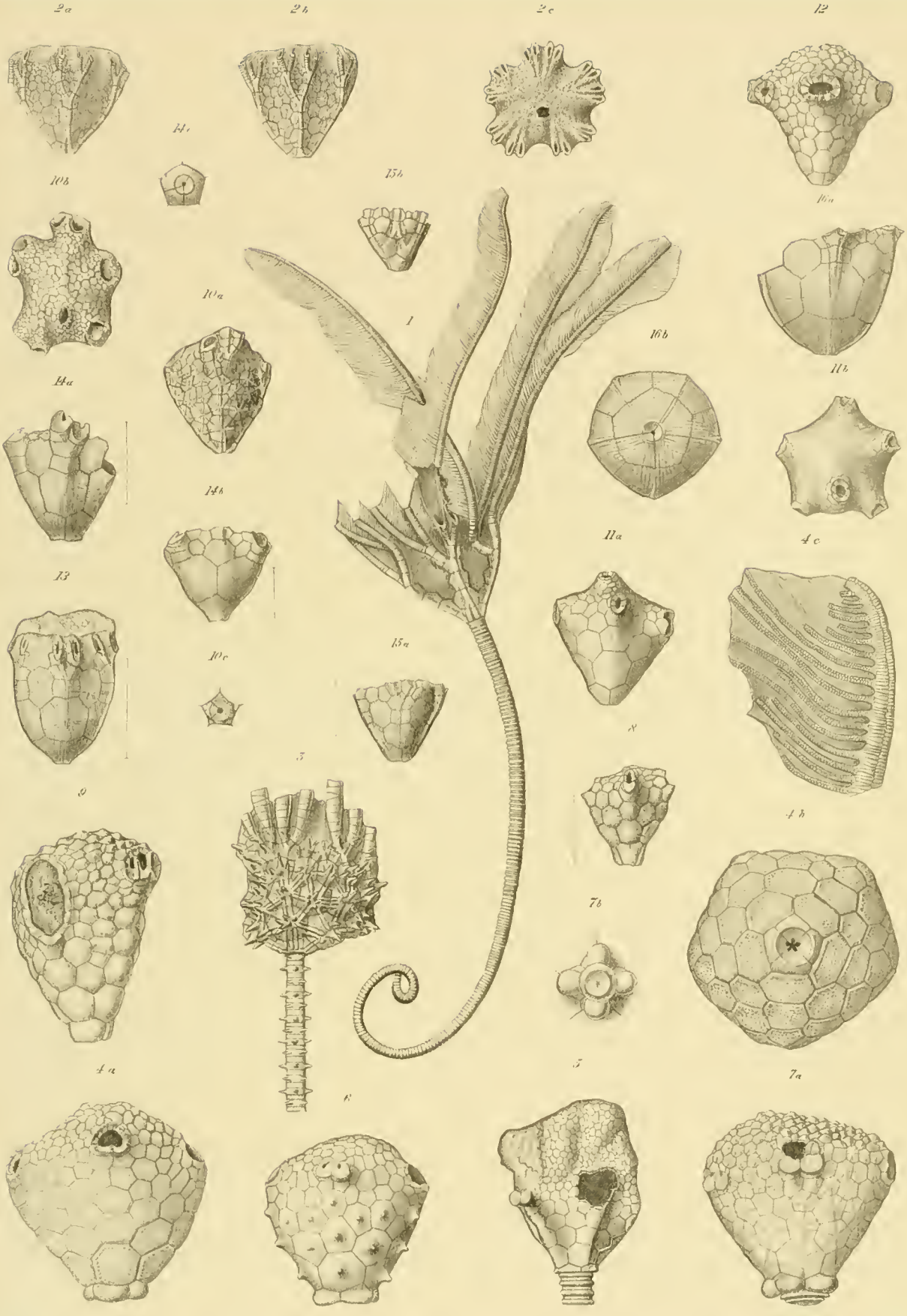

2a
2b
2c
12
14c
15b
16a
10b
10a
1
16b
14a
11b
14b
11a
4c
13
15a
10c
8
9
3
4b
7b
4a
5
7a
6

PLATE XXII.

PAGE

MARIACRINUS WARRENI Ringueberg 283

Fig. 1. The type specimen. (Coll. Dr. E. N. S. Ringueberg.)

MARIACRINUS CARLEYI (Hall) 282

2*a*. Postero-lateral view of calyx. (Coll. I. H. Harris.)
2*b*. Anterior view of same specimen.
2*c*. Ventral aspect of the same.

TECHNOCRINUS SPINULOSUS (Hall) 305

3. The type specimen. (Am. Mus. Nat. Hist. N. Y.)

MELOCRINUS BAINBRIDGENSIS H. and W. 297

4*a*. The type specimen; side view. (After Hall and Whitfield.)
4*b*. Dorsal aspect of same.
4*c*. The arms. (After Hall and Whitfield.)

MELOCRINUS GRACILIS W. and Sp. 298

5. The type specimen; side view. (Coll. J. M. Clarke.)

MELOCRINUS CALVINI W. and Sp. 300

6. The type specimen. (Coll. Prof. S. Calvin.)

MELOCRINUS TIFFANYI W. and Sp. 299

7*a*. The type specimen; right posterior view. (Coll. A. S. Tiffany.)
7*b*. The basals of same.

MELOCRINUS PARVUS W. and Sp. 303

8. The type specimen; anterior view ($1\frac{1}{2}$). (Coll. W. and Sp.)

MELOCRINUS OBLONGUS W. and Sp. 300

9. Lateral view of a very elongate calyx. (Coll. W. and Sp.)

MELOCRINUS OBCONICUS Hall 302

10*a*. Lateral view of calyx. (Same collection.)
10*b*. Ventral aspect of another specimen. (Same collection.)
10*c*. The basals.

MELOCRINUS ROEMERI W. and Sp. 301

Fig. 11*a*. Lateral view of calyx. (Same collection.)
11*b*. Ventral aspect of same specimen.

MELOCRINUS OBLONGUS W. and Sp. 300

12. The type specimen; lateral view. (Coll. W. and Sp.)

MACROSTYLOCRINUS FASCIATUS Hall 288

13. Lateral view of calyx ($\frac{1}{1}^{1}$). (Coll. W. and Sp.)

MACROSTYLOCRINUS STRIATUS Hall 287

14*a*. Lateral view of calyx ($\frac{1}{1}^{1}$). (Same collection.)
14*b*. Posterior view of another specimen ($\frac{1}{1}^{1}$). (Same collection.)
14*c*. The basals.

MACROSTYLOCRINUS GRANULOSUS Hall 289

15*a*. Lateral view of calyx ($\frac{1}{1}^{1}$). (Coll. W. and Sp.)
15*b*. Anal view of same specimen.

MACROSTYLOCRINUS MEEKI (Lyon) 290

16*a*. The type specimen; lateral view. (Coll. Borden Institute, New Providence, Ind.)
16*b*. Dorsal aspect of calyx. (Coll. Sidney S. Lyon.)

PLATE XXIII.

Page

MELOCRINUS NOBILISSIMUS (Hall) 295

Fig. 1. The type specimen. (Amer. Mus. Nat. Hist.)
2. Diagram showing the arrangement of the plates.
3. Portion of one of the radial trunks, showing the origin of the arms. (After Hall.)

MELOCRINUS PACHYDACTYLUS (Hall) 296

4. The structure of the radial trunks and the origin of the arms. (After Hall.)
5. The type specimen of "*Mariacrinus*" *pauciductylus* Hall. (After Hall.)

MARIACRINUS PLUMOSUS Hall 284

6. The type specimen. (After Hall.)
7. Dorsal cup of a larger specimen. (After Hall.)

MACROSTYLOCRINUS ORNATUS Hall 286

8*a*. The type specimen. (After Hall.)
8*b*. One of its radials, enlarged.
8*c*. A portion of an arm, enlarged.

MACROSTYLOCRINUS FUSIBRACHIATUS Ringueberg 291

9. The type specimen. (Coll. Dr. E. N. S. Ringueberg.)
10. A smaller, somewhat distorted specimen. (Same collection.)

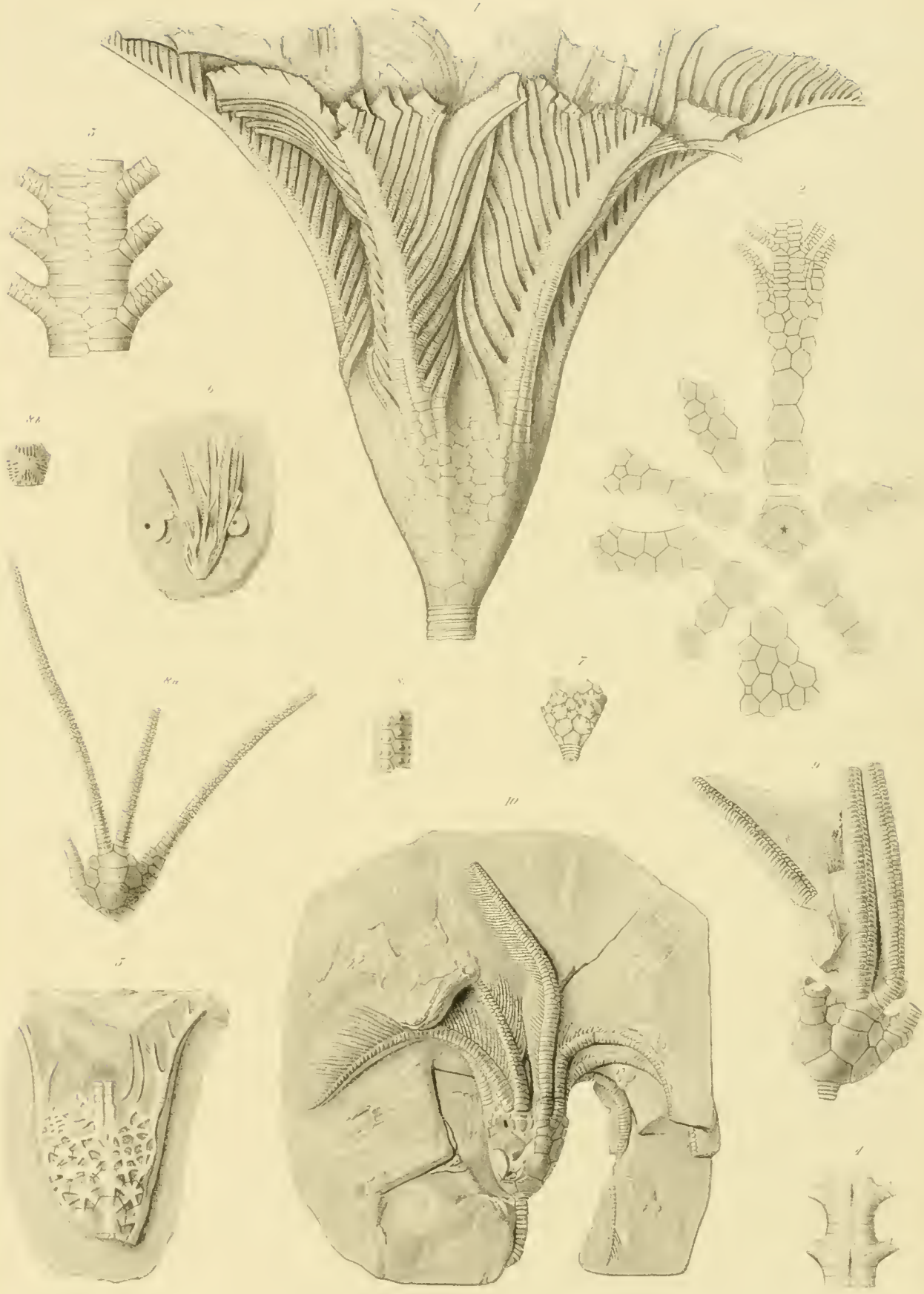


PLATE XXIV.

Page

Hadrocrinus discus Lyon 328

Fig. 1. The type specimen; dorsal aspect. (Coll. S. S. Lyon.)

Hadrocrinus plenissimus Lyon 328

2*a*. The type specimen; dorsal aspect. (Coll. S. S. Lyon.)
2*b*. Inner floor of dorsal cup. (Same collection.)

Technocrinus Andrewsi Hall 306

3. The type specimen, after Hall. (From a gutta percha cast made from a natural mould in sandstone.)

Melocrinus pachydactylus (Hall) 296

4*a*. The type specimen. (After Hall.)
4*b*. Another specimen. (Am. Mus. Nat. Hist.)

Melocrinus bainbridgensis Hall and Whitf. 297

5. The specimen described by S. H. Williams as *Melocrinus Clarkei*. (N. Y. State Cabinet of Nat. Hist.)

(?) Stelidiocrinus argutus (Walcott) 280

6. The type specimen. (After Walcott. Coll. Mus. Comp. Zoöl.)

Allocrinus typus W. and Sp. 307

7*a*. Side view of one of the types. (Coll. W. and Sp.)
7*b*. Basal view of same specimen.

Allocrinus Benedicti S. A. Miller 308

8*a*. Side view of calyx. (Same collection.)
8*b*. Basal view of same specimen.

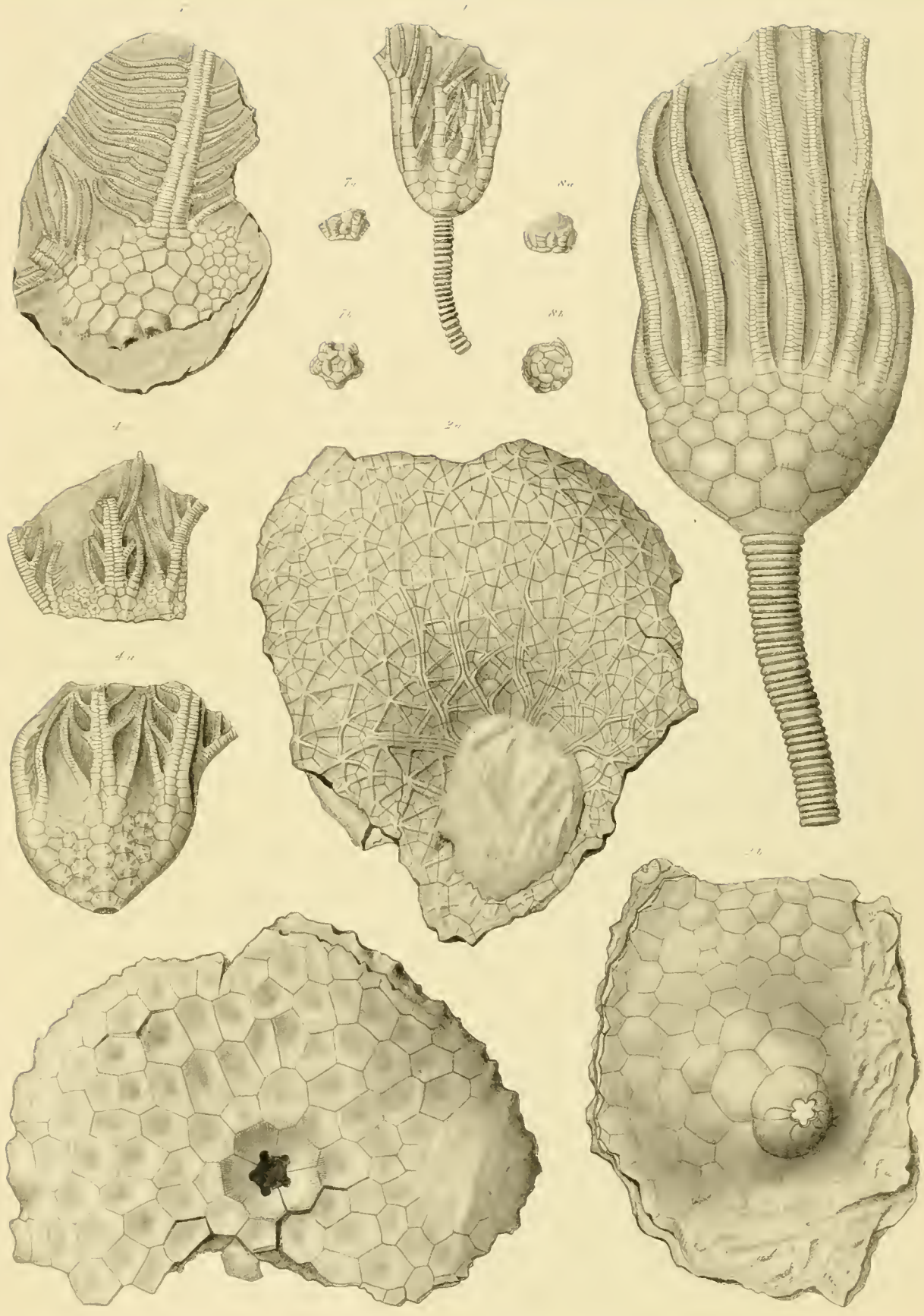


PLATE XXV.

Page

Dolatocrinus excavatus W. and Sp. 321

Fig. 1. Dorsal aspect. (Coll. Victor W. Lyon.)

Dolatocrinus Marshi, var. hamiltonensis W. and Sp. . . . 314

2*a*. Dorsal aspect. (Coll. Victor W. Lyon.)
2*b*. Ventral aspect of the same specimen.

Dolatocrinus tuberculatus W. and Sp. 324

3. Dorsal aspect. (Victor W. Lyon.)

Dolatocrinus speciosus Hall 323

4*a*. Dorsal aspect. (Coll. W. and Sp.)
4*b*. Side view of the same specimen.

Dolatocrinus major W. and Sp. 322

5. Dorsal aspect. (Coll. Victor W. Lyon.)

Dolatocrinus Lyoni W. and Sp. 314

6*a*. Dorsal aspect. (Same collection.)
6*b*. Ventral aspect of another specimen. (Same collection.)
6*c*. Side view of the same specimen.
6*d*. Portion of the tegmen, showing the slits; enlarged.

Dolatocrinus canadensis Whiteaves 315

7*a*. Dorsal aspect. (After Whiteaves.)
7*b*. Ventral aspect of same specimen.

Stereocrinus triangulatus Barris 325

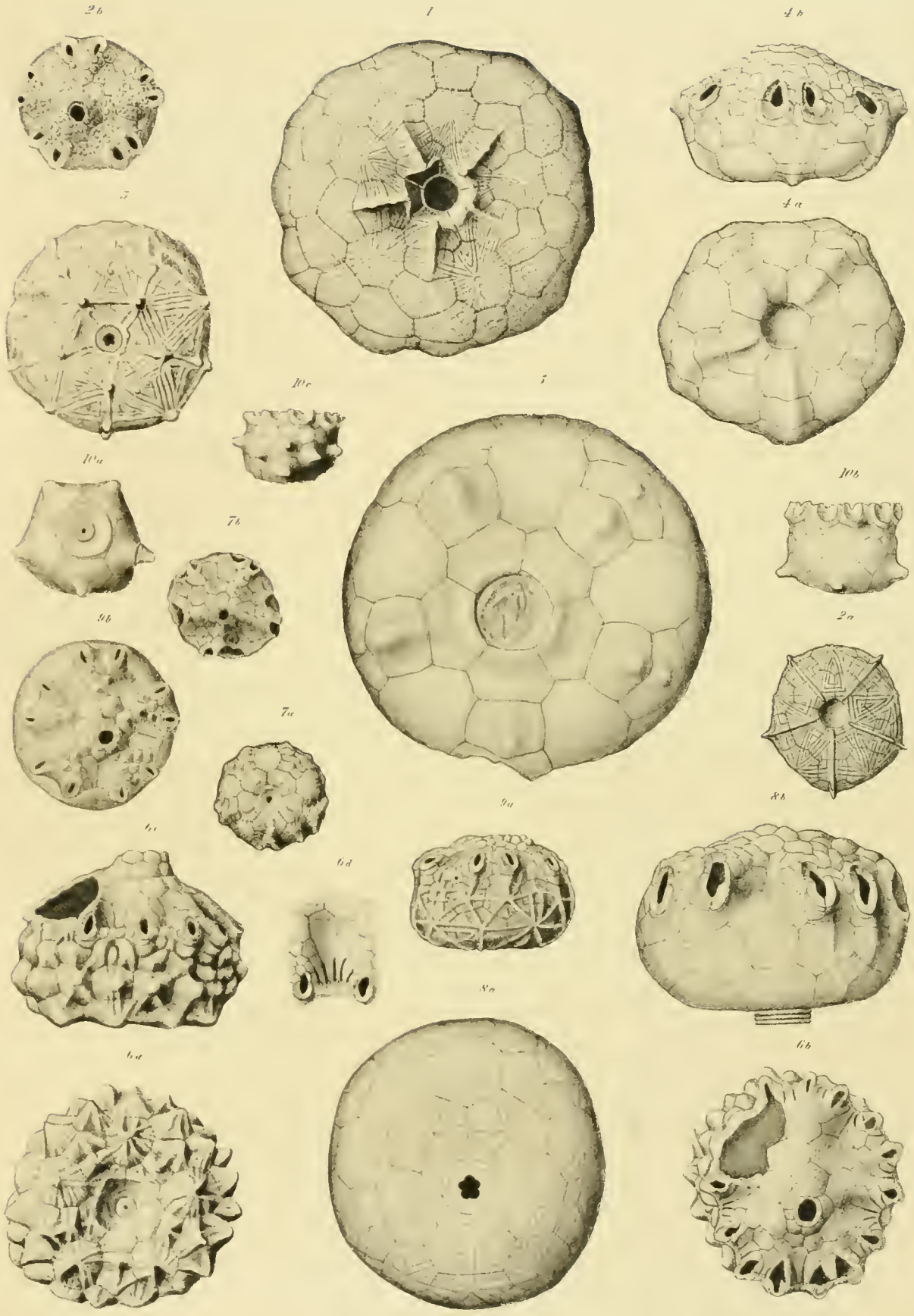
8*a*. The type specimen. (Museum Davenport Acad. Nat. Sci.)
8*b*. Side view of same specimen.

Stereocrinus Barrisi W. and Sp. 326

9*a*. Side view of a fine specimen. (Same collection.)
9*b*. Ventral aspect of another specimen. (Coll. W. and Sp.)

Centrocrinus pentaspinus Lyon 309

10*a*. The type specimen; dorsal view. (Coll. S. S. Lyon.)
10*b*. Side view of same specimen.
10*c*. Side view of another specimen in the Lyon collection. (Described as *Actinocrinus multicornus*.)



Chas R. Key

Heliotype Printing Co. Boston

PLATE XXVI.

Page

Dolatocrinus Marshi Lyon 312

Fig. 1*a*. The type specimen; posterior view. (Coll. S. S. Lyon.)
1*b*. Dorsal aspect of same specimen.
1*c*. Ventral aspect of same.
1*d*. Inner floor of the inverted basal cup, showing its derivation from 3 plates.

Dolatocrinus glyptus Hall 317

2*a*. The type specimen; posterior view. (Am. Mus. Nat. Hist. N. Y.)
2*b*. Basal aspect of another specimen. (Coll. J. M. Clarke.)

Dolatocrinus liratus Hall 319

3. A somewhat flattened specimen. (Am. Mus. Nat. Hist.)

Dolatocrinus triadactylus Barris 316

4*a*. The type specimen; anterior view. (Museum Davenport Acad. Sci.)
4*b*. Another specimen, giving a posterior view of the calyx. (Same collection.)
4*c*. Another showing the dorsal view of calyx. (Coll. W. and Sp.)
4*d*. Ventral aspect of the same specimen.

Dolatocrinus icosidactylus W. and Sp. 319

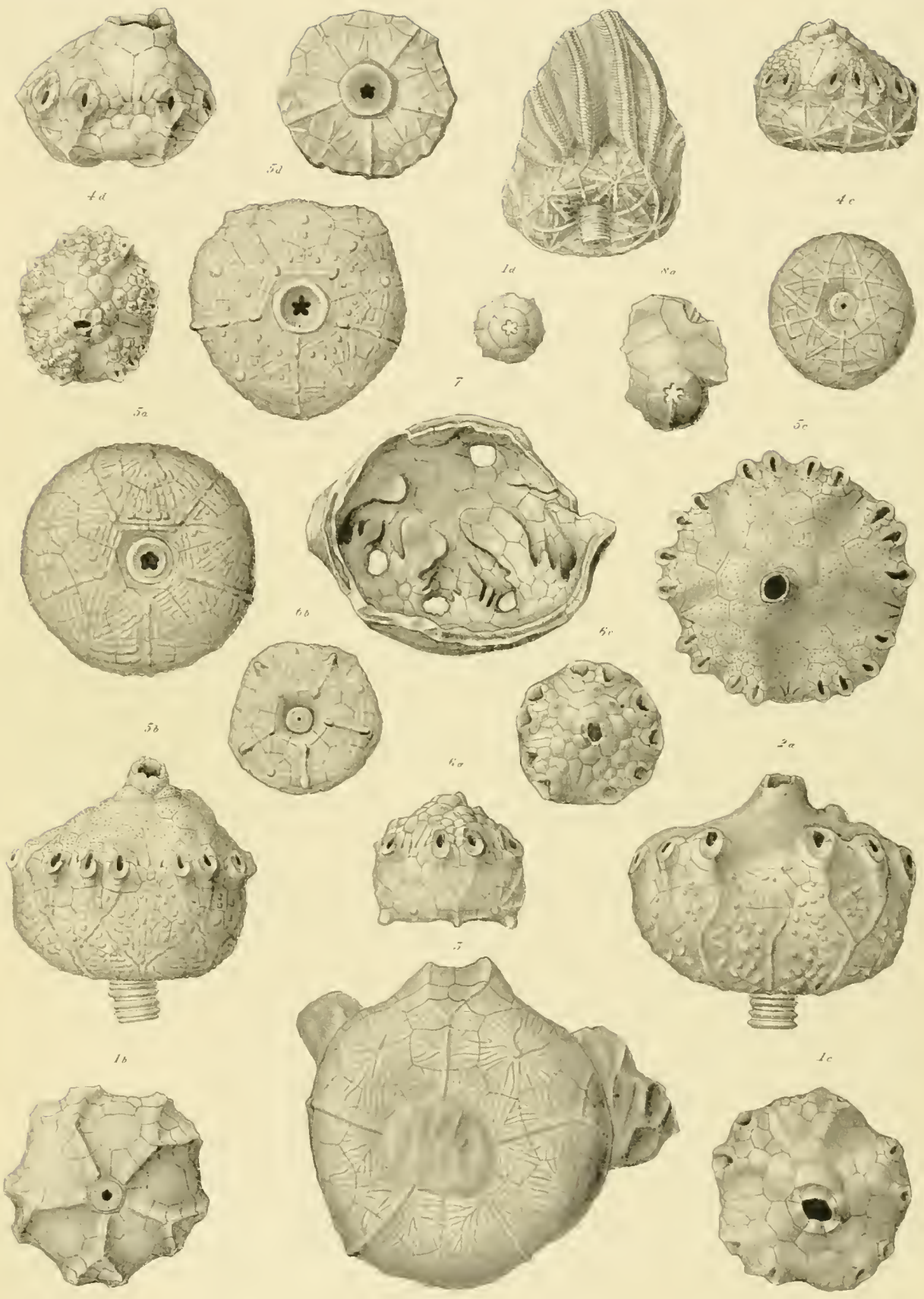
5*a*. Dorsal aspect of calyx. (Coll. V. W. Lyon.)
5*b*. Posterior view of the same specimen.
5*c*. Ventral aspect of same.
5*d*. Dorsal aspect of another specimen. (Coll. W. and Sp.)

Dolatocrinus lacus Lyon 311

6*a*. The type specimen; anterior view. (Coll. Sidney S. Lyon.)
6*b*. Dorsal aspect of the same specimen.
6*c*. Ventral aspect of same.

Dolatocrinus excavatus W. and Sp. 321

7. Inner floor of the ventral disk. (Coll. V. W. Lyon.)
8. Inner floor of basal disk.



Jas. H. Keyes del.

Heliotype Printing Co. Boston

PLATE XXVII.

PAGE

BATOCRINUS GRANDIS (Lyon) 381

Fig. 1*a*. Lyon's type specimen, — a fine example with arms
1*b*. Portion of an arm from near the top, enlarged.
2*a*. Lateral view of the calyx.
2*b*. Posterior view of a specimen with anal tube.

BATOCRINUS ICOSIDACTYLUS Casseday 368

3*a*. Lateral view of a large specimen.
3*b*. Dorsal aspect of another specimen.
3*c*. Portion of the anal tube.

BATOCRINUS IRREGULARIS Casseday 369

4*a*. Posterior view of the calyx, somewhat enlarged.
4*b*. Lateral view of the same specimen.
4*c*. Portion of the anal tube.

BATOCRINUS TURBINATUS (Hall). 375

5*a*. Posterior view of the calyx.
5*b*. Lateral view of another specimen.
5*c*. Antero-lateral view of a specimen with arms.

BATOCRINUS TURBINATUS, var. ELEGANS (Hall) 376

6*a*. Lateral view of the calyx.
6*b*. Posterior view of the same.

BATOCRINUS CANTONENSIS Miller and Gurley 383

7*a*. Posterior view of a specimen, showing anal tube.
7*b*. The same view of a specimen with arms.

BATOCRINUS CLYPEATUS (Hall) 380

8*a*. Lateral view of the calyx.
8*b*. The same of another specimen (variety *B. papillatus*).
8*c*. Anterior view of a more wheel-shaped specimen.
8*d*. Posterior view of a young specimen (typical form).
8*e*. Lateral view of a small specimen with arms (variety *B. inornatus*.)

(All the specimens are in the collection of Wachsmuth and Springer, except that of Fig. 1*a*, which is in the Lyon collection.)

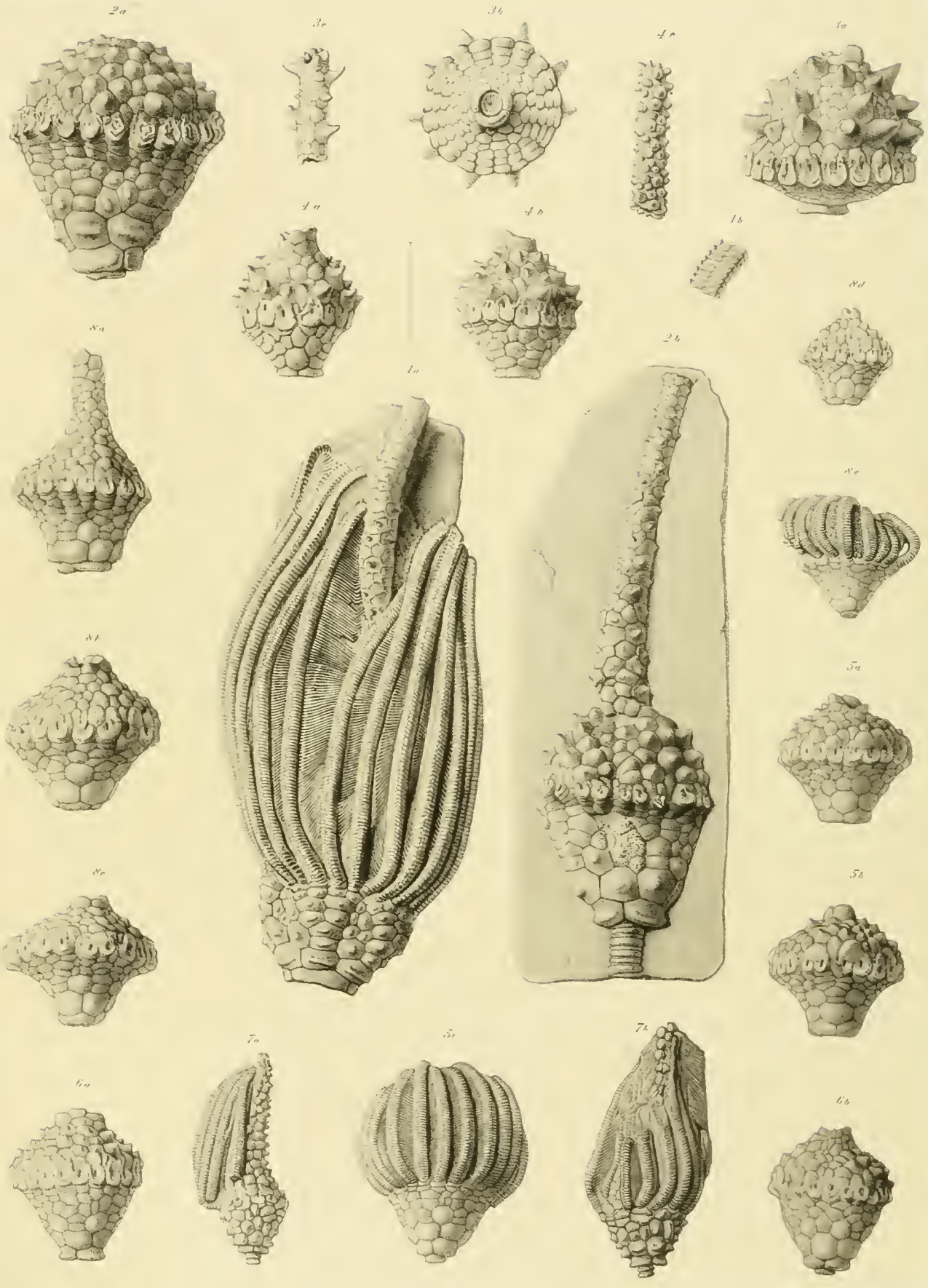

2a
3a
3b
4a
5a
4a
4b
1b
8d
8a
1a
2b
8c
8b
5a
8e
5b
7a
5a
7b
6a
6b

PLATE XXVIII.

PAGE

LOBOCRINUS LONGIROSTRIS (Hall) 442

Fig. 1*a*. Anterior view of a specimen with arms, anal tube, and column. (Mus. Comp. Zoöl.)

1*b*. Portion of an arm with the pinnules, enlarged.

1*c*. Anterior view of the calyx. (Coll. W. and Sp.)

1*d*. Posterior view of the calyx. (Same collection.)

1*e*. A very young specimen. (Same collection.)

BATOCRINUS LEPIDUS (Hall) 372

2. Side view of the calyx, showing the bifurcation of the left postero-lateral ray. (Coll. W. and Sp.)

3. Posterior view of the calyx. (Same collection.)

BATOCRINUS QUASILLUS Meek and Worthen 372

4*a*. Side view of the calyx. (Same collection.)

4*b*. Specimen showing the anal interradius. (Same collection.)

BATOCRINUS ÆQUALIS (Hall) 371

5. Posterior view of the calyx. (Same collection.)

6. Specimen with arms. (Mus. Comp. Zoöl.)

BATOCRINUS SUBÆQUALIS (McChesney) 369

7*a*. Fine specimen with arms. (Same collection.)

7*b*. Portion of an arm with the pinnules, enlarged.

8*a*. Lateral view of the calyx. (Same collection.)

8*b*. Posterior view of the same specimen.

9. A specimen with portion of anal tube, and showing the bifurcation of the right postero-lateral ray. (Same collection.)

BATOCRINUS TUBERCULATUS W. and Sp. 379

10*a*. Posterior view of the type specimen. (Coll. W. and Sp.)

10*b*. Another specimen, showing the left postero-lateral ray. (Same collection.)

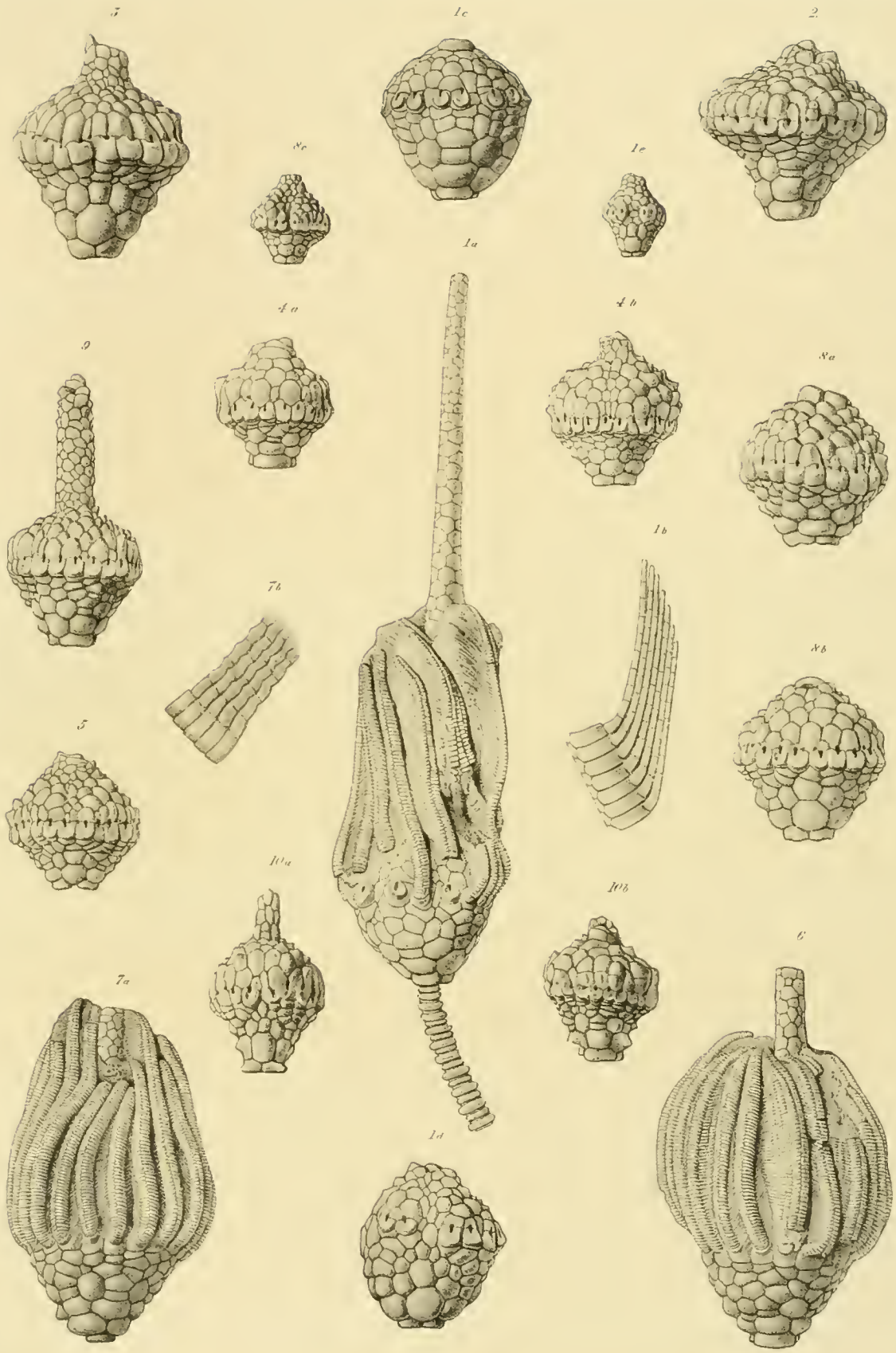

3
1c
2
8c
1e
1a
4a
4b
9
8a
1b
7b
8b
5
10a
10b
6
7a
1d

PLATE XXIX.

Page

Dizygocrinus dodecadactylus (Meek and Worthen) 432

Fig. 1*a*. Lateral view of the calyx.
1*b*. Posterior view of the same.
1*c*. Ventral aspect of same.

Dizygocrinus andrewsianus (McChesney) 433

2*a*. Posterior view of the calyx.
2*b*. Lateral view of another specimen.
2*c*. A specimen with arms, showing one of the postero-lateral rays.
2*d*. Posterior side of a specimen with arms.

Dizygocrinus rotundus (Yandell and Shum.) 431

3*a*. Dorsal aspect of the calyx.
3*b*. Ventral aspect of the calyx; the plates but slightly convex.
3*c*. Ventral aspect of a specimen with distinctly convex plates.
3*d*. Lateral view of the calyx.
3*e*. Another specimen, having part of the anal tube preserved.
3*f*. Side view of a specimen with twenty arms.
3*g*. A larger specimen with twenty-two arms.
4. Ventral aspect of a more discoid specimen (type of *Actinocrinus oblatus* Hall.)

Batocrinus laura (Hall) 384

5*a*. Large specimen with arms.
5*b*. Anterior view of the calyx.
5*c*. Lateral view of another specimen.
5*d*. Posterior view of a more conical specimen.

Eutrochocrinus Christyi (Shumard) 409

6. A young specimen ($\frac{2}{1}$).

Eutrochocrinus Lovei W. and Sp. 412

7. A young specimen ($\frac{2}{1}$).

Lobocrinus æquibrachiatus (McChesney) 440

8*a*. Posterior side of the calyx.
8*b*. Lateral view of another specimen.

Lobocrinus æquibrachiatus var. asteriscus (M. and W.) . . 441

9*a*. Dorsal aspect of the calyx (anal interradius the lower one).
9*b*. Ventral aspect of the calyx.

(All specimens in the collection of Wachsmuth and Springer.)

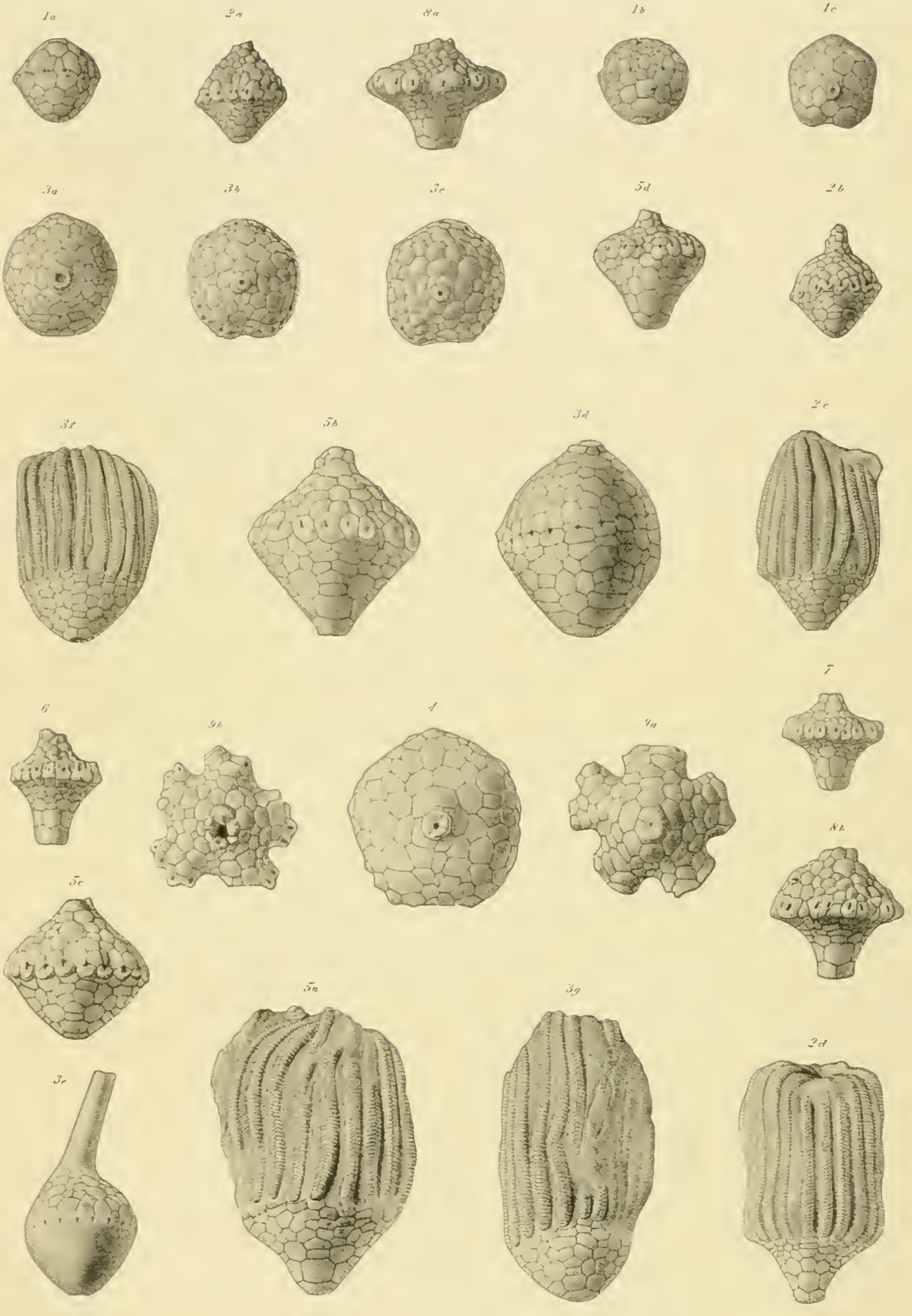

1a
2a
8a
1b
1c
3a
3b
3c
5d
2b
3f
5b
3d
2c
7
6
9b
4
9a
8b
5c
5a
3g
3e
2d

PLATE XXX.

Page

Batocrinus Macbridei W. and Sp. 376

Fig. 1. Specimen with arms, stem, and cirri.
2. Another specimen with arms and stem.
3. Ventral aspect of calyx ($\frac{2}{1}$).

Batocrinus mundulus Hall 382

4*a*. Posterior view of the calyx.
4*b*. Lateral view of the same.
5. Specimen with arms from Bono, Ind., probably of this species.

Batocrinus poculum S. A. Miller 378

6. Specimen with anal tube, arms, and stem.

Lobocrinus Yandelli (Shumard) 441

7*a*. The type specimen, showing anal side.
7*b*. Dorsal aspect of the same specimen.

Lobocrinus robustus W. and Sp. 436

8*a*. The type specimen; antero-lateral side.
8*b*. Posterior side of the same.

Lobocrinus Hageri (McChesney) 445

9. Posterior side of the calyx.
10. Antero-lateral side of another specimen.

Lobocrinus spiniferus W. and Sp. 439

11. One of the type specimens, showing the anterior side.
12. Another type specimen, showing the posterior side.

Macrocrinus jucundus (S. A. Miller) 451

13. Calyx and anal tube; anterior side.
14. Specimen with arms; antero-lateral side.

Macrocrinus verneuilianus (Shumard) 450

15. Large specimen with arms and anal tube.
16. Another specimen; the tube somewhat inflated.
17. Posterior side of the calyx; the plates but little convex.
18. Anterior side of the calyx; a very large, nodose specimen.

(All the specimens in the collection of Wachsmuth and Springer, except that of Fig. 7, which is in the Lyon collection.)

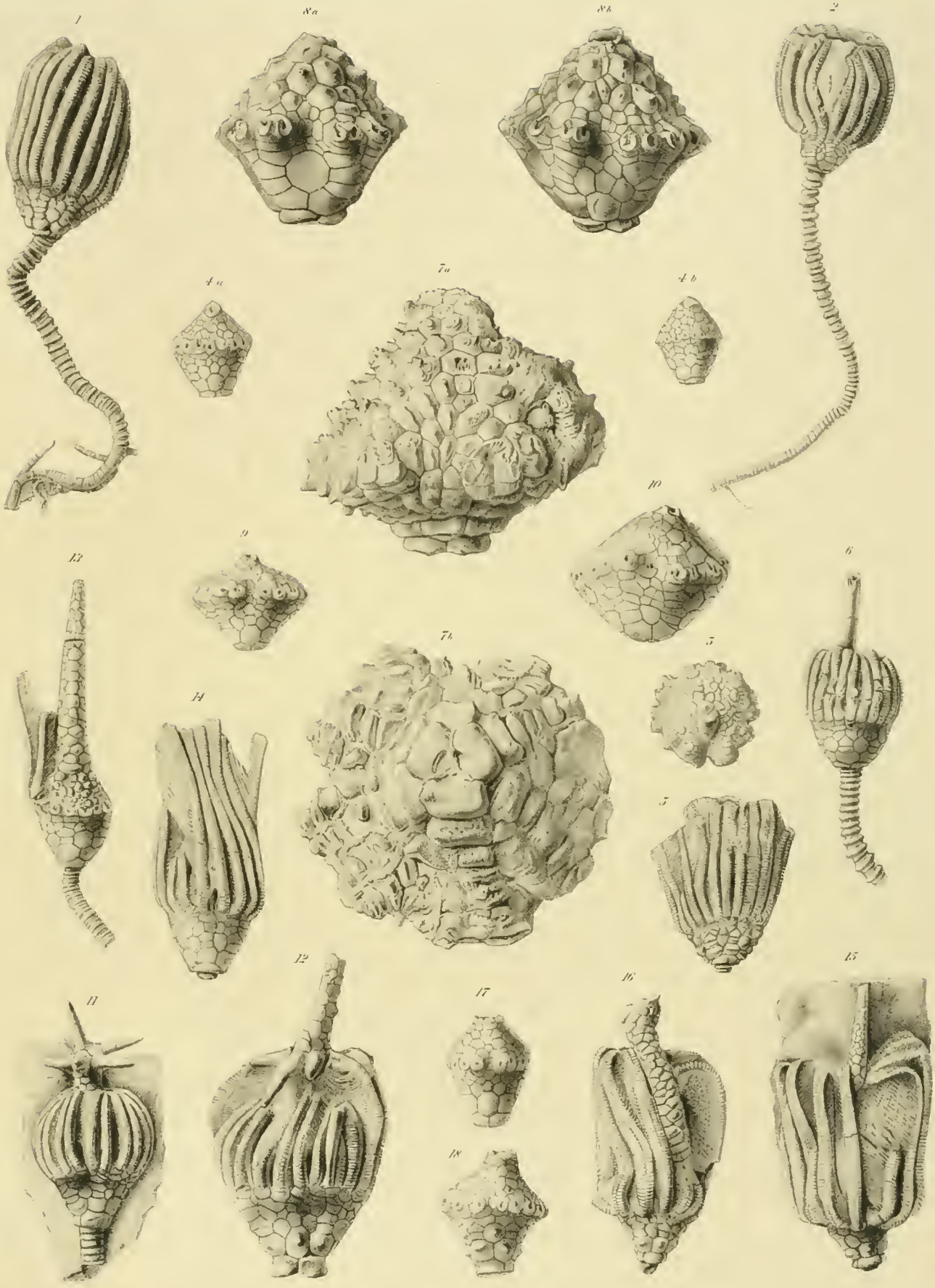

1
8a
8b
2
4a
7a
4b
10
9
12
6
7b
3
4
5
11
12
17
16
15
18

PLATE XXXI.

Page

Lobocrinus nashvillæ (Troost) 435

Fig. 1. Fine specimen with stem and anal tube.

Lobocrinus nashvillæ var. subtractus (White) 436

2*a*. Posterior side of a specimen with stem and anal tube.
2*b*. Portion of a deformed stem from another specimen.

Lobocrinus pyriformis (Shumard) 437

3*a*. Anterior view of the typical form; part of stem and anal tube preserved.
3*b*. Posterior side of a varietal form.
3*c*. Anterior view of an elongate variety.
3*d*. Perfect specimen with stem, arms, and anal tube.
3*e*. Section of an arm (enlarged), showing the spinous processes along the sides of the free brachials.

Batocrinus pistillus M. and W. 378

4*a*. Posterior view of the calyx.
4*b*. Anterior view of another specimen.

(All the specimens in the collection of Wachsmuth and Springer.)

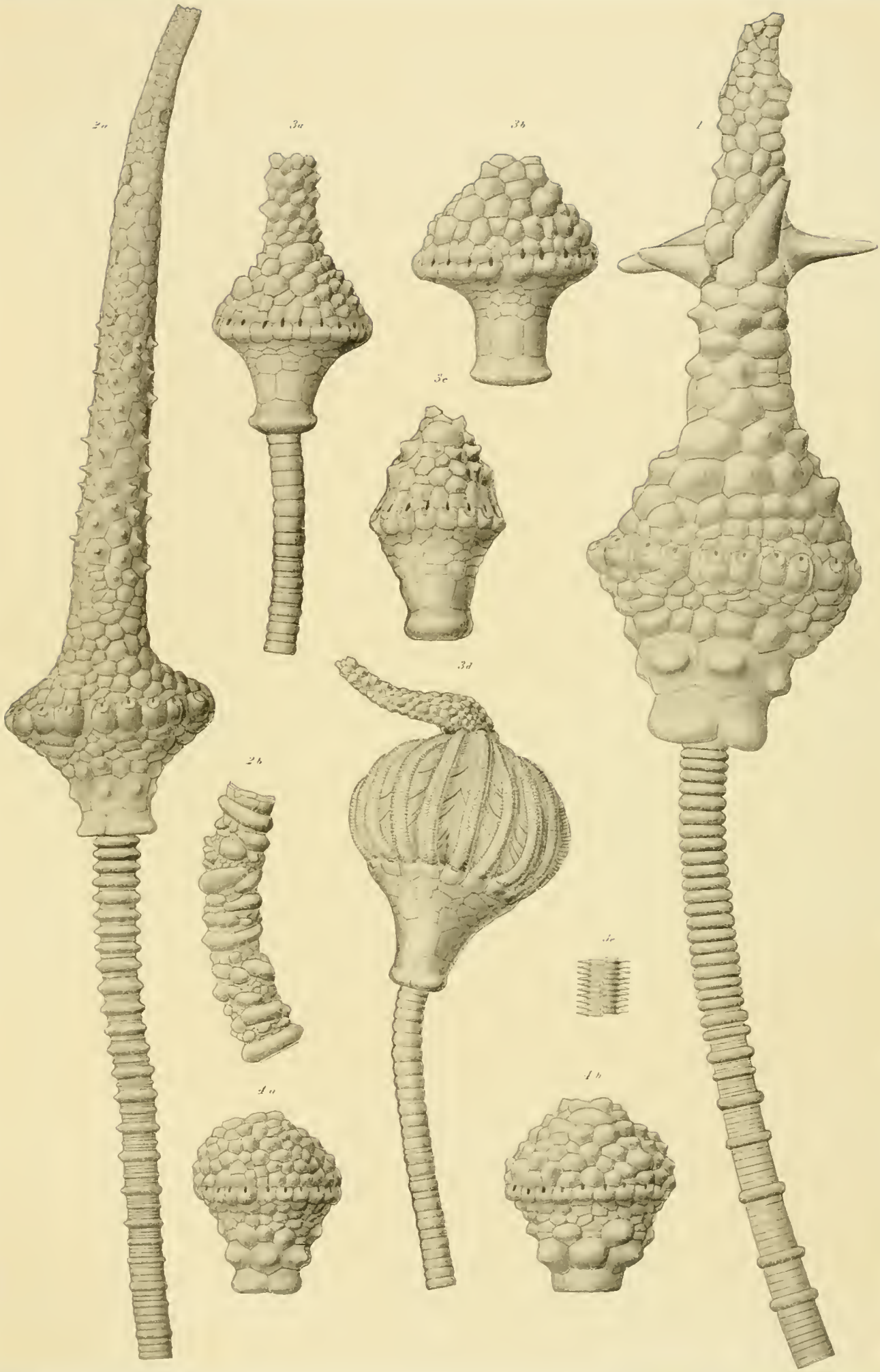

2a
3a
3b
1
3c
3d
2b
3e
4a
4b

PLATE XXXII.

PAGE

EUTROCHOCRINUS CHRISTYI (Shumard) 409

Fig. 1*a*. Lateral view of a specimen, showing arms, stem, and anal tube.
1*b*. A specimen preserving the extremity of the anal tube; viewed from above.
1*c*. Posterior view of the calyx.

EUTROCHOCRINUS LOVEI (W. and Sp.) 412

2*a*. Lateral view of the type specimen.
2*b*. Anterior view of the calyx.

EUTROCHOCRINUS CHRISTYI var. TROCHISCUS (M. and W.) . . . 410

3. Posterior view of the calyx.

EUTROCHOCRINUS PLANODISCUS (Hall) 411

4*a*. Ventral aspect of the calyx.
4*b*. Dorsal aspect of same; basals and first radials broken away.

(All specimens in the collection of Wachsmuth and Springer.)

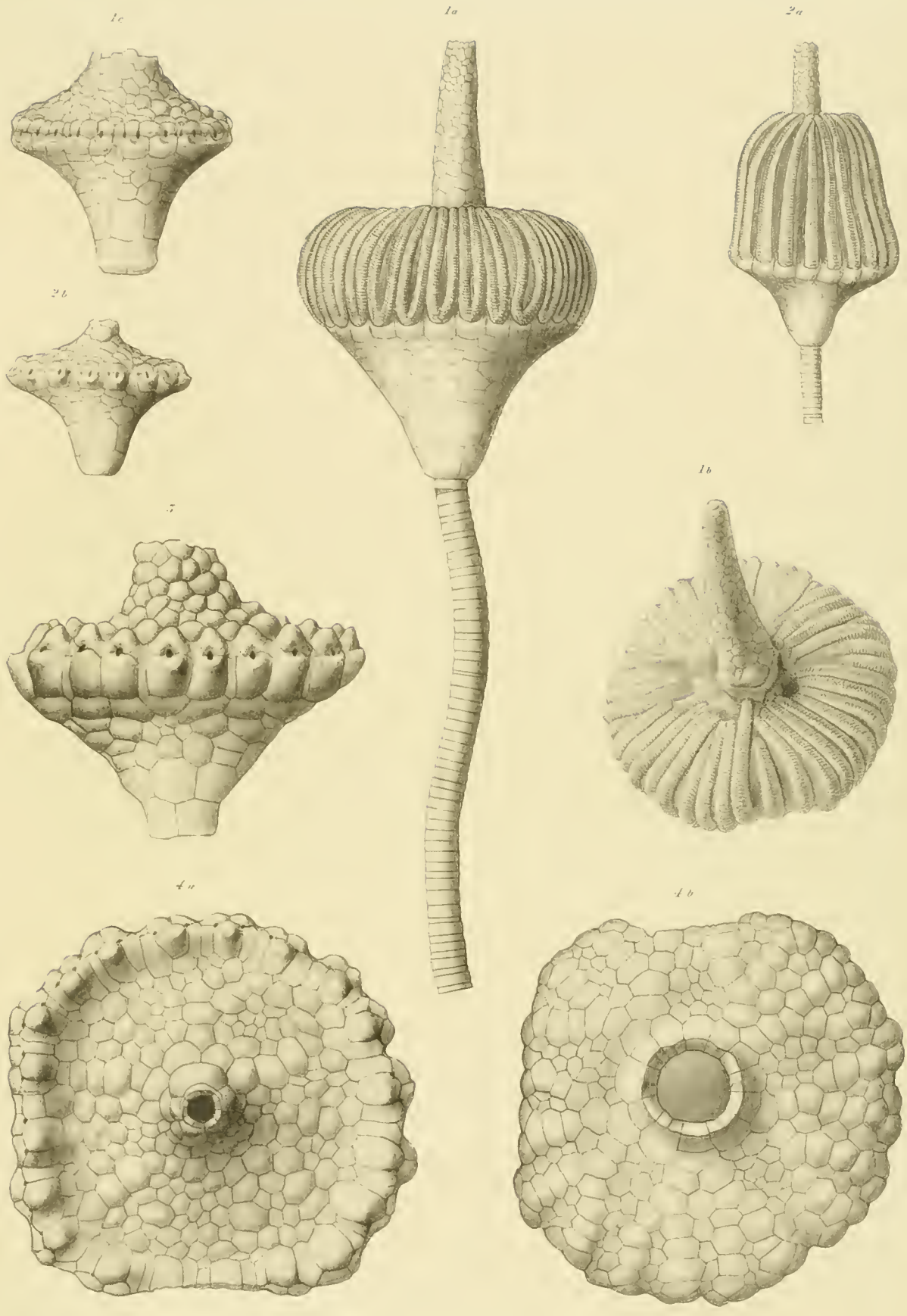

1c
1a
2a
2b
1b
3
4a
4b

PLATE XXXIII.

Page

Dizygocrinus originarius W. and Sp. 421

Fig. 1*a*. The type specimen.
1*b*. Specimen with one arm paired, the others single.

Eretmocrinus intermedius W. and Sp. 404

2*a*. Side view of a specimen with arms.
2*b*. Another example.
2*c*. Another specimen; top view, showing the spatulate, infolding arms.

Dizygocrinus montgomeryensis (Worthen) 428

3. Specimen with arms, anal tube, and stem; from Crawfordsville, Ind.
4. Another specimen with arms (all paired but one); from Keokuk, Iowa.

Dizygocrinus montgomeryensis var. unibrachiatus W. and Sp. 429

5*a*. A somewhat abnormal specimen with arms and stem. (Coll. L. A. Cox.)
5*b*. Another specimen with arms. (Same collection.)
5*c*. Posterior view of another specimen.

Dizygocrinus indianensis L. and C. 415

6*a*. Postero-lateral side of a specimen with arms.
6*b*. Calyx of another specimen, exposing anal side.

Dizigocrinus indianensis var. simplex W. and Sp. 415

7. Anterior view of a specimen with arms.

Dizygocrinus cantonensis W. and Sp. 423

8*a*. Specimen with portions of the arms, and showing anal tube.
8*b*. Another specimen, showing the arms and anal tube.

Dizygocrinus biturbinatus (Hall) 427

9. Lateral view of the calyx.

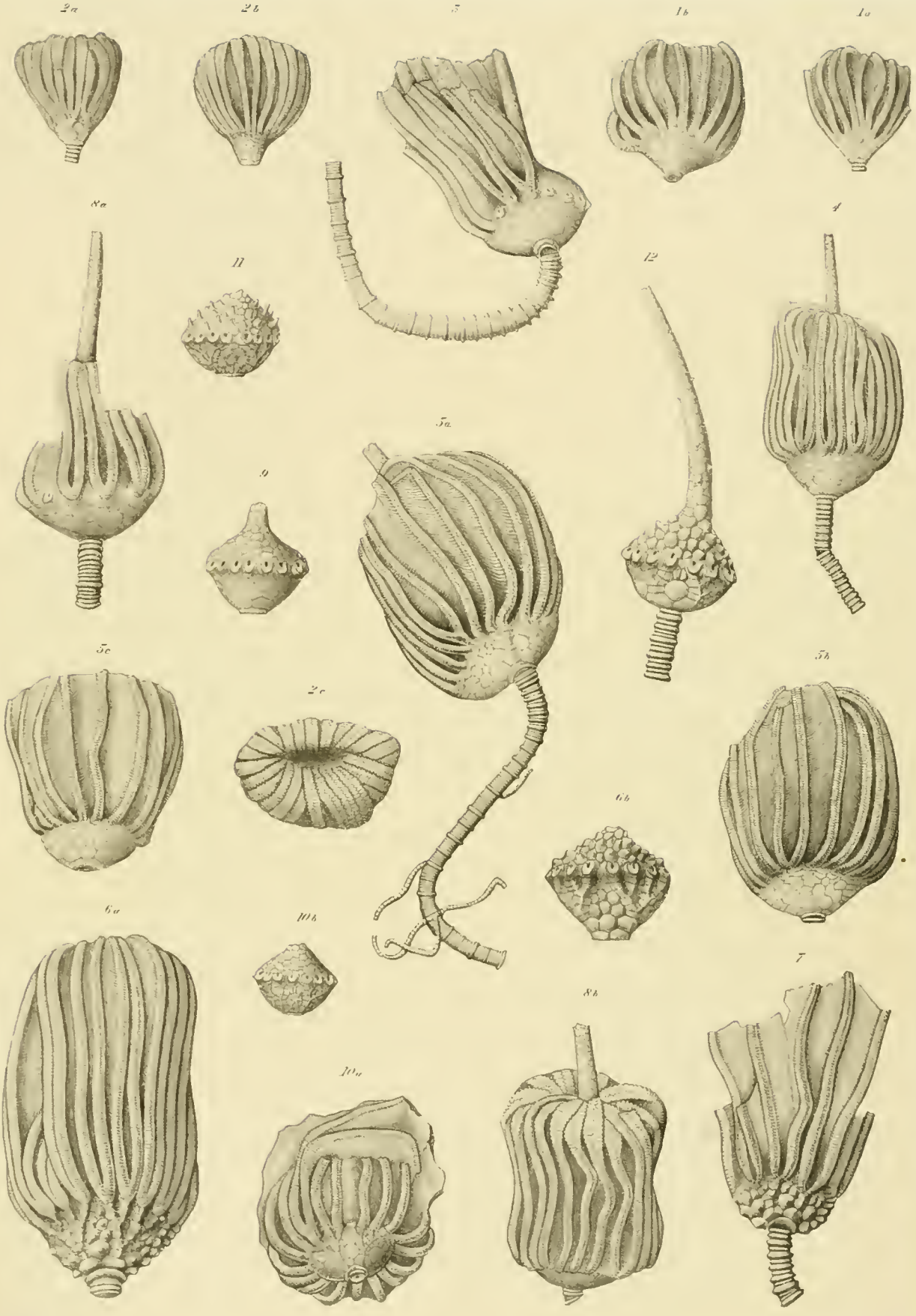
Dizygocrinus Whitei W. and Sp. 419

10*a*. Specimen with arms from the Keokuk group of Bono, Ind.
10*b*. Lateral view of the calyx. (Same locality.)
11. Posterior view of the calyx. (Specimen from the Warsaw limestone of Kentucky.)

Dizygocrinus facetus Miller and Gurley 418

12. Specimen from Canton, Ind., showing anal interradius.

(All specimens in the collection of Wachsmuth and Springer, unless otherwise stated.)



Chas R Keyes del

Heliotype Printing Co Boston

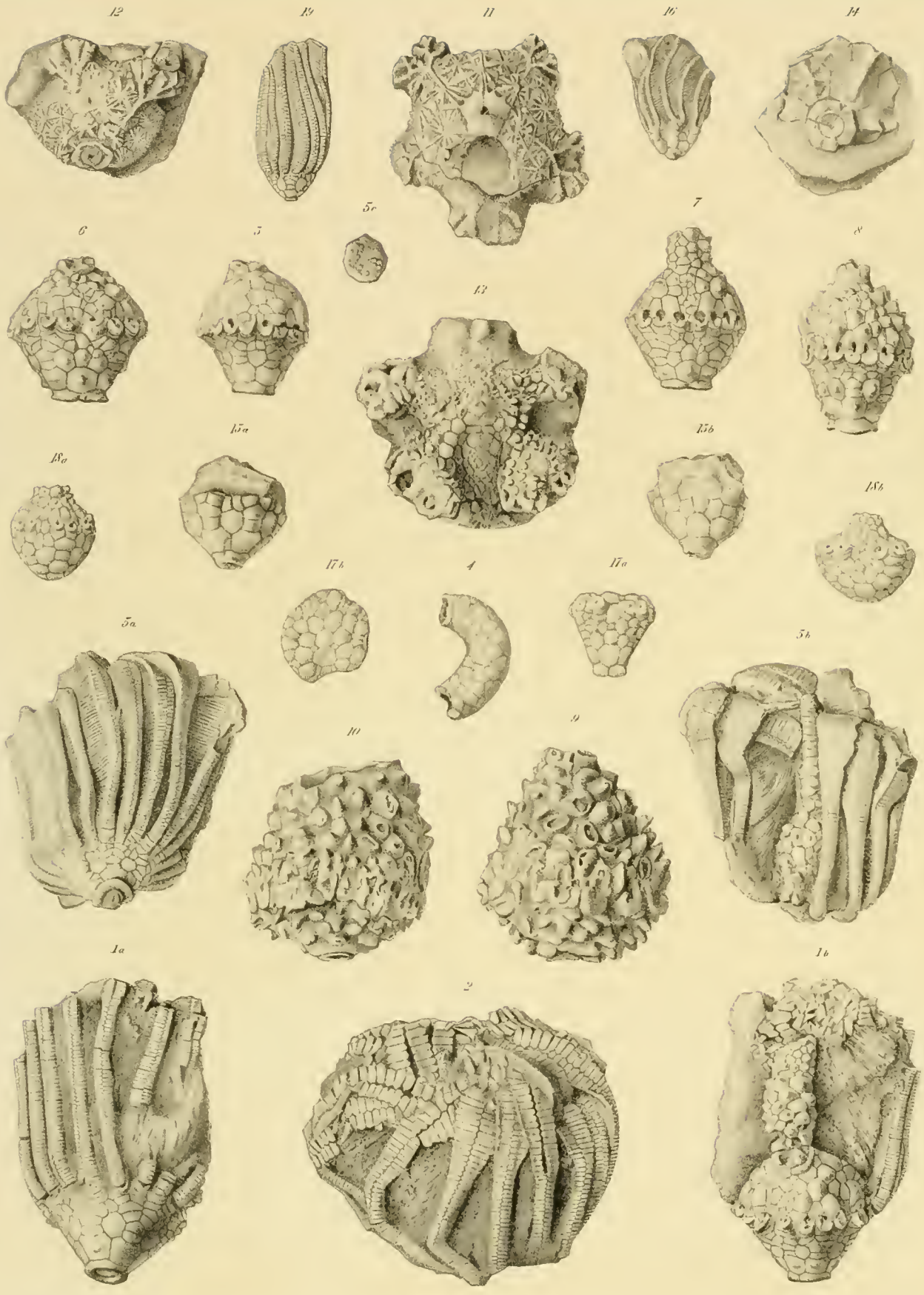

12
19
11
16
14
6
3
5c
7
8
13
15a
15b
18a
18b
17b
4
17a
5a
5b
10
9
1a
1b
2

PLATE XXXIV.

Page

ERETMOCRINUS CALYCULOIDES (Hall) 395

Fig. 1*a*. Lateral view of a specimen having the lower part of the arms preserved.
1*b*. Opposite view of the specimen, showing anal tube.
2. A specimen showing the paddle-shaped tips of the arms.
3. Lateral view of the calyx, showing the excentric position of the anal tube.
4. Showing the curvature of the anal tube.

ERETMOCRINUS GRANULIFERUS W. and Sp. 390

5*a*. Lateral view of the type specimen.
5*b*. Opposite side of the specimen, showing the paddle-shaped arms and anal tube.
5*c*. A detached plate showing surface ornamentation.

ERETMOCRINUS CALYCULOIDES var. NODOSUS W. and Sp. 396

6. Posterior side of the type specimen.
7. A specimen showing the anal side.
8. Lateral view of a very elongate specimen.

ERETMOCRINUS PRÆGRAVIS S. A. Miller 405

9. Lateral view of the calyx.
10. Posterior view of another specimen.

GENNÆOCRINUS KENTUCKIENSIS (Shum.) 548

11. Dorsal aspect of the calyx.
12. Right postero-lateral side of another specimen.
13. Aspect of the ventral disk.

GENNÆOCRINUS EUCHARIS (Hall) 549

14. Portion of the dorsal cup

ACACOCRINUS AMERICANUS W. and Sp. 515

15*a*. Anterior side of the type specimen.
15*b*. Posterior side of the same specimen.

ACACOCRINUS ELRODI W. and Sp. 515

16. The type specimen.

PAGE
AOROCRINUS ELEGANS (S. A. Miller) 480

Fig. 17*a*. Posterior side of the type specimen.
17*b*. Ventral aspect of the same.

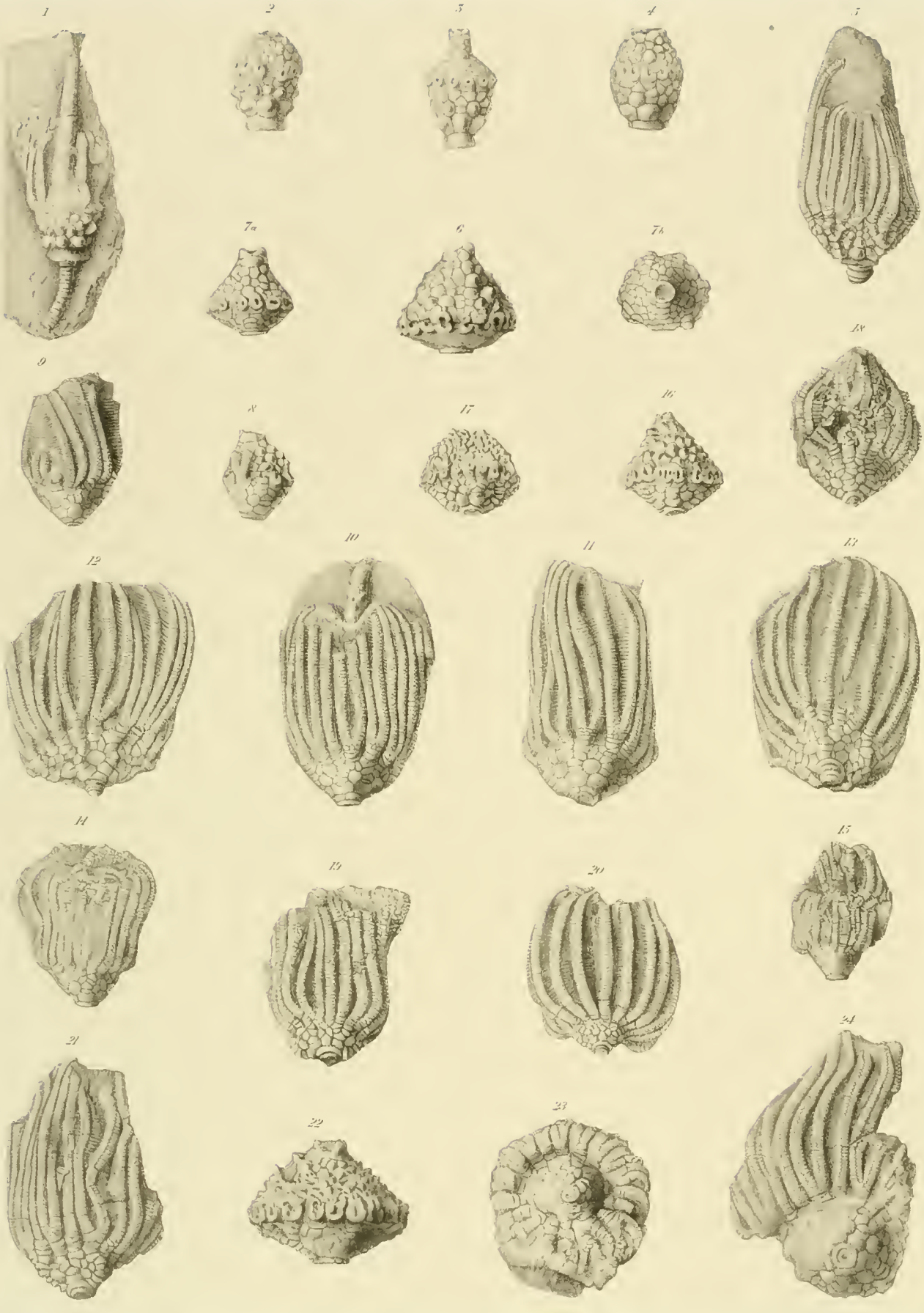
LOBOCRINUS INFLATUS (Rowley and Hare) 444

18*a*. Anterior view of the type specimen.
18*b*. Lateral view of the specimen described by Rowley and Hare as *Batocrinus bulbosus*.

DIZYGOCRINUS GURLEYI (S. A. Miller) 422

19. The type specimen.

(All the specimens are in the collection of Wachsmuth and Springer, except those represented by Figs. 18*a* and 18*b*, which are in the possession of Mr. R. R. Rowley, and Fig. 19, which is owned by Mr. F. A. Sampson.)



T. L. Ridgway, del.

Heliotype Printing Co. Boston

PLATE XXXV.

Page

Macrocrinus Koninckı (Shumard) 447

Fig. 1. Specimen with anal tube, arms, and stem. (Mus. Comp. Zoöl.)
2. Calyx, showing anal side.
3. Another specimen, showing anterior side.

Macrocrinus lagunculus (Hall) 453

4. Calyx, postero-lateral side.

Dizygocrinus indianensis (Lyon) 415

5. The arms of the two posterior rays nearly all paired; those of the three anterior rays mostly single in the specimen.

Dizigocrinus decoris (Miller) 420

6. Calyx, in a side view.

Dizygocrinus euconus (Meek and Worthen) 430

7*a*. Calyx, showing the postero-lateral ray, and the anal interradius. (A specimen from Taylor Co., Ky.)
7*b*. Dorsal aspect of the same specimen.

Dizygocrinus mutabilis W. and Sp. 429

8. Anterior side of the calyx.
9. Specimen with arms in a side view.
10. Specimen with anal tube, and most of the arms paired.
11. Specimen in which one half of the arms are single.

Dizygocrinus Whitei var. didactylus W. and Sp. 420

12. Specimen with the arms all paired.
13. Specimen in which most of the arms are single.

Dizygocrinus originarius var. adultus W. and Sp. 422

14. Specimen with most of the arms paired.
15. Another in which most of the arms are single.

Dizygocrinus unionensis (Worthen) 424

16. Anterior side of calyx.
17. Anal side of a crushed specimen.
18. Side view of another specimen.
19. Posterior side of a specimen with arms.
20. Another specimen, showing posterior side.

PAGE
DIZYGOCRINUS UNIONENSIS var. DIVALIS (S. A. Miller). 425

Fig. 21. Specimen with arms, showing anterior side; the arms alternately paired.
22. Side view of the calyx.
23. Dorsal aspect of a specimen in which all the arms are paired.
24. Specimen with some of the arms paired.

(All specimens in the collection of Wachsmuth and Springer, unless otherwise stated.)

PLATE XXXVI.

Page

Eretmocrinus remibrachiatus var. expansus W. and Sp. . . . 390

Fig. 1. Ventral aspect of a large specimen, showing the folding of the arms. The radial trunk of an *Eucladocrinus millebrachiatus* lying on top.

Eretmocrinus clio (Hall). 393

2*a*. Specimen with arms and column.
2*b*. Posterior side of the calyx.

Eretmocrinus neglectus (Meek and Worthen) 394

3. Anterior side of the calyx.

Eretmocrinus clœlia (Hall) 398

4*a*. Specimen with arms and column.
4*b*. Side view of a somewhat crushed specimen.

Eretmocrinus corbulis (Hall) 399

5*a*. Ventral aspect of the calyx.
5*b*. Dorsal aspect of the same.
5*c*. Lateral view of another specimen.
6. Fine specimen with arms.

Eretmocrinus leucosia (Hall) 401

7*a*. Specimen with part of arms (basals and radials not preserved).
7*b*. Posterior side of the calyx.
7*c*. Dorsal aspect of the same.

Macrocrinus gemmiformis (Hall) 449

8. Posterior side of the calyx.

Eretmocrinus rugosus W. and Sp. 402

9*a*. Posterior side of the type specimen.
9*b*. Ventral aspect of the calyx. (Same specimen.)
9*c*. The base of the same specimen.

Eretmocrinus minor W. and Sp. 391

10*a*. Posterior side of the type specimen.
10*b*. Antero-lateral side of another specimen.

Eretmocrinus depressus W. and Sp. 392

11*a*. Posterior side of the type specimen.
11*b*. Posterior side of a smaller specimen, with more convex plates.

(All the specimens in the collection of Wachsmuth and Springer.)

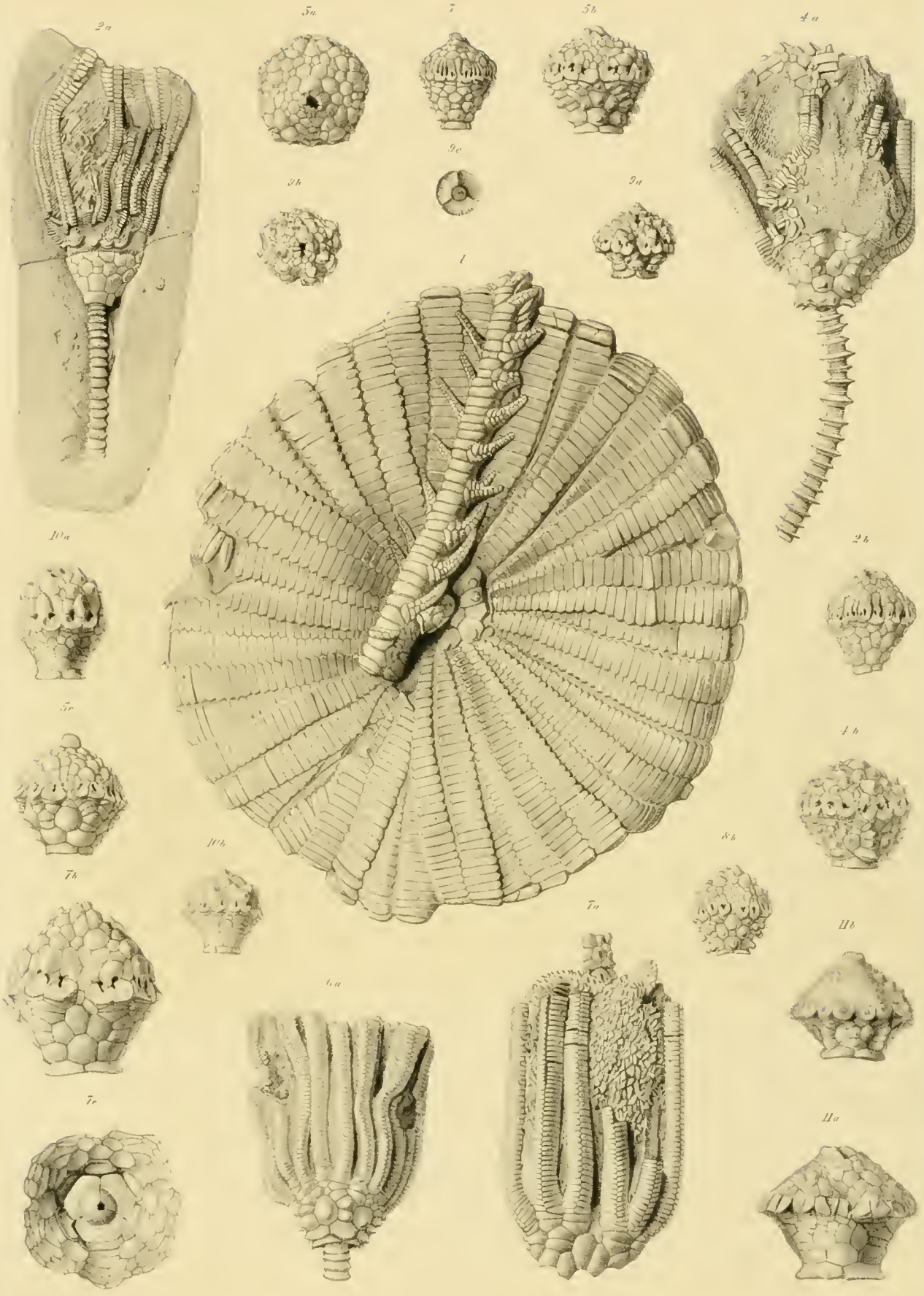

2a
5a
7
5b
4a
9c
3b
9a
1
10a
2b
5c
4b
10b
8b
7b
7a
11b
6a
7c
11a

PLATE XXXVII.

PAGE

ERETMOCRINUS REMIBRACHIATUS var. EXPANSUS W. and Sp. 390

Fig. 1*a*. Specimen from the Burlington and Keokuk transition bed; dorsal aspect.
1*b*. Side view of the calyx; from same bed.

ERETMOCRINUS REMIBRACHIATUS (Hall). 388

2*a*. Lateral view of a specimen from the Upper Burlington Limestone.
2*b*. Another example from the same bed.

ERETMOCRINUS MAGNIFICUS Lyon and Cass 386

3. A large specimen, with rows of angular nodes following the rays and their subdivisions.

ERETMOCRINUS RAMULOSUS (Hall) 387

4*a*. Posterior side of a large calyx from Tennessee.
4*b*. Dorsal aspect of a highly ornamented specimen from Iowa.
5*a*. Arm fragment, probably belonging to this species (from Tennessee).
5*b*. Cross-section of it.
5*c*. Upper portion of another arm fragment from the same locality.
5*d*. The cross-section.

ERETMOCRINUS MATUTA (Hall) 396

6*a*. Specimen with arms; the anal tube bent outward.
6*b*. Specimen showing the natural curving of the anal tube.
6*c*. A large calyx.

ERETMOCRINUS CORONATUS (Hall) 403

7*a*. Dorsal aspect of the calyx.
7*b*. Anterior side of same.
7*c*. Ventral aspect of another specimen.

MACROCRINUS CARICA (Hall) 448

8. Anterior side of the calyx.

ERETMOCRINUS CLIO (Hall). 393

9*a*. Anterior side of the calyx.
9*b*. Ventral aspect of a more lobate specimen.

(All specimens in the collection of Wachsmuth and Springer.)

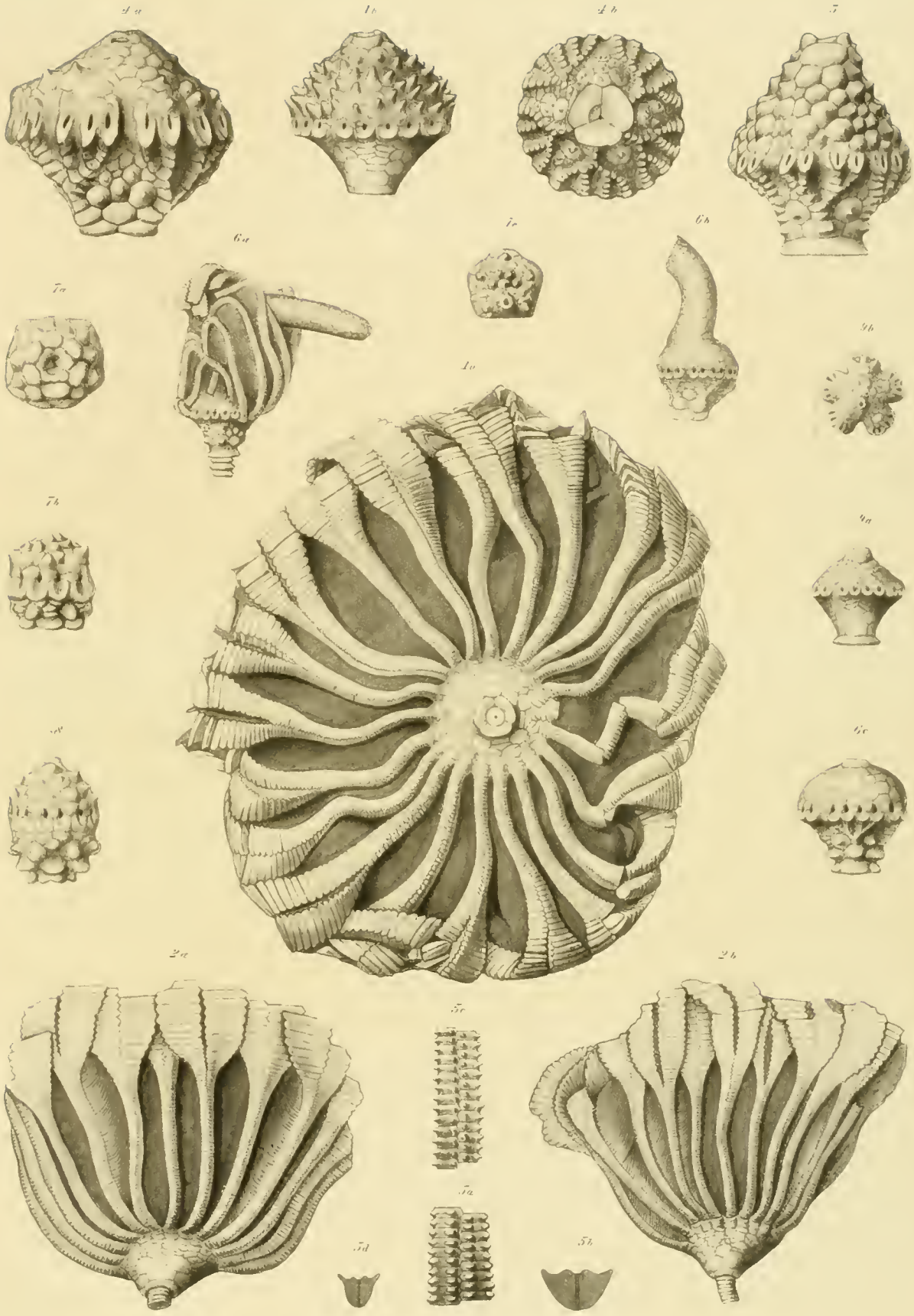


PLATE XXXVIII.

Page

AGARICOCRINUS CONVEXUS (Hall) 508

Fig. 1*a*. Side view of the calyx, and portions of the arms.
1*b*. Ventral aspect of the calyx.

AGARICOCRINUS BREVIS (Hall) 511

2*a*. A fine specimen with arms.
2*b*. Ventral aspect of the calyx.
2*c*. Posterior side of the calyx.
2*d*. Dorsal aspect of the calyx.
2*e*. Side view of the calyx.

AGARICOCRINUS FISCELLUS (Hall) 512

3*a*. Dorsal view of the calyx.
3*b*. Ventral aspect of the same specimen.
3*c*. Postero-lateral side of same.

AGARICOCRINUS PYRAMIDATUS (Hall) 512

4*a*. Specimen with arms.
4*b*. Dorsal aspect of the calyx.
4*c*. Ventral aspect of the calyx.
5*a*. Posterior side of a young specimen.
5*b*. Dorsal view of same.
5*c*. Ventral aspect of same.

AGARICOCRINUS PLANOCONVEXUS (Hall) 503

6*a*. Dorsal view of the calyx.
6*b*. Side view of another specimen.
6*c*. Ventral aspect of same.

AGARICOCRINUS STELLATUS Hall 508

7*a*. Dorsal view of a specimen with arms.
7*b*. A small specimen with arms.
7*c*. Dorsal aspect of the calyx.
7*d*. Another specimen, showing the anal side.
7*e*. The same, showing the ventral aspect of the calyx.

(All figures from specimens in the collection of Wachsmuth and Springer.)

2b
2c
2d
3a
3b
2e
5a
5c
5b
3c
1a
1b
4b
4a
2a
6b
6c
7a
7b
6a
4c
7c
7d
7e

PLATE XXXIX.

Page

AGARICOCRINUS COREYI (L. and C.) 510

Fig. 1*a*. Basal view of the type specimen. (Lyon collection.)
1*b*. Side view of the same.

AGARICOCRINUS CRASSUS Wetherby 499

2*a*. Side view of a large specimen. (Coll. L. A. Cox.)
2*b*. Dorsal aspect of the same specimen.

AGARICOCRINUS EXCAVATUS Hall 491

3. Side view of a specimen with greatly protruding anus. (Coll. W. and Sp.)
4. Dorsal aspect of another specimen. (Same collection.)
5. Dorsal aspect of another. (Same collection.)

AGARICOCRINUS NODULOSUS, var. MACADAMSI Worthen 498

6. Side view of a large specimen. (Same collection.)

AGARICOCRINUS CONICUS W. and Sp. 501

7. A fine specimen with *Myzostoma* (?) cysts on two arms.
8. Posterior view of the calyx. (Both specimens in the coll. W. and Sp.)

AGARICOCRINUS WORTHENI Hall 490

9. Dorsal aspect of a specimen in which the second costals are produced into large nodes. (Coll. L. A. Cox.)

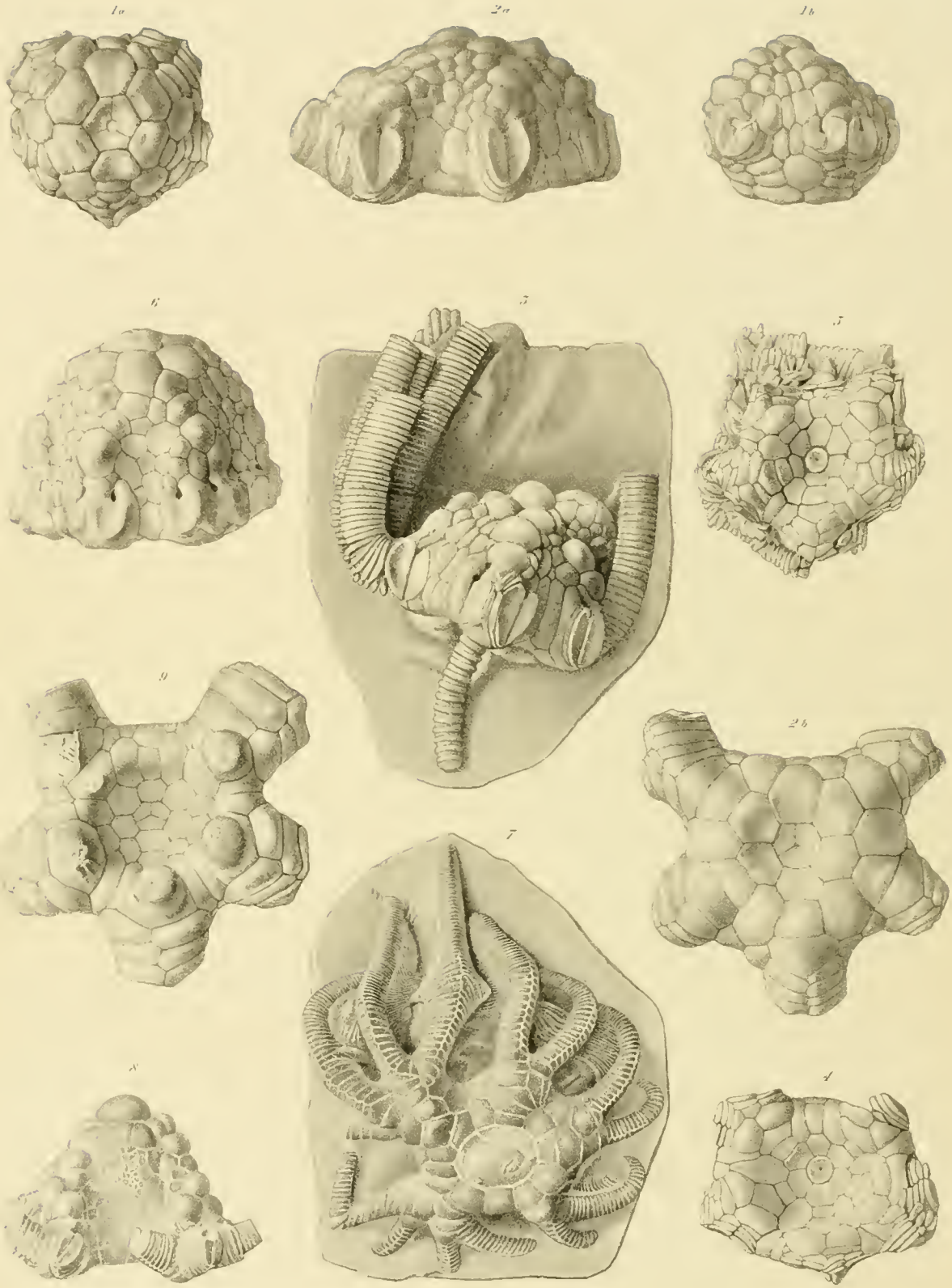

1a
2a
1b
6
3
5
9
2b
7
8
4

PLATE XL.

Page

Agaricocrinus splendens S. A. Miller 495

Fig. 1*a*. A large specimen with arms and stem.

1*b*. Dorsal aspect of another specimen.

1*c*. Ventral aspect of the calyx.

(?) Agaricocrinus nodulosus Worthen 497

2. Dorsal aspect of a very smooth specimen with portions of the arms, from Canton, Ind.

Agaricocrinus elegans Wetherby 500

3*a*. Dorsal aspect of a specimen from Hamilton, Ill.

3*b*. Ventral aspect of the same.

Agaricocrinus crassus Wetherby 499

4. Tegmen of a small specimen from Tennessee; the food grooves of the posterior rays covered by large alternate plates.

Agaricocrinus Wortheni Hall 490

5*a*. Posterior side of a large specimen.

5*b*. Anterior side of the same.

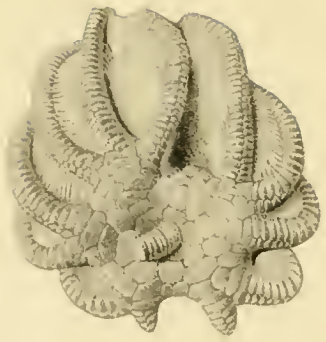
5*c*. Dorsal aspect of same.

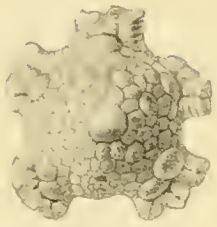
5*d*. Ventral aspect of same.

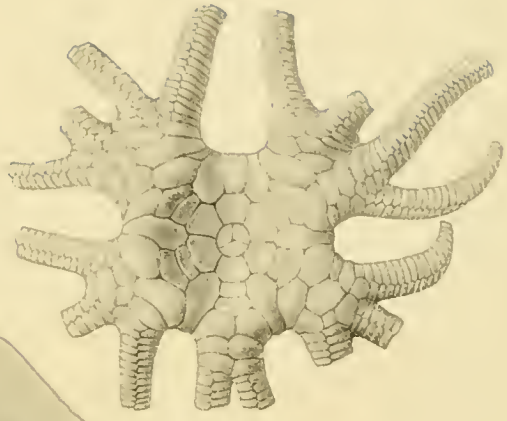
Agaricocrinus americanus, var. tuberosus (Hall) 489

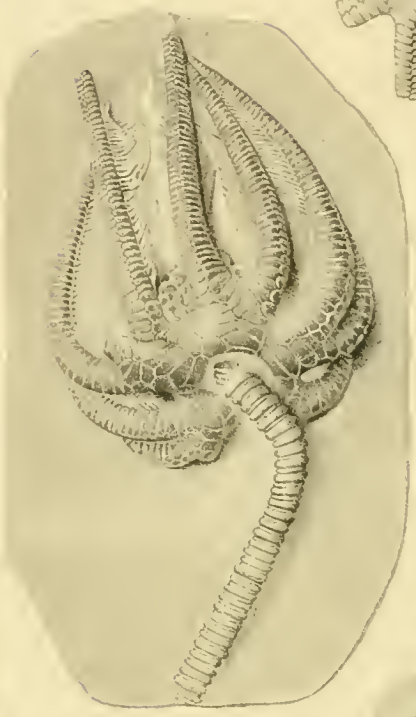
6. Dorsal aspect of the calyx.

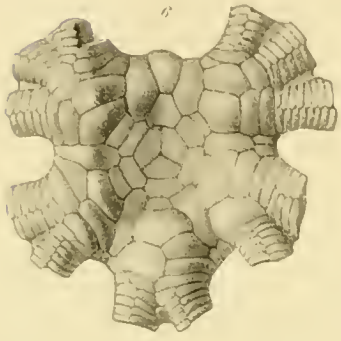
(All the specimens in the collection of Wachsmuth and Springer, except that of Fig. 5, which is in the Museum of Comparative Zoölogy.)

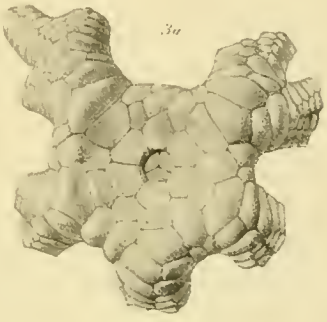

1b

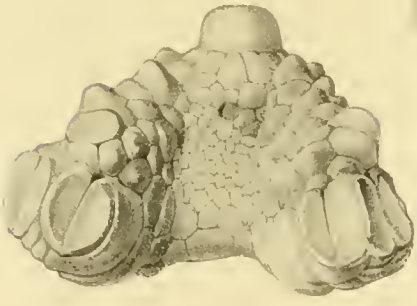

1c

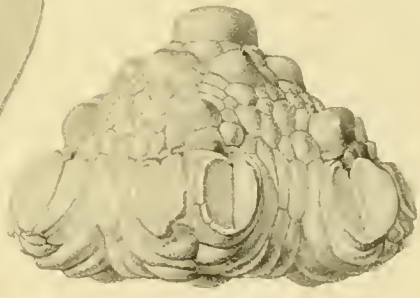

2


1a

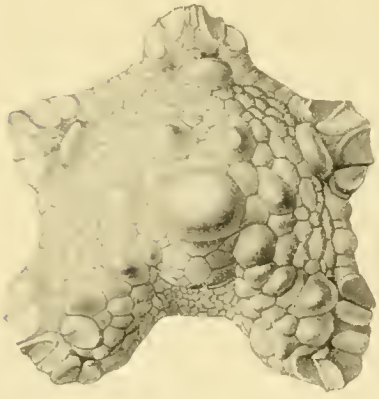

6


3a


5a


5b

4


5d

3b

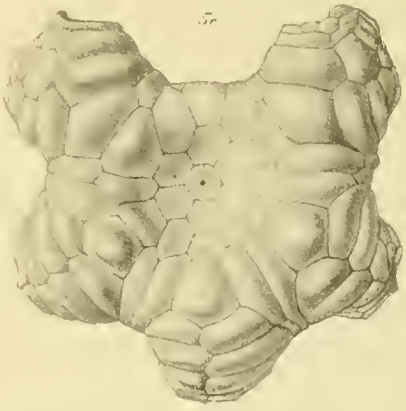

5c

PLATE XLI.

Page

AGARICOCRINUS INFLATUS Hall 502

Fig. 1*a*. A large specimen with arms (the arms slightly restored.)

1*b*. Posterior side of the calyx.

1*c*. Dorsal aspect of another specimen.

1*d*. The summit of the tegmen.

AGARICOCRINUS BULLATUS Hall 493

2*a*. Specimen with arms and stem.

2*b*. Dorsal aspect of a large calyx.

2*c*. Ventral aspect of same.

2*d*. Inner floor of dorsal cup.

AGARICOCRINUS GRACILIS M. and W. 513

3*a*. A large specimen with arms.

3*b*. Posterior side of calyx.

3*c*. Dorsal aspect of same.

AGARICOCRINUS BELLATREMA Hall 506

4*a*. A specimen with portions of the arms.

4*b*. Posterior side of the calyx with one arm attached.

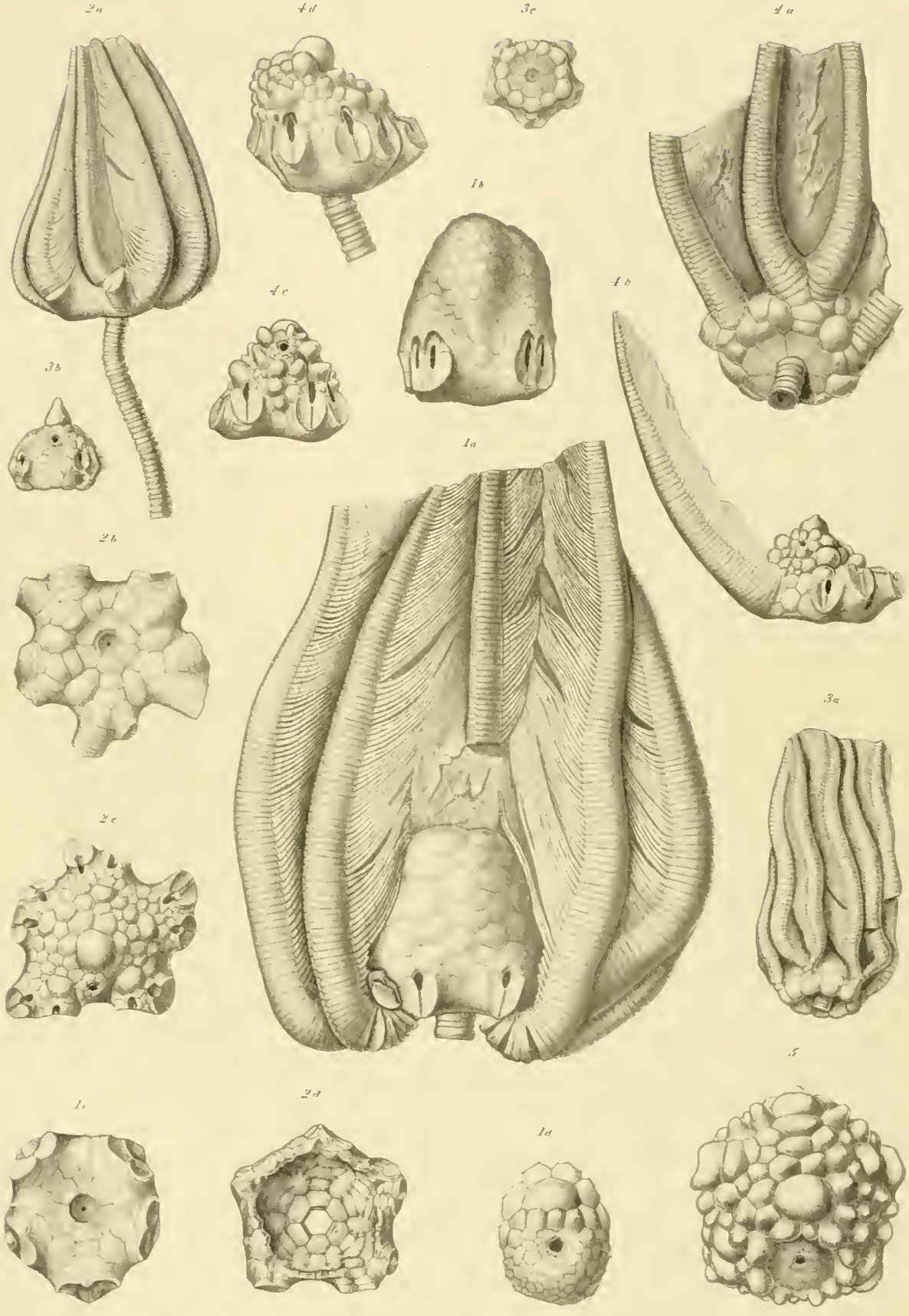
4*c*. Posterior side of a smaller specimen.

4*d*. Side view of a large specimen.

AGARICOCRINUS BELLATREMA, var. MAJOR W. and Sp. 507

5. Ventral aspect of a very nodose specimen.

(All specimens in the collection of Wachsmuth and Springer.)



Chas. R. Keyes, del.
Heliotype Printing Co. Boston

PLATE XLII.

PAGE

AGARICOCRINUS AMERICANUS (Rœmer) 488

Fig. 1. Specimen with arms, from Indiana.

2*a*. Posterior side of the calyx (specimen from Tennessee).

2*b*. Anterior side of another specimen (from the same locality).

AGARICOCRINUS WHITFIELDI Hall 496

3. Ventral aspect of the calyx. (Illinois State collection.)

AGARICOCRINUS AMERICANUS, var. TUBEROSUS (Hall) 489

4. Dorsal aspect of the calyx.

DORYCRINUS CORNIGERUS (Hall) 458

5. Specimen with arms and stem.

6. Postero-lateral view of calyx.

DORYCRINUS QUINQUELOBUS Hall 460

7. Side view of the calyx; the spines broken away.

8. Lateral view of a specimen with arms.

9. Posterior side of calyx; the spines intact.

DORYCRINUS SUBTURBINATUS Meek and Worthen 466

10*a*. Antero-lateral view of the calyx.

10*b*. Posterior view of the calyx.

AOROCRINUS CASSEDAYI (Lyon) 483

11*a*. Ventral aspect of the type specimen. (Lyon collection.)

11*b*. Posterior side of the same.

12. Side view of a specimen from Alpena, Mich.

AOROCRINUS CONCAVUS (Meek and Worthen) 482

13*a*. Dorsal aspect of the type specimen. (Mus. Comp. Zoöl.)

13*b*. Ventral aspect of the same.

13*c*. Side view of same.

ALLOPROSALLOCRINUS CONICUS Lyon and Cass. 407

14*a*. Anterior view of the calyx.

14*b*. Posterior view of the same.

14*c*. Dorsal aspect of same.

(All specimens in the collection of Wachsmuth and Springer, unless otherwise stated.)

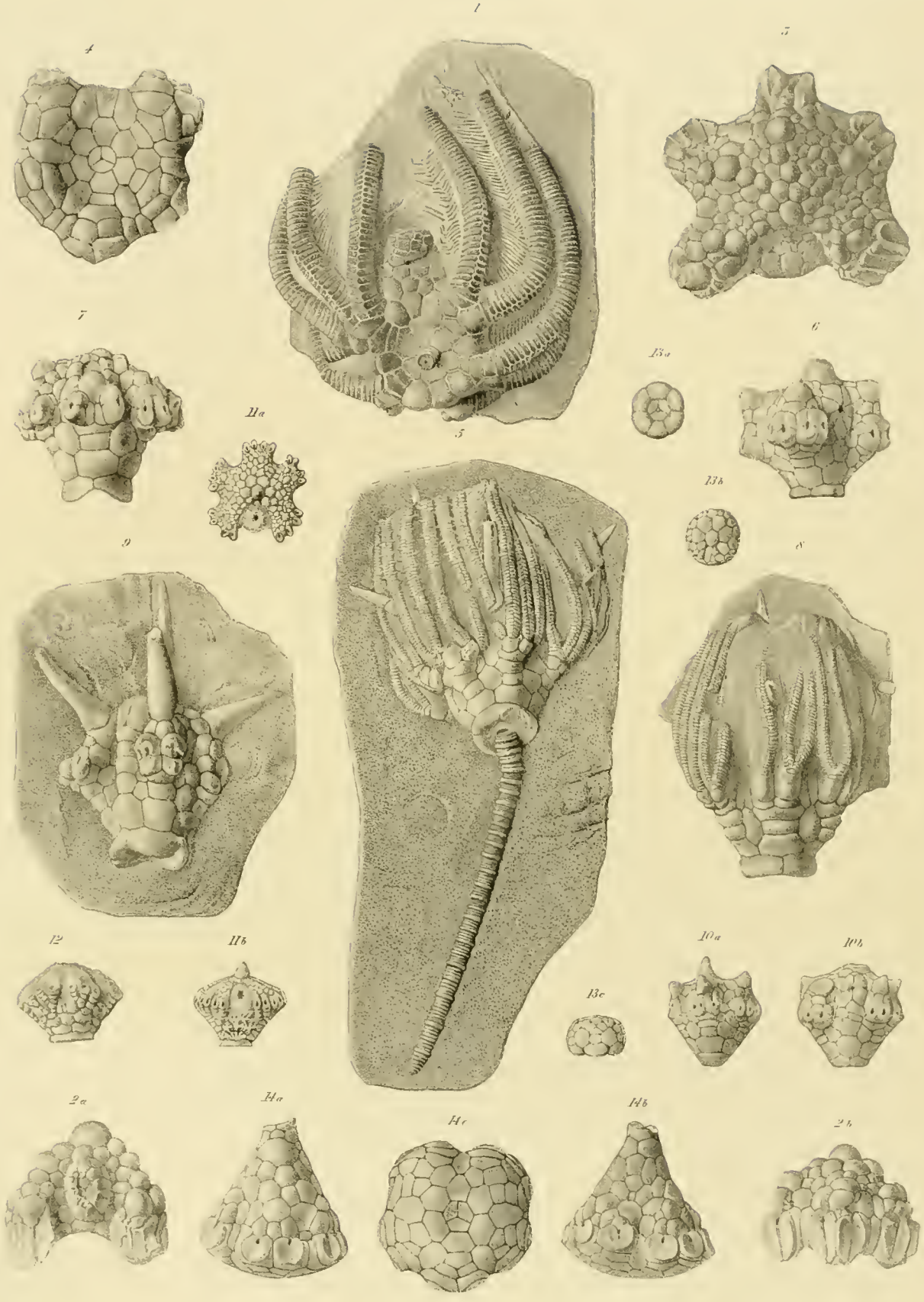

1
2a
2b
3
4
5
6
7
8
9
10a
10b
11a
11b
12
13a
13b
13c
14a
14b
14c

PLATE XLIII.

PAGE

DORYCRINUS MISSISSIPPIENSIS F. Rœmer 455

Fig. 1. Specimen with arms and stem. (Coll. Lisbon A. Cox.)

DORYCRINUS GOULDI (Hall) 456

2. Large specimen with arms and stem. (Coll. W. and Sp.)
3. A young specimen with arms. (Same collection.)

AOROCRINUS SPINOSULUS (Hall) 478

4. Specimen with arms. (Coll. L. A. Cox.)

DORYCRINUS CORNIGERUS (Hall) 458

5. Calyx, showing the anal side. (Coll. W. and Sp.)

DORYCRINUS MISSOURIENSIS (Shumard) 463

6. Posterior side of the calyx with most of the spines intact. (Same collection.)

AGARICOCRINUS NODULOSUS Worthen 497

7*a*. Dorsal aspect of the calyx. (Same collection.)
7*b*. Ventral aspect of the calyx.

AGARICOCRINUS WHITFIELDI Hall 496

8*a*. Dorsal aspect of the type specimen. (Illinois State collection.)
8*b*. Ventral aspect of the same specimen.

AGARICOCRINUS NODOSUS Meek and Worthen 493

9. Calyx and portion of the arms. (Coll. W. and Sp.)

1
7a
7b
8a
8b
3
9
4
2
6
5

PLATE XLIV.

Page

DORYCRINUS INTERMEDIUS Meek and Worthen 461

Fig. 1. Specimen with arms, spines, and stem.

DORYCRINUS MISSISSIPPIENSIS Rœmer 455

2. Posterior side of the calyx.
3. Ventral aspect of a specimen with long spines.

DORYCRINUS GOULDI (Hall) 456

4. A specimen having the arms and portions of the spines preserved (from Indian Creek, Ind.)
5. Anterior view of the calyx. (Specimen from Kentucky.)

DORYCRINUS CORNIGERUS (Hall) 458

6. Dorsal aspect of the calyx.
7. Ventral aspect of another specimen.

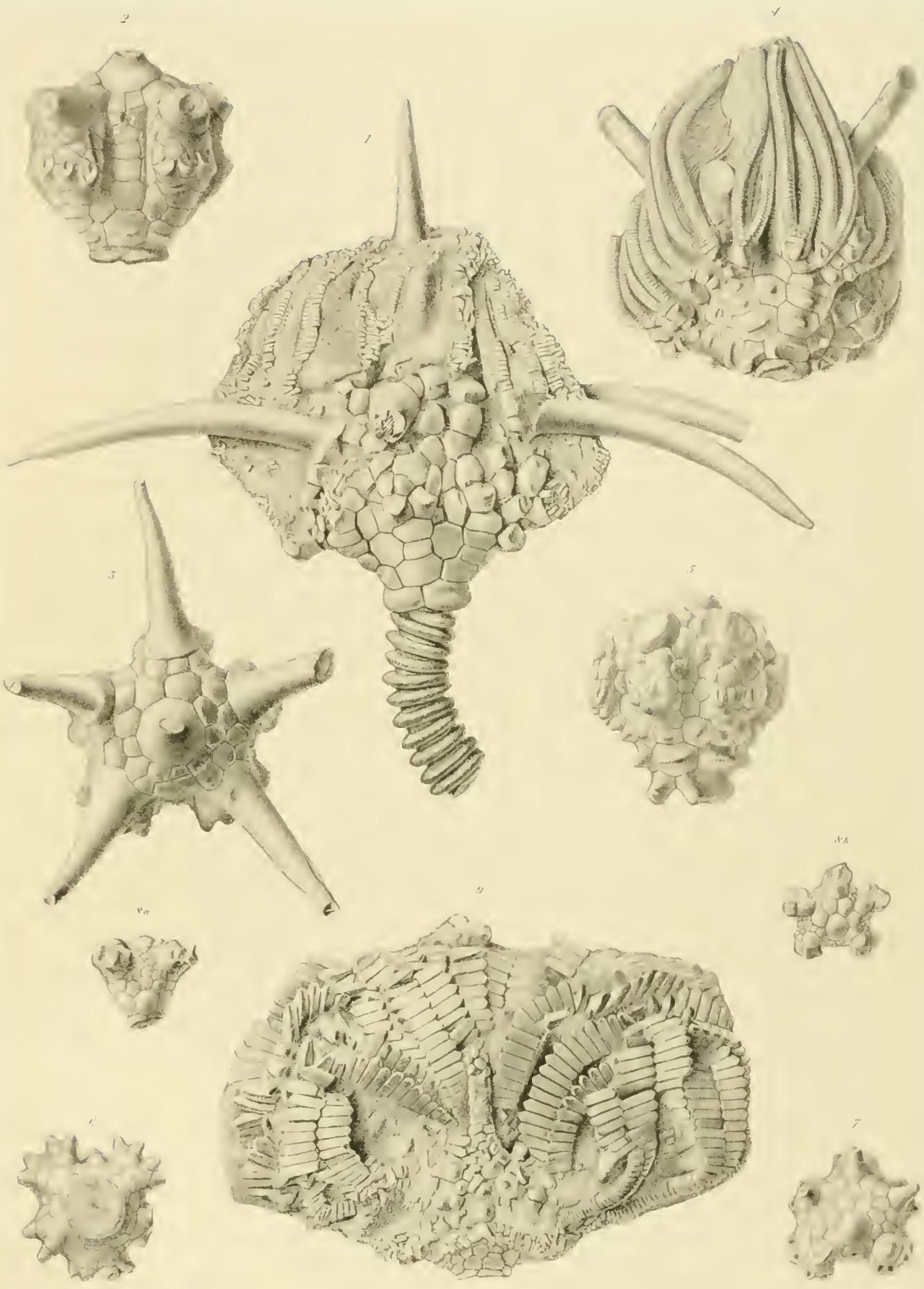
AOROCRINUS SPINOSULUS (Hall) 478

8*a*. Posterior side of the calyx.
8*b*. Ventral aspect of the same specimen.

ERETMOCRINUS REMIBRACHIATUS, var. EXPANSUS W. and Sp. . . . 390

9. A large specimen, showing the calyx, anal tube, and the infolding of the arms.

(All the specimens in the collection of Wachsmuth and Springer.)


2
4
1
3
5
5a
6
7

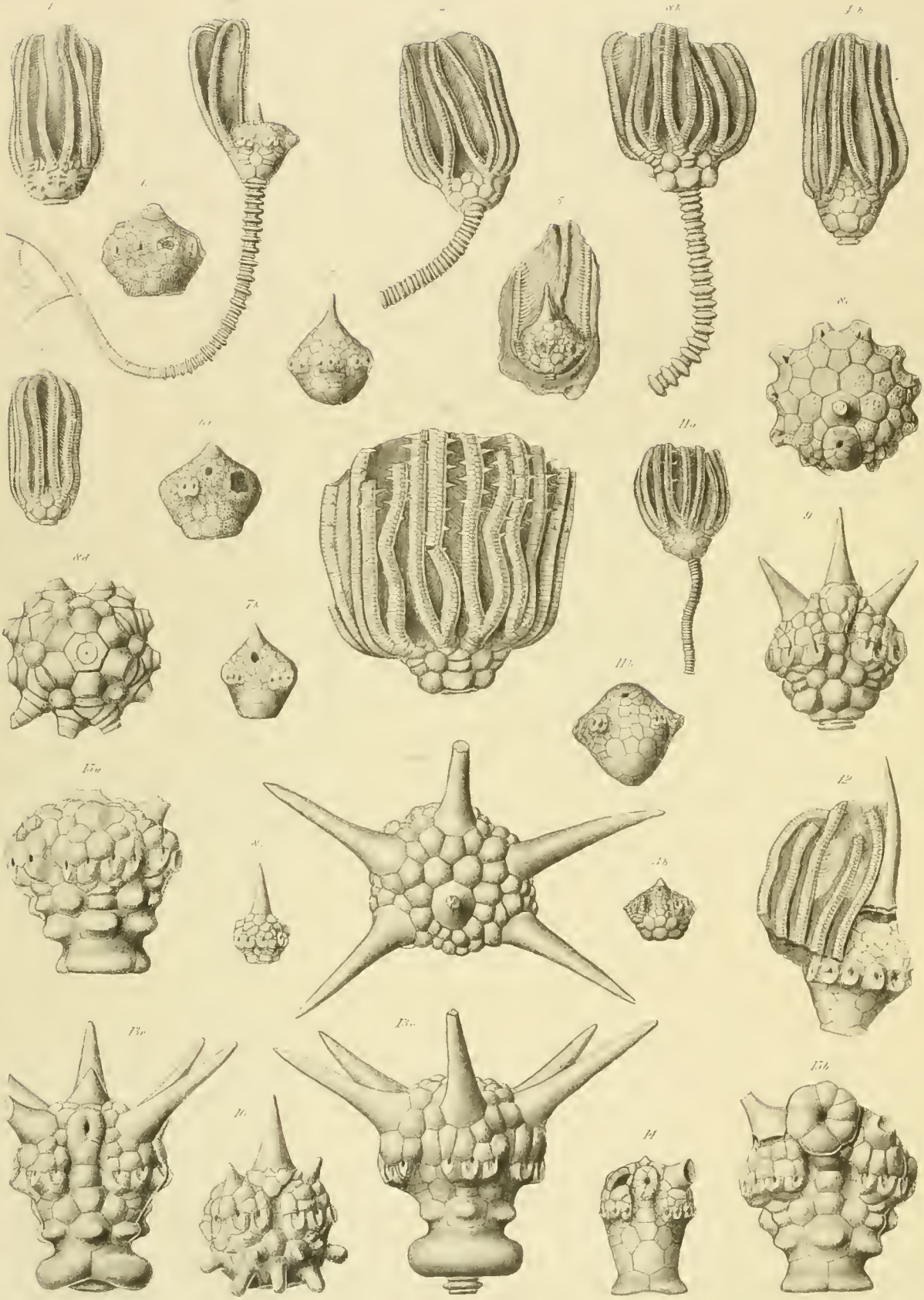


PLATE XLV.

Page

Aorocrinus radiatus W. and Sp. 472

Fig. 1. A specimen with arms; anterior side.

Aorocrinus helice (Hall). 481

2. Posterior view of the type specimen. (After Hall.)

Aorocrinus parvibasis W. and Sp. 473

3*a*. Specimen with arms from the anterior side.

3*b*. Posterior view of the calyx.

Aorocrinus immaturus W. and Sp. 471

4*a*. Lateral view of specimen with part of the arms, and portions of stem and cirri preserved.

4*b*. Posterior view of another specimen.

Aorocrinus helice (?). 481

5. Anterior view; from a gutta-percha cast made in the natural mould.

Aorocrinus canaliculatus M. and W. 475

6*a*. Anterior view of the type specimen. (After Meek and Worthen.)

6*b*. Posterior view of the same. (After Meek and Worthen.)

Aorocrinus subaculeatus (Hall) 476

7*a*. Anterior view of the calyx.

7*b*. Posterior side of the same. (After Hall.)

Dorycrinus unicornis (O. and Sh.) 468

8*a*. Anterior view of a specimen with arms.

8*b*. The same view of a smaller specimen with part of the stem.

8*c*. Ventral aspect of a large calyx.

8*d*. Dorsal aspect of another large calyx.

8*e*. Anterior view of a young specimen.

9. Posterior view of the form described by Hall as *Actinocrinus tricornis*.

10. The form described by Hall as *Actinocrinus pendens;* anal side.

Aorocrinus parvus (Shumard) 477

11*a*. Specimen with arms and stem.

11*b*. Posterior side of calyx of a large specimen.

Page

Dorycrinus unispina (Hall) 467

Fig. 12. Specimen with an unusually large spine and portions of the arms.

Dorycrinus missouriensis (Shumard) 463

13*a*. Anterior view of the calyx with spines intact.

13*b*. Ventral aspect of the same specimen.

13*c*. Posterior view of another specimen.

14. An abnormal specimen; posterior side.

Dorycrinus Rœmeri M. and W.. 464

15*a*. Anterior view of the calyx.

15*b*. Posterior view of another specimen.

(All specimens, except 6 and 7*b*, in the collection of Wachsmuth and Springer.)

PLATE XLVI.

Page

(?) Periechocrinus Whitei (Hall) 530

Fig. 1. A very large specimen from the Upper Burlington limestone. (Coll. W. and Sp.)

2. A smaller specimen from the same bed. (Same collection.)

3. Side view of the calyx. (Same horizon, and same collection.)

(?) Periechocrinus tenuidiscus (Hall) 531

4. Lateral view of the dorsal cup. (Same collection.)

Agaricocrinus Sampsoni S. A. Miller 505

5. The type specimen. (Coll. F. A. Sampson.)

Lobocrinus æquibrachiatus McChesney 440

6*a*. Specimen with only eighteen arms. (Coll. W. and Sp.)

6*b*. Ventral aspect of the same specimen.

Batocrinus rotadentatus Rowley and Hare 374

7. The type specimen, showing the dorsal cup. (Coll. R. R. Rowley.)

Batocrinus Calvini Rowley 373

8*a*. Side view of the type specimen. (Coll. R. R. Rowley.)

8*b*. Another view of the calyx, showing the anal interradius to the left.

Dizygocrinus euconus, var. abscissus (Rowley and Hare) . . . 431

9. Side view of the calyx. (Coll. W. and Sp.)

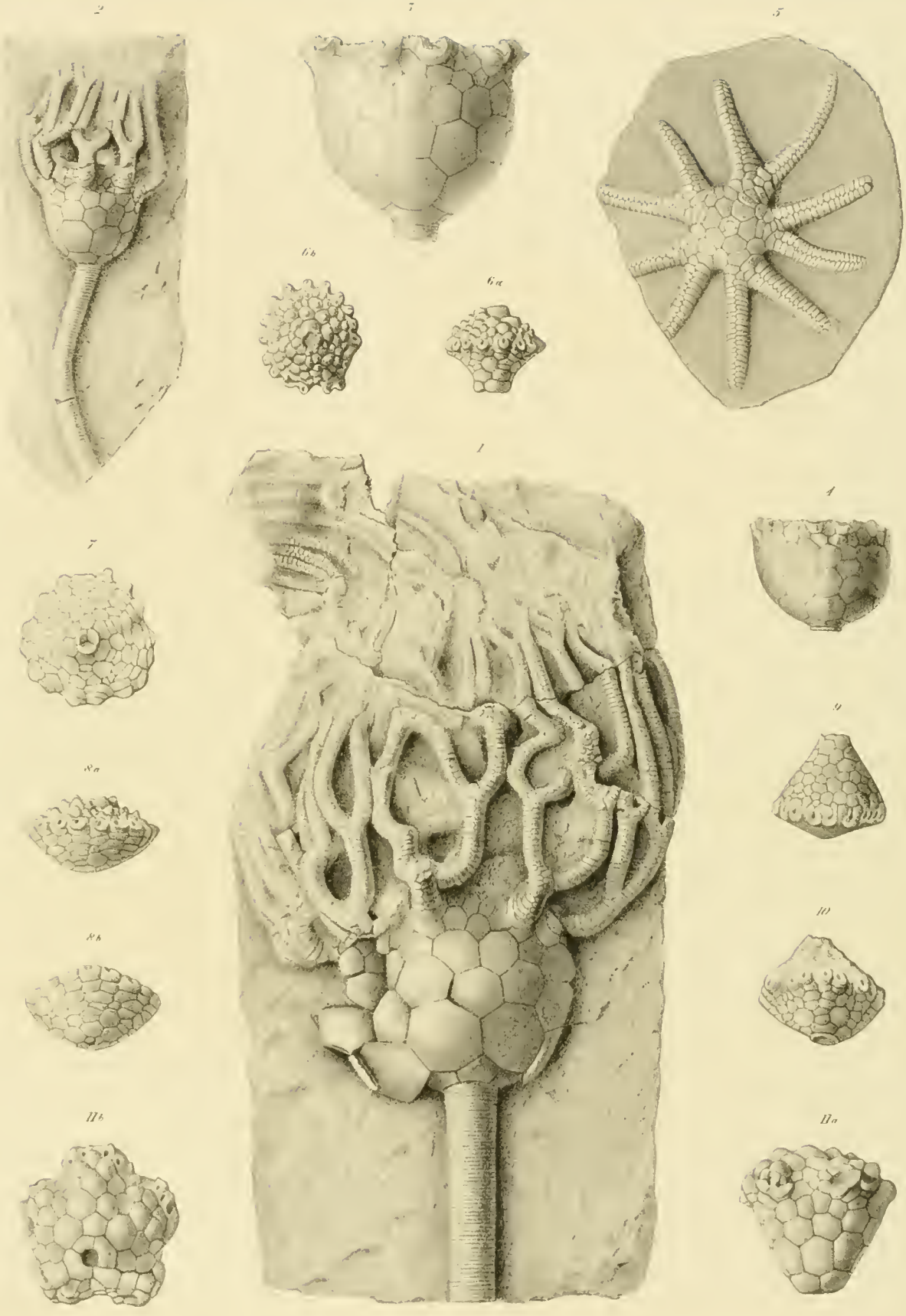
Dizygocrinus montgomeryensis Worthen 428

10. Type of the synonym "*Batocrinus Gurleyi*" R. and H. (Coll. R. R. Rowley.)

Actinocrinus (?) chouteauensis S. A. Miller 570

11*a*. Posterior view of the type specimen. (Coll. F. A. Sampson.)

11*b*. Ventral aspect of the same specimen.



A. M. Westergren del.

PLATE XLVII.

Page

Megistocrinus Evansi O. and Sh. 533

Fig. 1*a*. Lateral view of a large specimen.

1*b*. Ventral aspect of the same.

2*a*. Basals and radials of a large specimen with corrugated surface.

2*b*. Inner floor of the anchylosed basals.

3. A medium-sized specimen with the anal opening low down.

4*a*. Upper part of the stem.

4*b*. Its lower part.

5*a*. A rather small specimen of the form described by Hall as *Actinocrinus brevicornis;* anterior side.

5*b*. Posterior view of the same specimen.

5*c*. Ventral aspect of same.

Megistocrinus nobilis W and Sp. 537

6. Posterior side of a large specimen with arms.

7. Ventral aspect of another specimen with arms, showing side- and covering-plates.

8*a*. Showing the covering-plates and side-pieces as they enter the ventral disk (enlarged).

8*b*. A portion of the same specimen, showing the covering- and side-pieces in profile (still more enlarged).

(All the specimens are in the collection of Wachsmuth and Springer.)

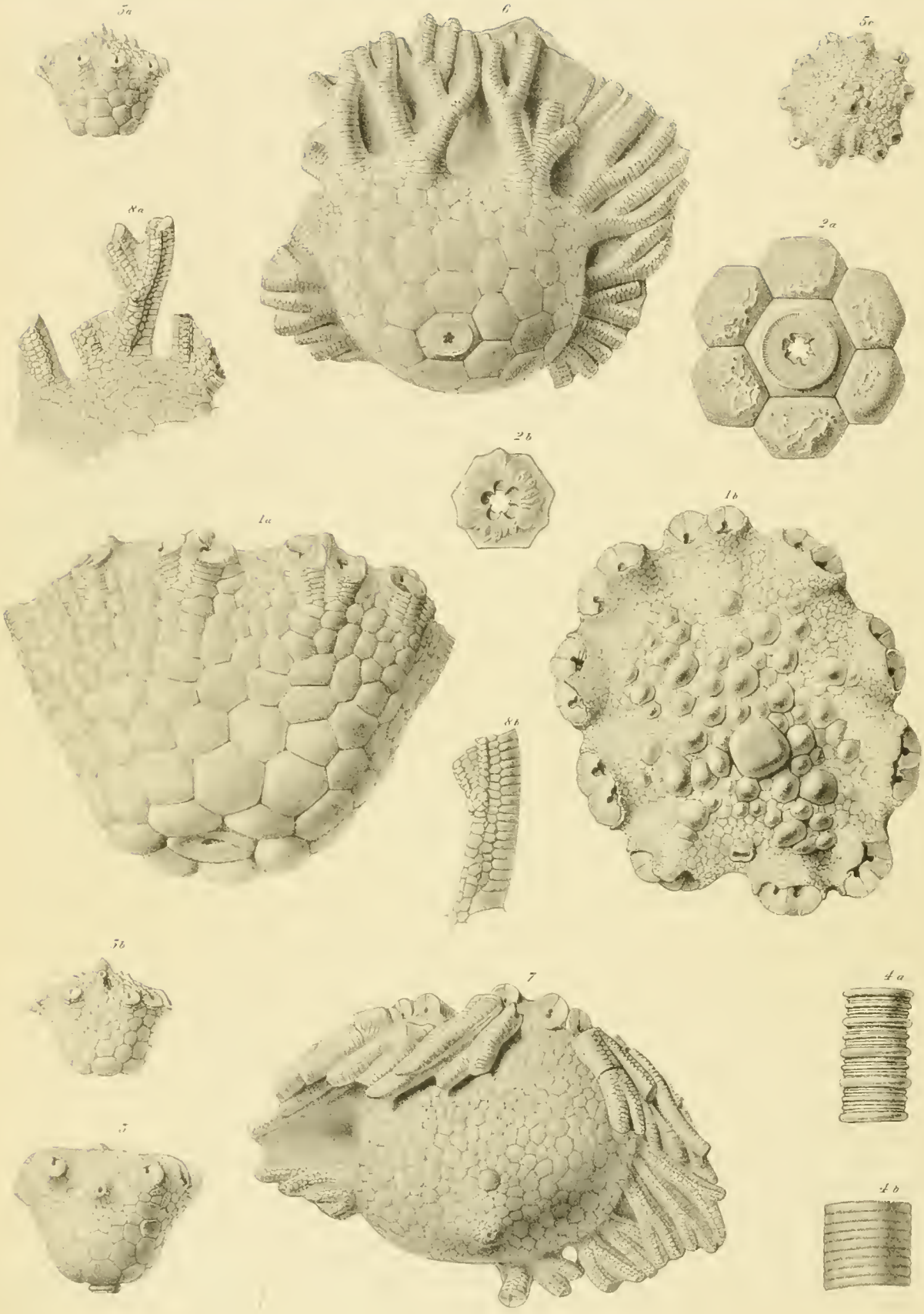

5a
6
5c
8a
2a
2b
1b
1a
8b
5b
7
4a
3
4b

PLATE XLVIII.

Page

MEGISTOCRINUS SPINOSULUS Lyon 544

Fig. 1*a*. Posterior view of the type specimen; from Louisville. (Lyon collection.)

1*b*. Dorsal aspect of the same specimen.

1*c*. Ventral aspect of same.

2. A specimen from Columbus, O.; the form described by S. A. Miller as *M. pileatus*. (Coll. W. and Sp.)

MEGISTOCRINUS LATUS Hall 538

3*a*. Ventral aspect of calyx. (Coll. A. S Tiffany.)

3*b*. Dorsal view of same. (The orientation of both figures incorrect.)

MEGISTOCRINUS FARNSWORTHI White 539

4*a*. Dorsal view of the calyx. (Coll. W. and Sp.)

4*b*. Side view of another specimen. (Same collection.)

MEGISTOCRINUS CONCAVUS W. and Sp. 543

5*a*. Dorsal view of the calyx. (Coll. W. and Sp.)

5*b*. Lateral view of the type specimen. (Davenport Acad. Sci.)

5*c*. Ventral aspect of the same specimen.

MEGISTOCRINUS RUGOSUS Lyon and Cass. 542

6*a*. Dorsal aspect of the calyx. (Coll. W. and Sp.)

6*b*. Ventral aspect of the type specimen. (Lyon collection.)

6*c*. Anterior view of a smaller specimen, showing portion of the anal tube. (Same collection.)

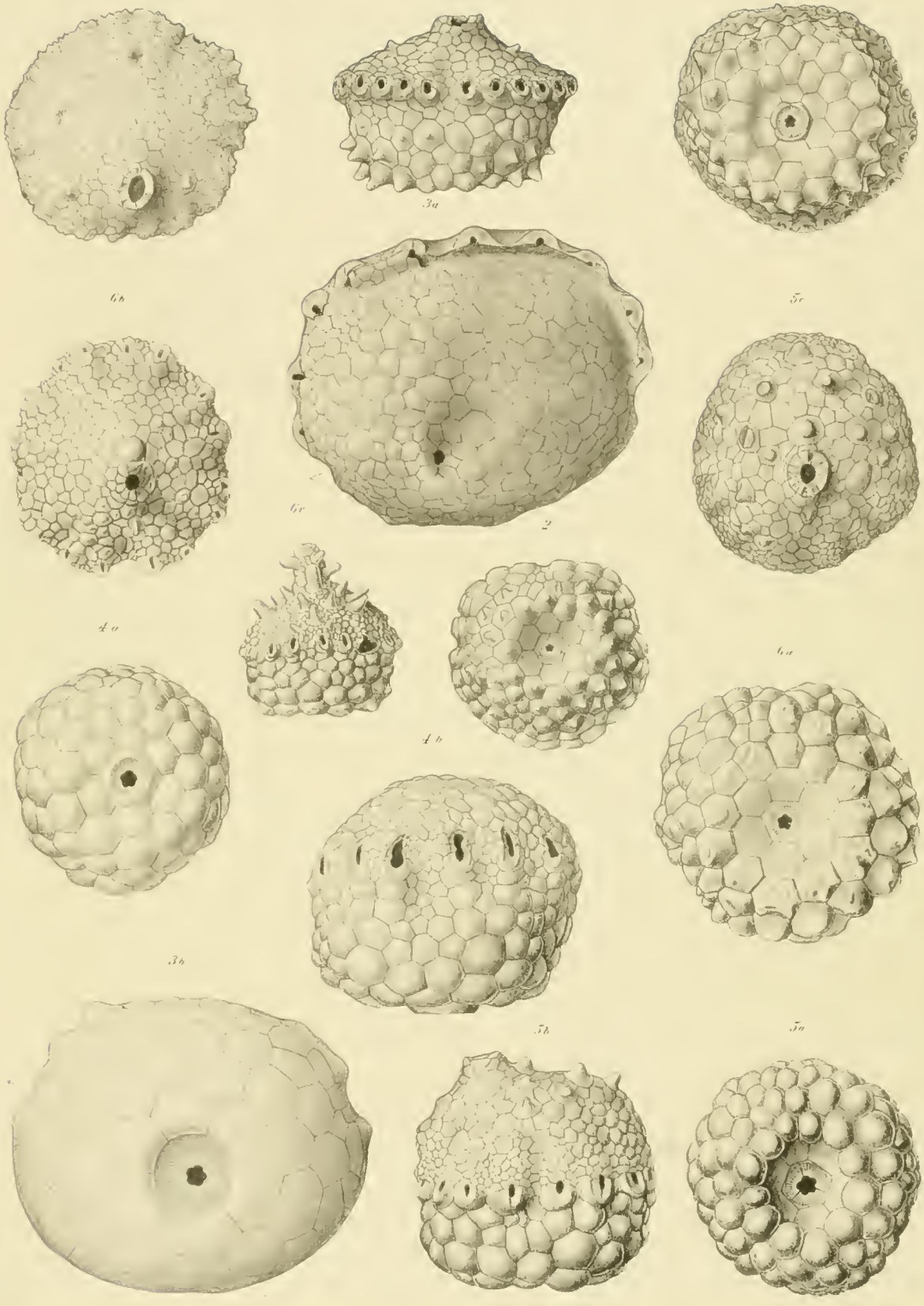

1c
1a
1b
3a
6b
5c
6c
2
4a
6a
4b
3b
5b
5a

PLATE XLIX.

Page

Megistocrinus abnormis Lyon 546

Fig. 1*a*. Dorsal aspect of the calyx. (Coll. W. and Sp.)

1*b*. Lateral view of the same specimen.

1*c*. Ventral aspect of another specimen. (Same collection.)

Megistocrinus depressus Hall 540

2. A specimen from New York. (Coll. A. S. Tiffany.)

3. Side view of a specimen from Louisville. (Coll. W. and Sp.)

4*a*. Dorsal aspect of a specimen from New York. (State Mus. Nat. Hist. N. Y.)

4*b*. Ventral aspect of another specimen. (Same collection.)

4*c*. Portion of the arms. (Same collection.)

4*d*. Dorsal aspect of a small specimen from New York, showing the ornamentation. (Coll. W. and Sp.)

Megistocrinus nodosus Barris 541

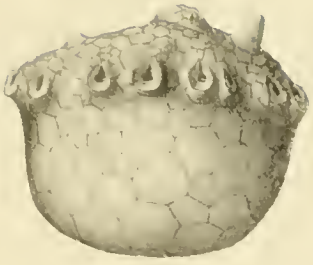
5*a*. Lateral view of the type specimen. (Mus. Davenport Acad. Nat. Sci.)

5*b*. Ventral aspect of another specimen. (Same collection.)

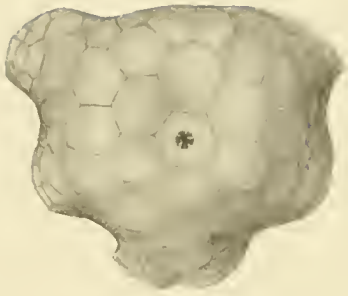
Megistocrinus multidecoratus Barris 542

6. Lateral aspect of the type specimen. (Same collection.)

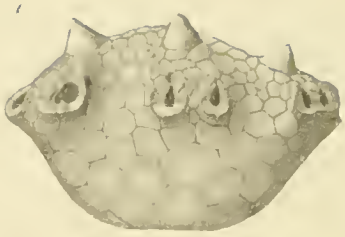
3



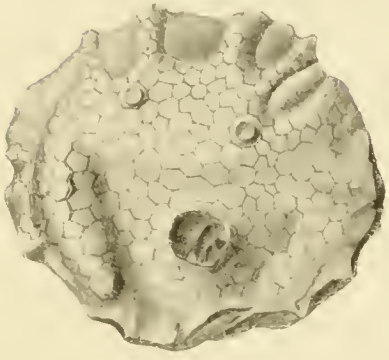
4a



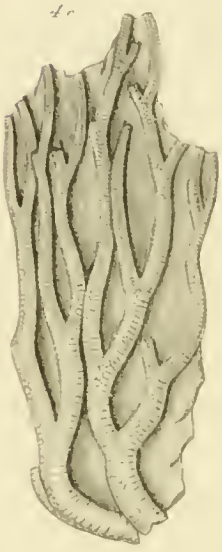
1b



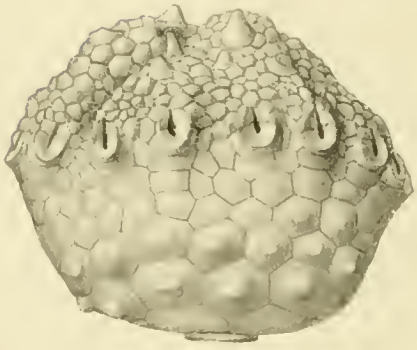
4b



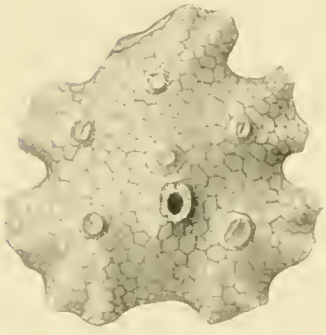
4c



5a

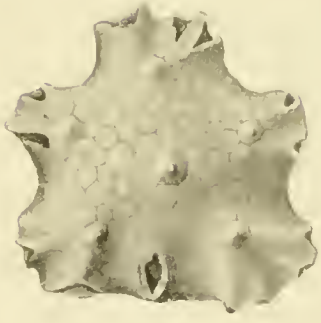


2

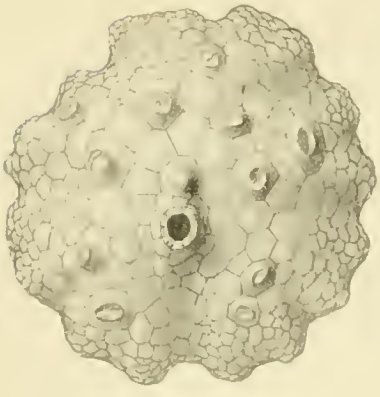


4a

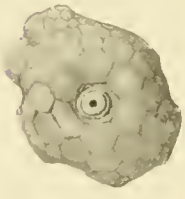
1c



5b



4d



1

PLATE L.

PAGE

PERIECHOCRINUS NECIS (Winch. and Marcy) 524

Fig. 1*a*. Posterior side of an internal cast. (Coll. W. C. Egan.)

1*b*. Ventral aspect of another cast. (Same collection.)

PERIECHOCRINUS INFELIX W. and M. 525

2*a*. An interior cast in a side view. (Same collection.)

2*b*. Ventral aspect of an internal cast. (Same collection.)

2*c*. Lateral view of a specimen figured by S. A. Miller as *Saccocrinus Egani*. (Same collection.)

2*d*. Ventral aspect of another cast, figured as *S. Egani*. (Same collection.)

PERIECHOCRINUS ORNATUS Hall and Whitf. 527

3*a*. Gutta-percha cast from a mould in the rock, showing surface markings; posterior side. (After Hall and Whitfield.)

3*b*. Anterior view of an internal cast. (After Hall and Whitfield.)

PERIECHOCRINUS TENNESSEENSIS (Hall) 528

4. Posterior view of Rœmer's type specimen. (After Rœmer.)

PERIECHOCRINUS URNIFORMIS (S. A. Miller) 526

5*a*. Posterior view of an internal cast. (Coll. W. C. Egan.)

5*b*. Ventral aspect of another cast. (Same collection.)

PERIECHOCRINUS SPECIOSUS (Hall) 521

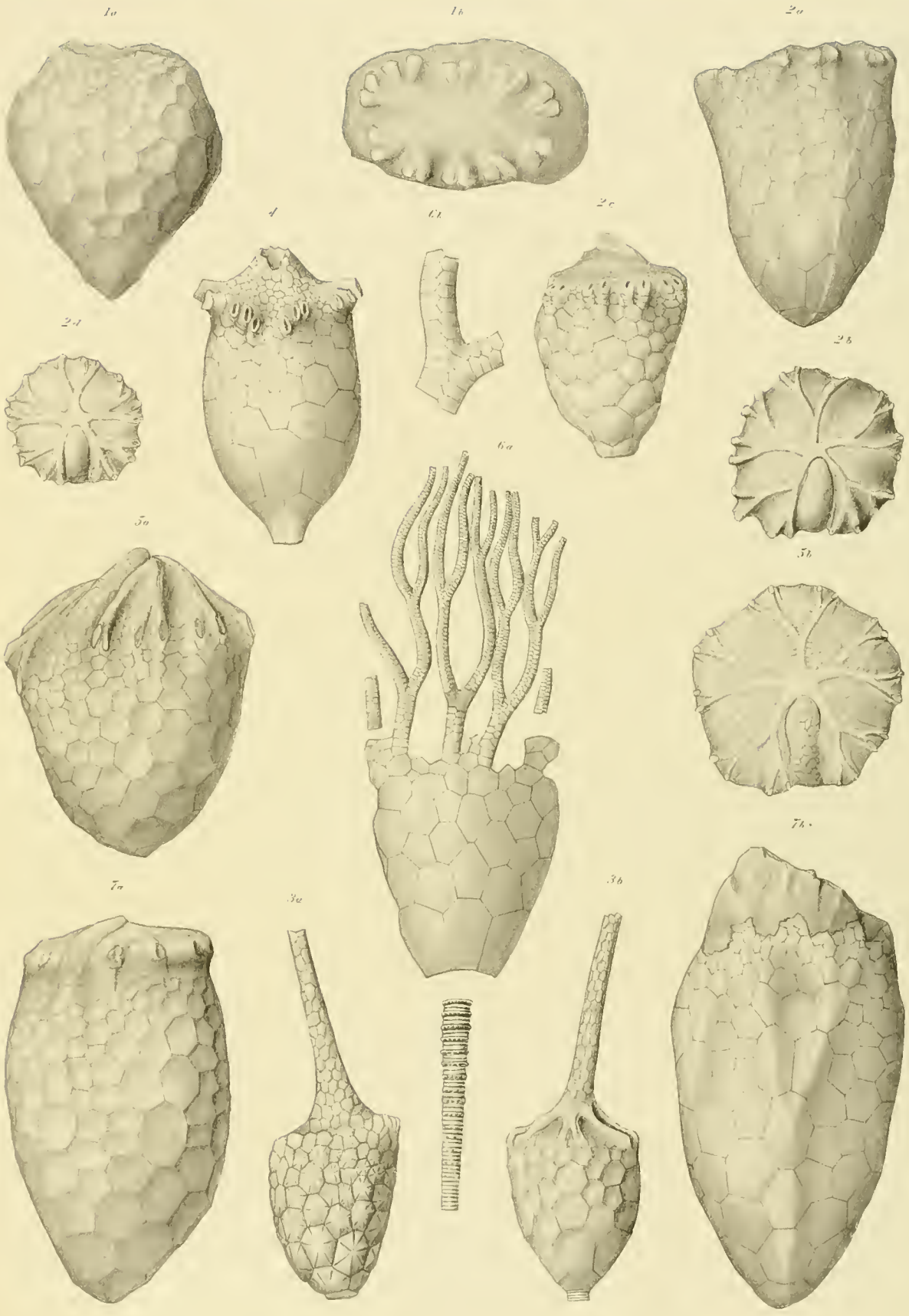
6*a*. The type specimen. (After Hall.)

6*b*. Part of an arm enlarged. (After Hall.)

PERIECHOCRINUS MARCOUANUS (Winch. and Marcy) 523

7*a*. Side view of an internal cast; anal side to the left. (Coll. W. C. Egan.)

7*b*. Anterior view of the dorsal cup. (Same collection.)



Heliotype Printing Co. Boston

PLATE LI.

Page

Periechocrinus Whitfieldi (Hall) 522

Fig. 1. A very large and unique specimen with arms.

2*a*. Side view of the dorsal cup. (After Hall.)

2*b*. The plates of one ray, showing ornamentation. (After Hall.)

3. Posterior view of a large elongate specimen.

4. Ventral aspect of another specimen.

Periechocrinus marcouanus (Winch. and Marcy) 523

Side view of the dorsal cup.

Periechocrinus tenuidiscus (Hall) 531

6. Antero-lateral view of the dorsal cup.

Periechocrinus ornatus (Hall) 527

7. Side view of the calyx; from St. Paul, Ind.

Megistocrinus nobilis W. and Sp. 537

8. A young specimen. (Type of *Megistocrinus parvus*.)

Periechocrinus Whitei (Hall) 530

9. Anterior view of a large specimen with arms from the Lower Burlington group.

10. A specimen from the Kinderhook group of Marshall Co., Iowa.

(All specimens, except 2*a* and *b*, in the collection of Wachsmuth and Springer.)

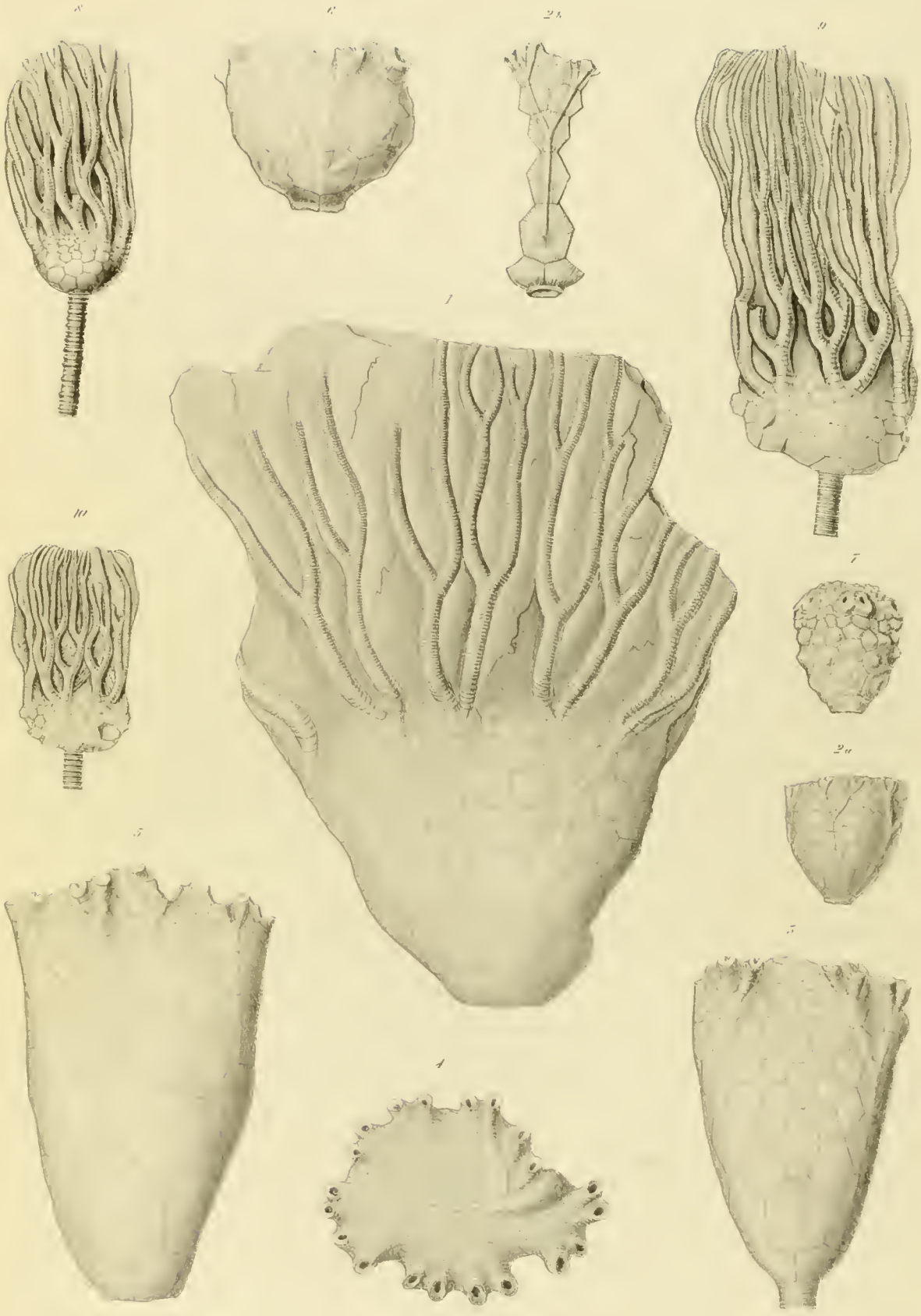

8
6
2a
9
1
10
7
2a
5
3
4

PLATE LII.

PAGE

ACTINOCRINUS LOBATUS Hall 557

Fig. 1*a*. Ventral aspect of a large specimen.

1*b*. Anterior view of the same.

ACTINOCRINUS VERRUCOSUS Hall 558

2*a*. A large specimen with anal tube, and portions of the arms.

2*b*. Posterior view of the calyx.

2*c*. Ventral aspect of the calyx.

ACTINOCRINUS MULTIRADIATUS Shum. 555

3. Large specimen with arms.

4*a*. Posterior view of the calyx.

4*b*. Ventral aspect of the same specimen.

5. Lateral view of another specimen.

6. Another specimen with arms.

ACTINOCRINUS GRIFFITHI W. and Sp. 568

7. Anterior view of the calyx.

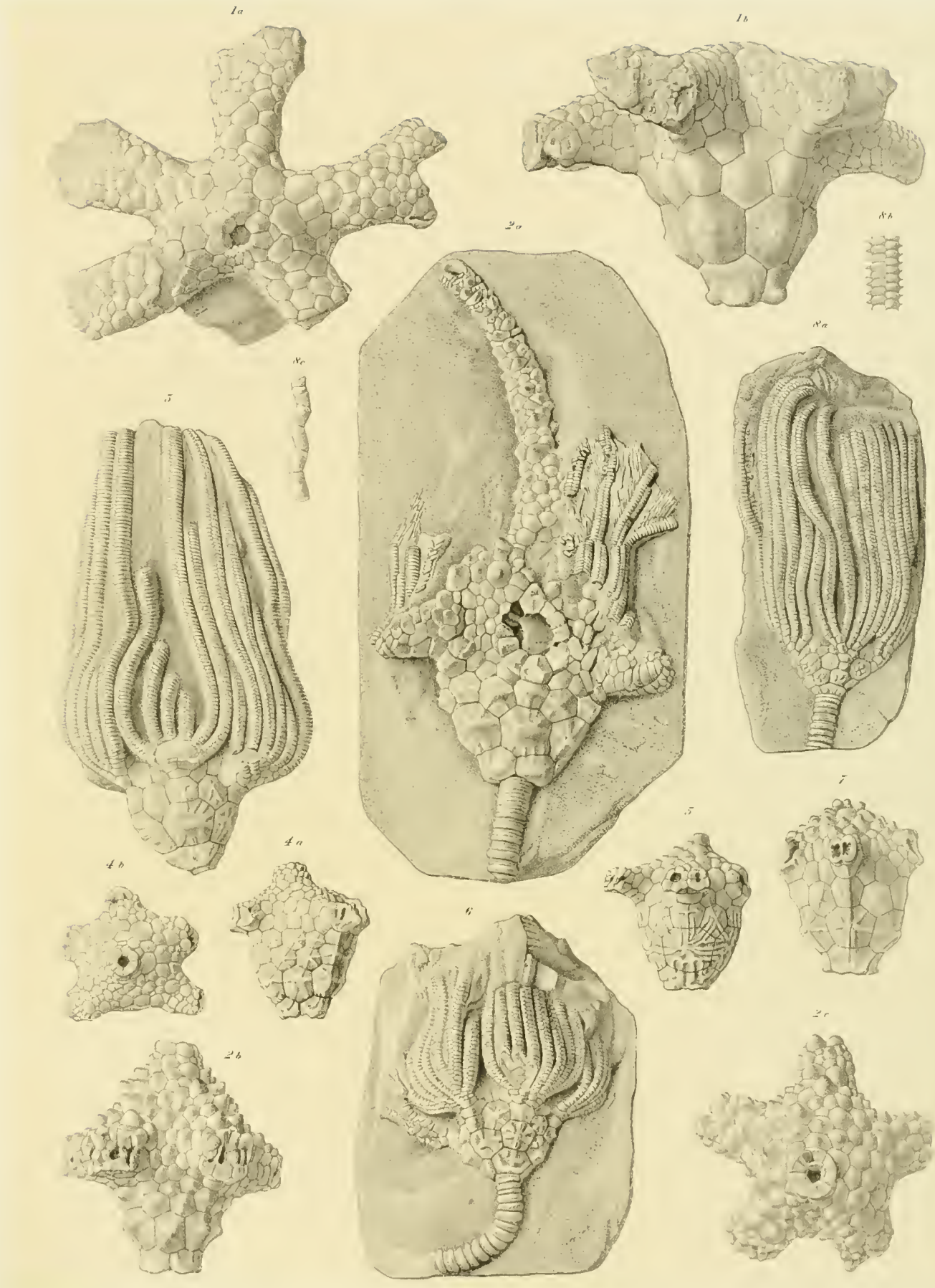
ACTINOCRINUS TUBERCULOSUS W. and Sp. 573

8*a*. Posterior side of the type specimen.

8*b*. The structure at the upper part of the arms.

8*c*. The proximal arm plates (enlarged.)

(All the specimens in the collection of Wachsmuth and Springer.)



A M Westergren del

Heliotype Printing Co, Boston

PLATE LIII.

PAGE

ACTINOCRINUS MULTIRAMOSUS W. and Sp. 564

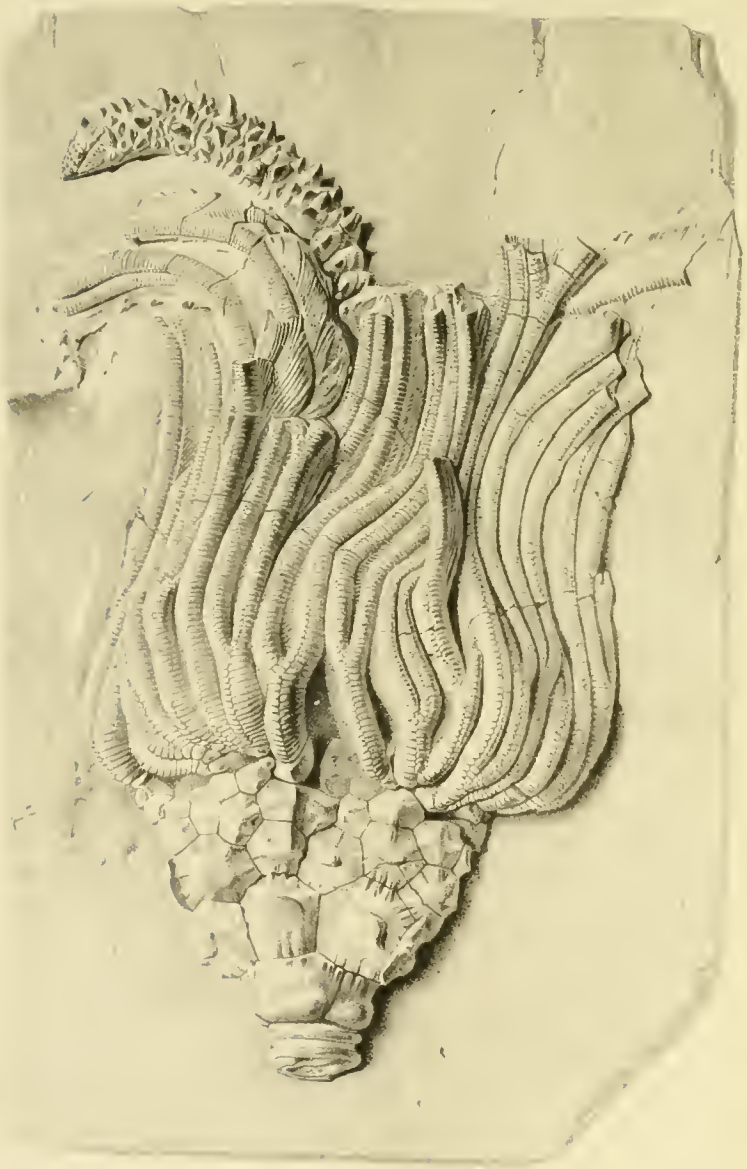
Fig. 1. A magnificent specimen with arms and anal tube.

ACTINOCRINUS MAGNIFICUS W. and Sp. 567

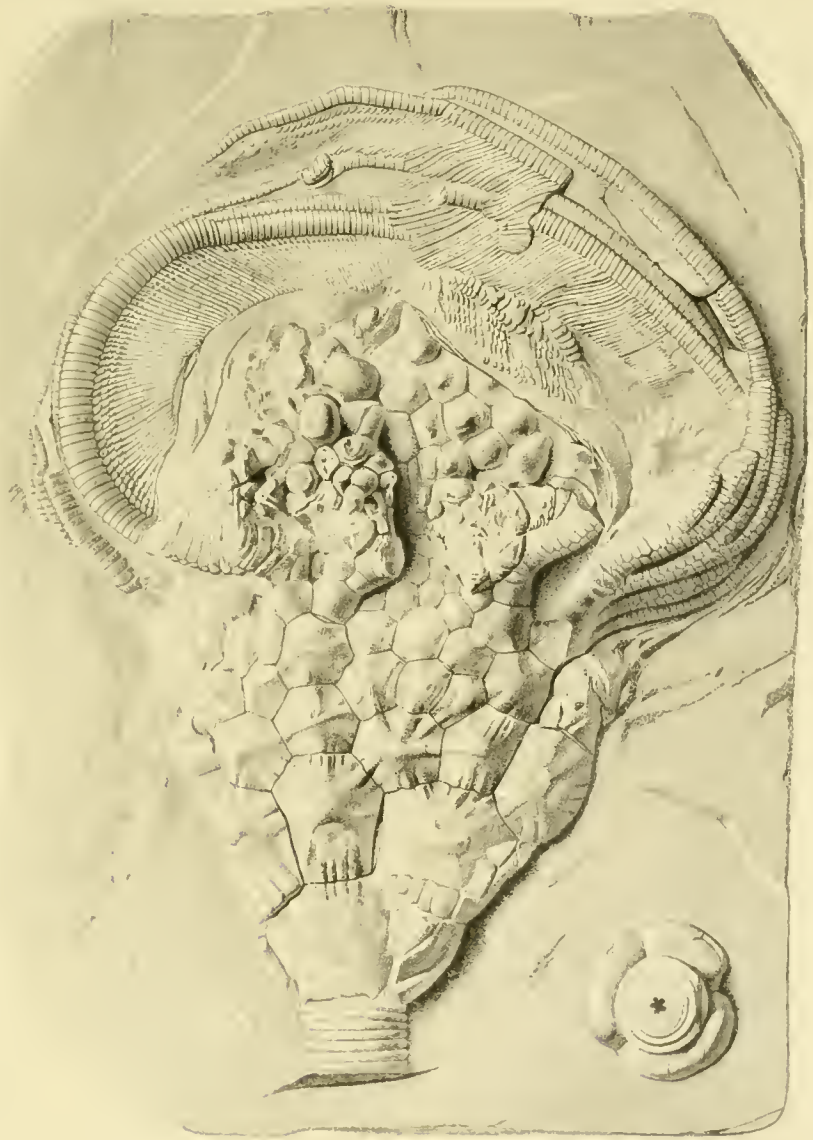
2. A very large specimen with arms.

(Both in the collection of Wachsmuth and Springer.)

1



2



A. M. Vaughan del.

PLATE LIV.

Page

Actinocrinus jugosus Hall 563

Fig. 1. Posterior side of a large calyx. (Coll. L. A. Cox.)

Actinocrinus Lowei Hall 562

2. Lateral view of the calyx. (Same collection.)

Actinocrinus lobatus Hall 557

3. Anterior view of a specimen with arms. (Mus. Comp. Zoöl.)

Actinocrinus trijugis (S. A. Miller) 576

4*a*. Posterior view of the calyx. (One of the type specimens; in the Coll. of F. A. Sampson.)

4*b*. Ventral aspect of the same specimen.

Cactocrinus glans (Hall) 625

5. Posterior view of the calyx. (Coll. W. and Sp.)

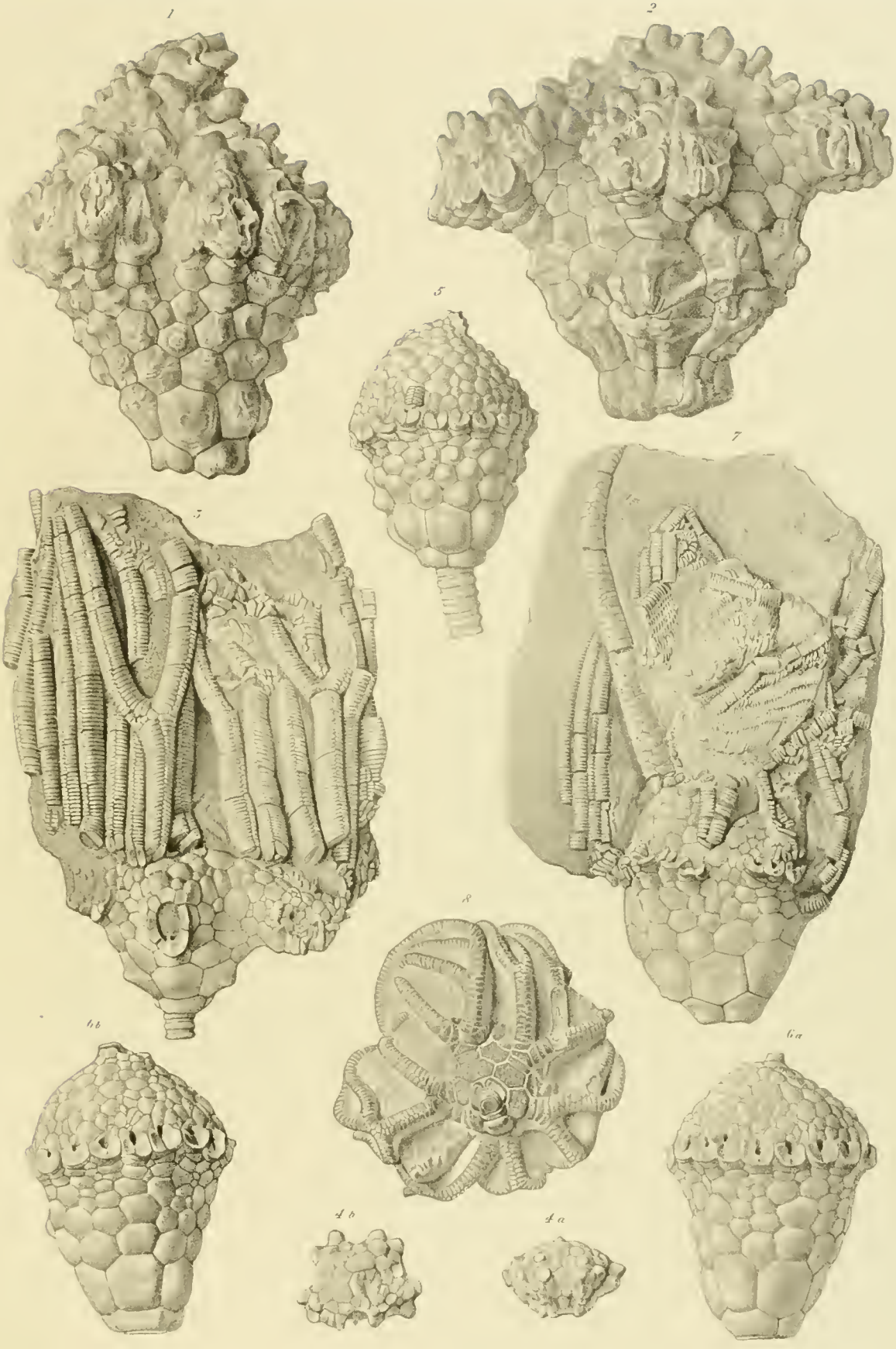
6*a*. Lateral view of a less nodose specimen. (Same collection.)

6*b*. Another view of the same specimen.

7. Hall's type of *Actinocrinus eryx*. (Mus. Comp. Zoöl.)

Amphoracrinus viminalis (Hall) 590

8. Specimen with arms. (Coll. W. and Sp.)



A. M. Westergren del.

Heliotype Printing Boston

PLATE LV.

PAGE

ACTINOCRINUS LOBATUS Hall 557

Fig. 1*a*. Posterior view of a fine specimen; showing portions of anal tube and arms. (Coll. W. and Sp.)

1*b*. Stem near the calyx.

ACTINOCRINUS PERNODOSUS Hall 561

2*a*. Anterior view of the calyx. (Same collection.)

2*b*. Posterior view of another specimen. (Same collection.)

ACTINOCRINUS MULTIRAMOSUS W. and Sp. 564

3. The calyx with an *Onychaster* fastened to the anal tube. (Same collection.)

ACTINOCRINUS TENUISCULPTUS McChesney 571

4*a*. Anterior side of a specimen with arms. (Same collection.)

4*b*. Posterior side of the calyx. (Same collection.)

ACTINOCRINUS SCITULUS M. and W. 559

5. Anterior side of a specimen with arms. (Same collection.)

6*a*. Side view of the calyx. (Same collection.)

6*b*. Posterior view of the same specimen.

ACTINOCRINUS ARROSUS (S. A. Miller) 577

7. One of the type specimens. (Coll. F. A. Sampson.)

8*a*. Dorsal aspect of the calyx. (Same collection.)

8*b*. Side view of the same specimen.

8*c*. Ventral aspect of same.

CACTOCRINUS OBESUS (Keyes) 613

9*a*. Side view of the type specimen. (Coll. Missouri Surv.)

9*b*. Ventral aspect of the same. (Coll. W. and Sp.)

CACTOCRINUS SEXARMATUS (Hall) 615

10. Left postero-lateral side of the dorsal cup. (Coll. W. and Sp.)

11. Posterior view of the calyx. (Same collection.)

CACTOCRINUS FOSSATUS (S. A. Miller) 620

12. The type specimen, showing the posterior side of the calyx. (After Miller.)

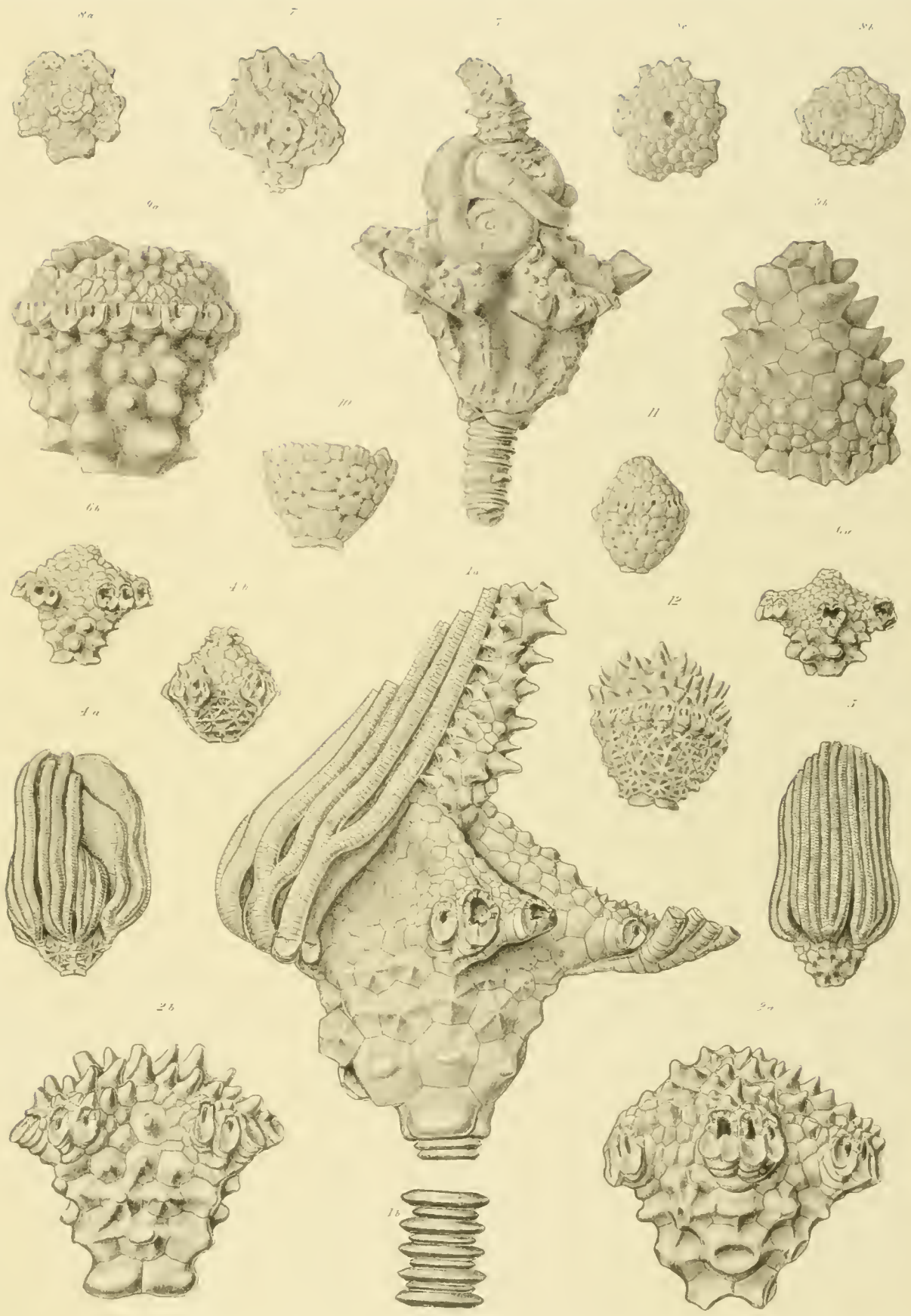


PLATE LVI.

Page

ACTINOCRINUS DAPHNE (Hall) 574

Fig. 1. Posterior view of a large specimen. (Coll. W. and Sp.)

CACTOCRINUS THALIA (Hall) 604

2. Specimen with arms, described by Hall as *Actinocrinus infrequens*. (Mus. Comp. Zoöl.)

CACTOCRINUS THETIS (Hall) 614

3. Posterior view of the calyx and anal tube. (Coll. W. and Sp.)
4. A large specimen with arms. (Same collection.)

CACTOCRINUS OPUSCULUS (Hall) 607

5*a*. Specimen with arms. (Mus. Comp. Zoöl.)
5*b*. Calyx, showing the left posterior ray and the anal interradius. (Coll. W. and Sp.)

CACTOCRINUS MULTIBRACHIATUS (Hall) 617

6. Antero-lateral view of the calyx. (Coll. W. and Sp.)
7. Posterior view of another specimen. (Same collection.)

CACTOCRINUS LUCINA (Hall) 603

8. Anterior view of a specimen with arms. (Mus. Comp. Zoöl.)
9. Posterior side of the calyx; from near Louisiana, Mo., described by Rowley and Hare as *Aetinocrinus puteatus*. (Coll. R. R. Rowley.)

CACTOCRINUS ECTYPUS (Meek and Worthen) 611

10. Side view of a large specimen. (Coll. W. and Sp.)

ACTINOCRINUS GRACILIS W. and Sp. 572

11. A specimen with arms ($\frac{1}{1}^{1}$). (Mus. Comp. Zoöl.)

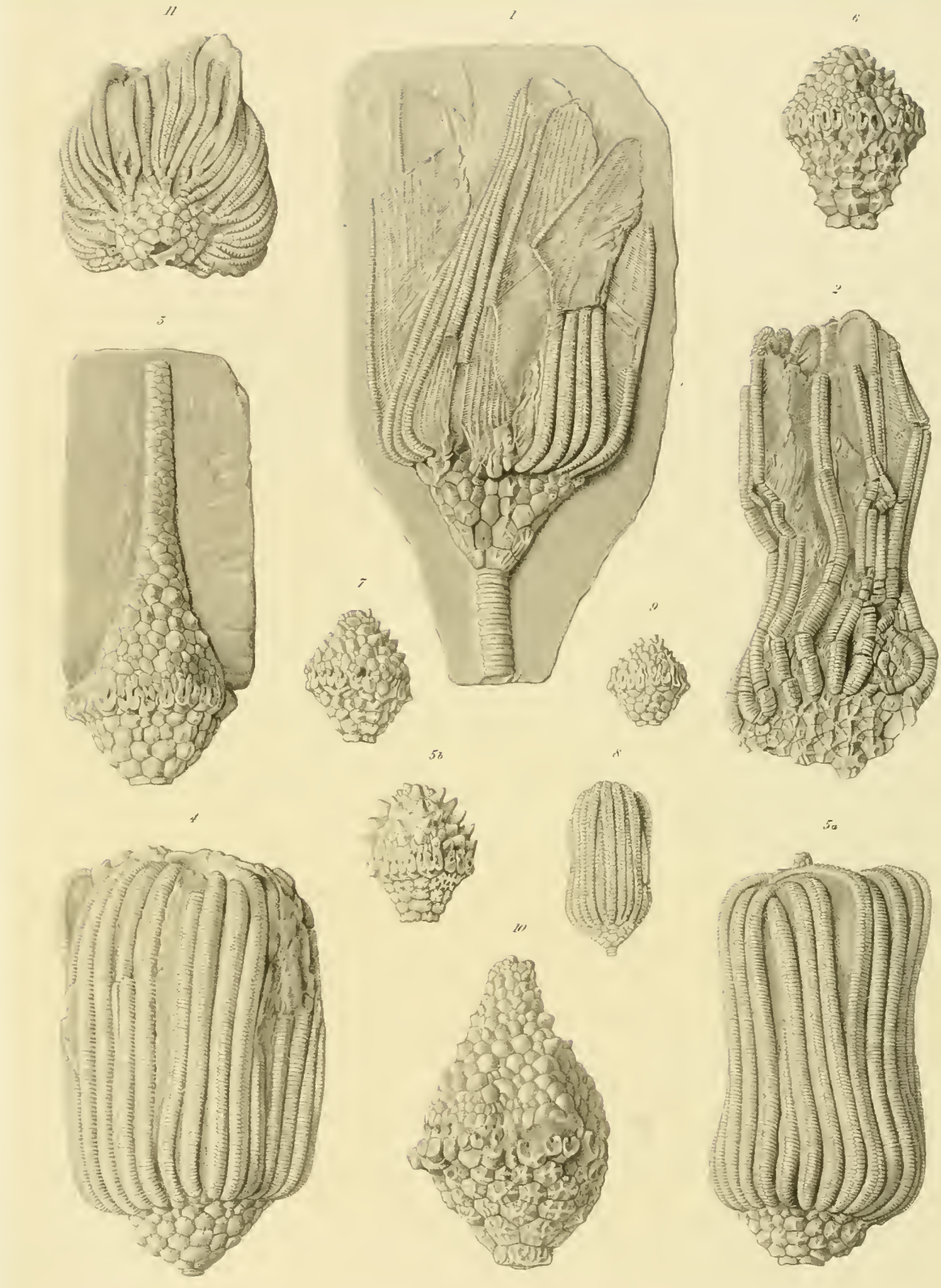

11
1
6
2
3
7
9
5b
8
4
5a
10

PLATE LVII.

PAGE

CACTOCRINUS NODOBRACHIATUS W. and Sp. 622

Fig. 1. Posterior side of a fine specimen with arms; the arms incurving and touching the summit of the disk.

2. Anterior view of another specimen.

CACTOCRINUS ORNATISSIMUS W. and Sp. 621

3. Posterior view of the type specimen.

CACTOCRINUS ARNOLDI W. and Sp. 624

4*a*. Specimen with arms and pinnules (the nodes upon the arms are not preserved.*)

4*b*. Side view of the calyx, showing the left antero-lateral ray.

CACTOCRINUS DENTICULATUS W. and Sp. 606

5*a*. The type specimen, showing the right posterior ray.

5*b*. Portion of an arm from near the upper end (enlarged).

CACTOCRINUS EXTENSUS W. and Sp. 616

6. Lateral view of the calyx.

7. Specimen with arms, anal tube, and column.

CACTOCRINUS LONGUS (Meek and Worthen) 609

8. Anterior view of an unusually fine and large calyx.

CACTOCRINUS CLARUS (Hall) 612

9. Lateral view of a large dorsal cup with almost smooth plates.

10. Anterior view of a specimen with ornamented plates.

CACTOCRINUS RETICULATUS, var. OVATUS (Hall) 606

11. Anterior view of the calyx.

CACTOCRINUS THALIA (Hall) 604

12. Anterior view of the dorsal cup.

13. Another specimen, showing the left posterior ray and anal interradius.

(All the specimens in the collection of Wachsmuth and Springer.)

* This figure is misleading in giving the appearance of spines to some arm-fragments lying upon the disk.

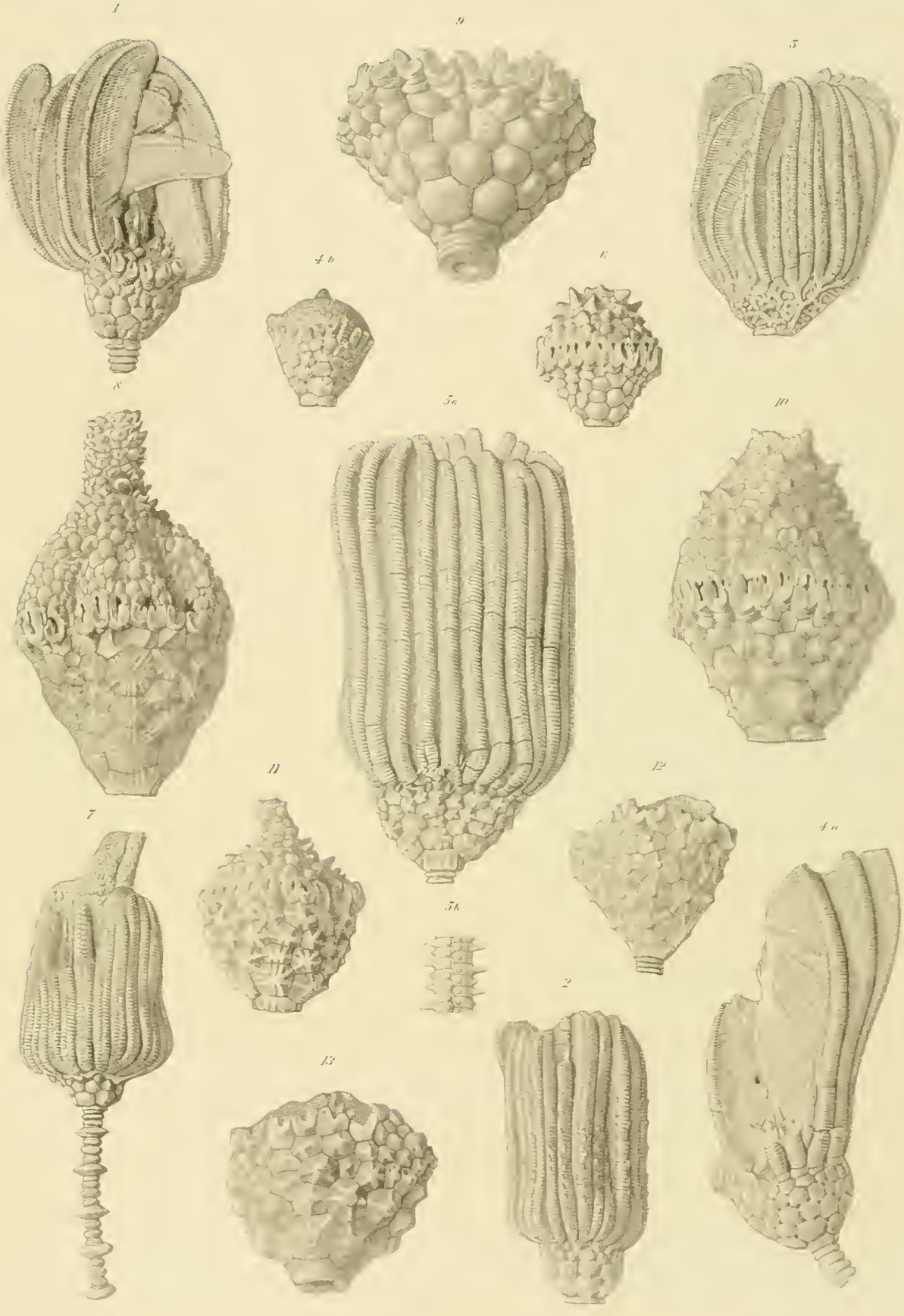

1
9
5
4b
6
8
5a
10
11
12
7
4a
5b
2
13

PLATE LVIII.

Page

Cactocrinus clarus (Hall) 612

Fig. 1. Showing the arm structure, and the arrangement of the hooks along the pinnules.

Cactocrinus reticulatus (Hall) 605

2*a*. Anterior view of the calyx.

2*b*. Posterior view of the calyx.

Cactocrinus proboscidalis (Hall) 601

3. A large specimen with arms.

4. Another specimen with arms.

5. Posterior view of the calyx.

6. Lateral view of a specimen, showing a portion of the anal tube.

7*a*. Portion of an arm, showing the dorsal side of the pinnules and the hooks; the food grooves open at places, and closed at others, ¾.

7*b*. The ventral side of the pinnules still more enlarged, showing the arrangement of the covering plates and side pieces, and also at intervals the bottom of the food grooves.

7*c*. Dorsal aspect of three adjoining pinnules greatly enlarged.

7*d*. A single pinnule joint, greatly enlarged.

Cactocrinus multibrachiatus (Hall) 617

8. Anterior side of a fine specimen with arms.

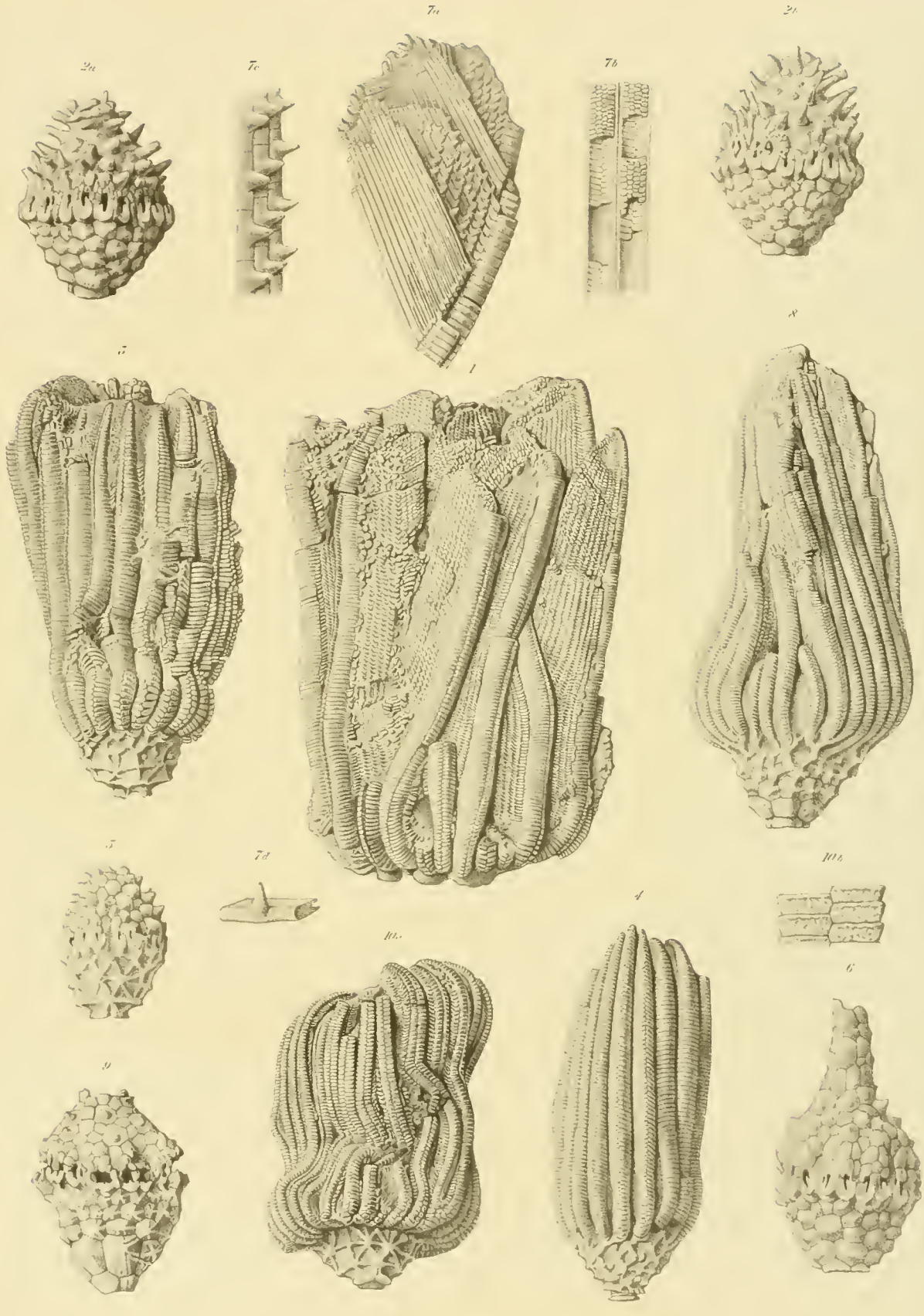
Cactocrinus limabrachiatus (Hall) 608

9. Lateral view of the calyx (one of the rays abnormal, having but one costal).

10*a*. Specimen with arms.

10*b*. Arm joints, much enlarged.

(All the specimens in the collection of Wachsmuth and Springer.)



A. M. W[illegible]

PLATE LIX.

Page

Teleiocrinus rudis (Hall) 630

Fig. 1. Specimen with arms and stem.
2. Anterior view of a specimen with arms, anal tube, and stem.
3. Lateral view of the calyx (a very large specimen).

Teleiocrinus adolescens W. and Sp. 635

4. Side view of the type specimen.

Teleiocrinus tenuiradiatus (Hall) 634

5. Dorsal aspect of a specimen with arms.
6. Anterior side of a large calyx.

Teleiocrinus umbrosus (Hall) 628

7. Portion of the stem.

Cactocrinus cælatus (Hall) 618

8. Lateral view of the calyx; typical form.
9. Posterior view of a slightly lobed specimen.

Cactocrinus cælatus, var. spinotentaculus (Hall) 619

10. Anterior view of the calyx.

(All specimens in the collection of Wachsmuth and Springer.)

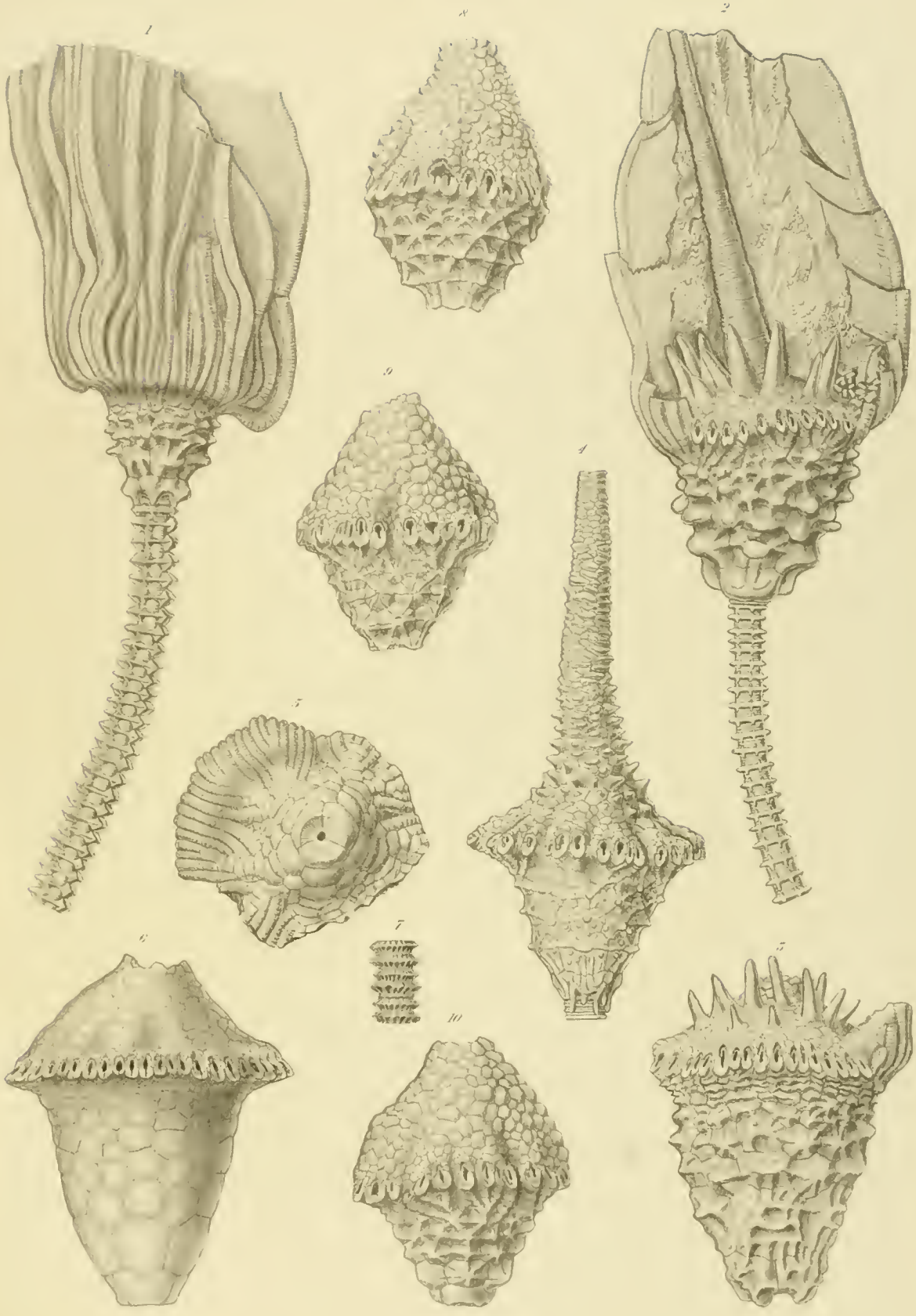


PLATE LX.

Page

Strotocrinus glyptus (Hall) 640

Fig. 1*a*. Specimen with arms and stem.

1*b*. Posterior view of a very large specimen.

1*c*. Ventral aspect of a natural cast.

Teleiocrinus umbrosus (Hall) 628

2*a*. A fine specimen with arms and stem.

2*b*. Anterior view of the calyx (typical form).

2*c*. Ventral aspect of another specimen.

2*d*. A very young specimen; the rays free above the distichals.

Teleiocrinus liratus (Hall) 633

3. A large specimen with anal tube and stem.

Teleiocrinus althea (Hall) 632

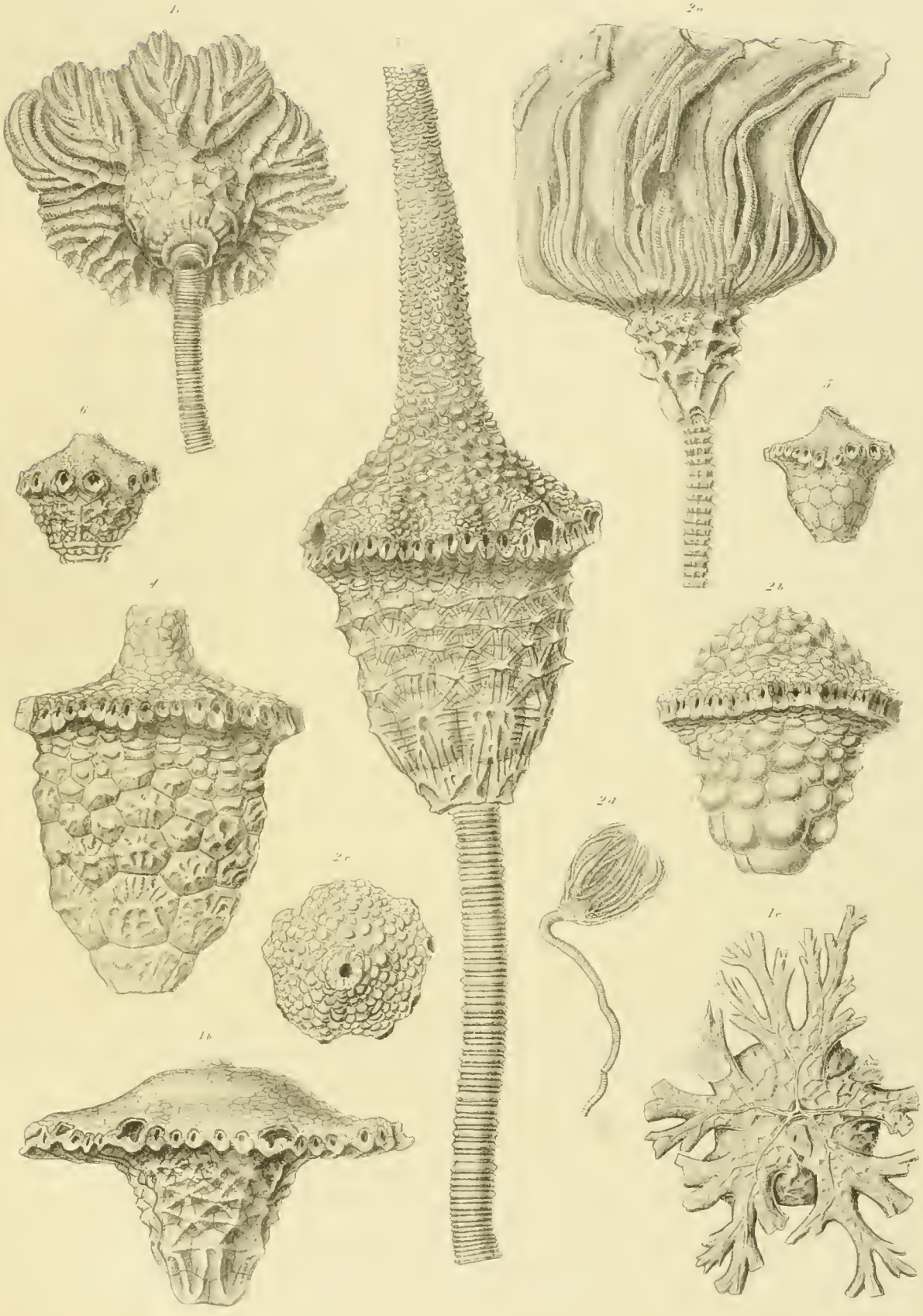
4. Anterior view of a large calyx.

Actinocrinus asperrimus M. and W. 575

5. Posterior view of the calyx.

6. Anterior side of the calyx (specimen with unusually strong ridges).

(All the specimens in the collection of Wachsmuth and Springer.)



Heliotype Printing Co. Boston

PLATE LXI.

Page

Steganocrinus sculptus (Hall) 583

Fig. 1*a*. Posterior view of a large specimen with arms, anal tube, and stem.
1*b*. Lateral view of a very large calyx.
1*c*. Posterior view of another calyx.
1*d*. Young specimen with arms and column.
1*e*. Portion of one of the tubular appendages, showing the bases of the arms ($\frac{2}{1}$).
1*f*. Cross-section of the same ($\frac{2}{1}$).

Steganocrinus araneolus M. and W. 581

2*a*. Dorsal aspect of a specimen with arms.
2*b*. Lateral view of the calyx, and the lower end of the anal tube.

Steganocrinus pentagonus (Hall) 579

3*a*. Ventral aspect of a specimen, showing portions of the arms.
3*b*. Anterior view of a large calyx.
3*c*. Ventral aspect of the same specimen.
3*d*. Distal face of the first distichal (enlarged).
3*e*. Posterior view of a smaller specimen with more regularly arranged covering pieces.
4*a*. Posterior view of a specimen from New Mexico.
4*b*. Ventral aspect of the same specimen.

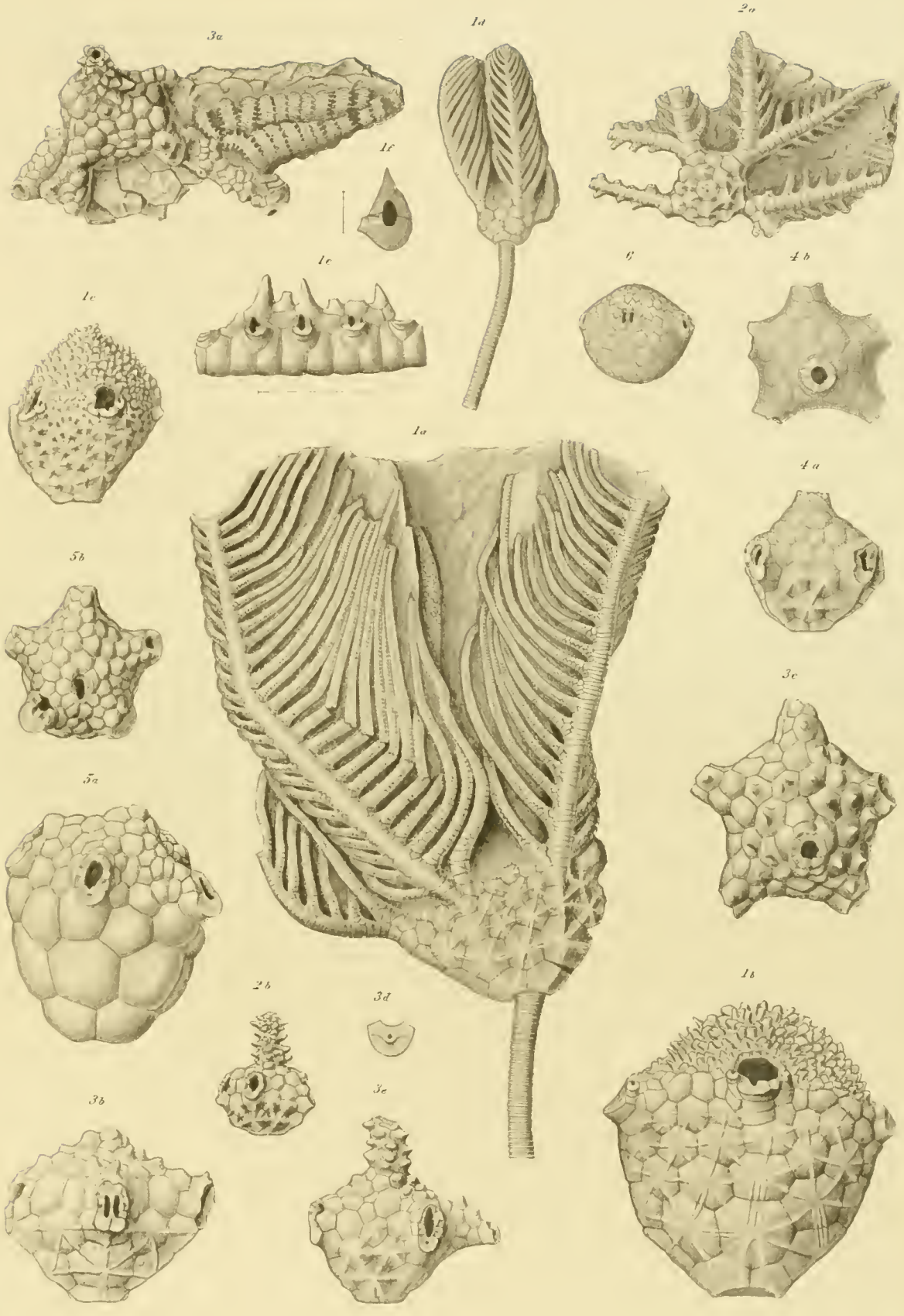
Steganocrinus concinnus (Shumard) 582

5*a*. Lateral view of the calyx.
5*b*. Ventral aspect of a small specimen.

Steganocrinus globosus W. and Sp. 585

6. Lateral view of the type specimen.

(All specimens in the collection of Wachsmuth and Springer.)



Chas R Kevin del. Heliotype Printing Co. Boston

PLATE LXII.

Page

AMPHORACRINUS SPINOBRACHIATUS (Hall) 591

Fig. 1. Dorsal aspect of a specimen with a portion of the arms.

2. Side view of a specimen with arms.

3. Lateral view of the calyx.

4. Dorsal aspect of the calyx, showing the ornamentation.

AMPHORACRINUS DIVERGENS (Hall) 588

5. Dorsal aspect of a somewhat distorted specimen with arms.

6*a*. Dorsal aspect of a fine specimen with spreading arms.

6*b*. A forked oral spine of this specimen.

7*a*. Posterior view of a fine specimen, showing the arms and spines surrounding the anus. (The specimen was described by Meek and Worthen as *A. divergens*, var. *multiramosus*.)

7*b*. Ventral aspect of the same specimen, showing the oral and anal spines.

8*a*. Side view of a very small specimen, showing the oral spines.

8*b*. Dorsal aspect of the same specimen.

8*c*. Ventral aspect of the same, showing the oral and anal spines.

9. Posterior view of the calyx.

10. Lateral view of the calyx, showing lower part of anal tube.

(Figs. 5, 7*a*, and 7*b* were made from specimens in the collection of the Mus. Comp. Zoöl.; the others are in the collection of Wachsmuth and Springer.)

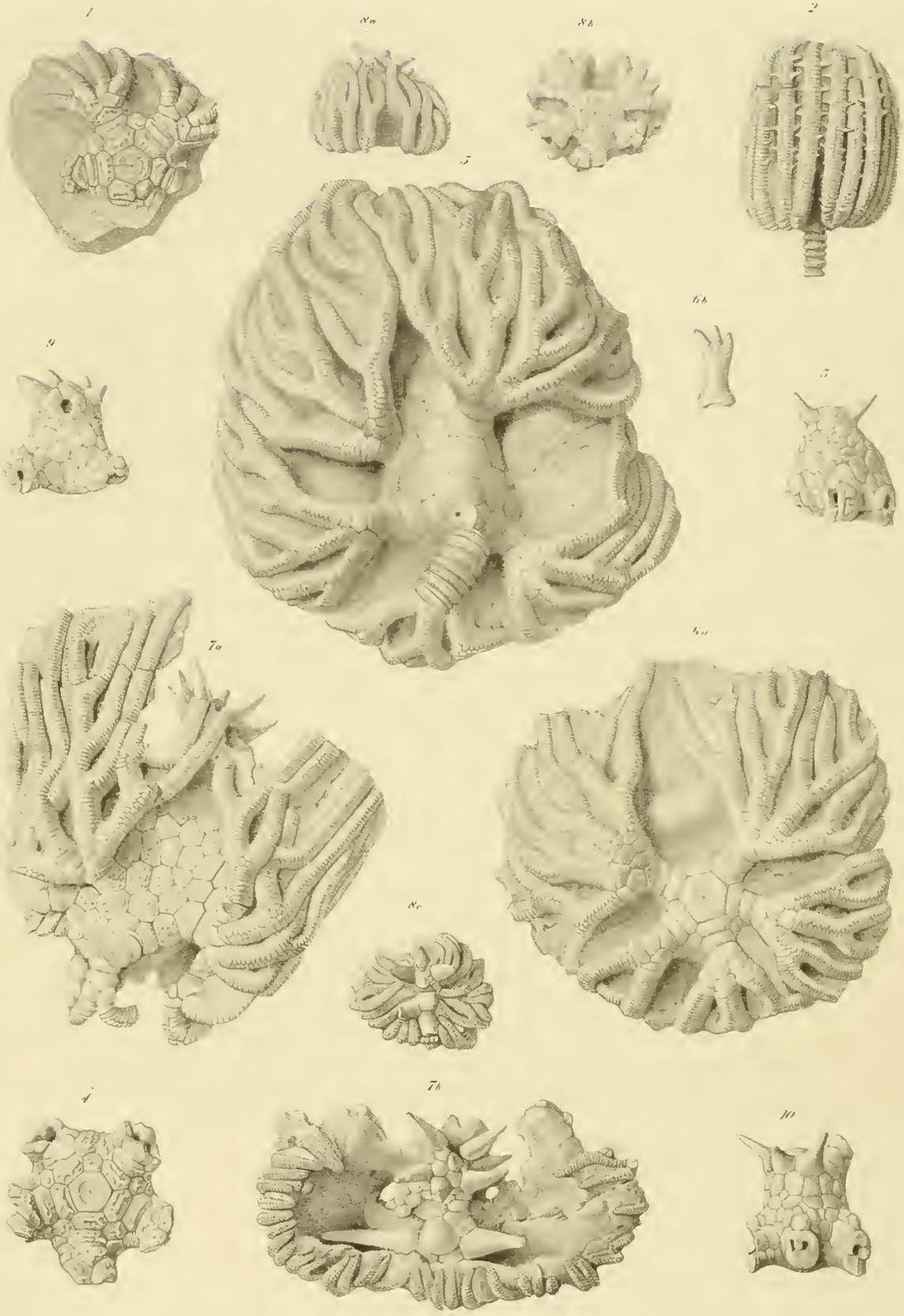

1
8a
8b
2
5
6b
9
3
7a
6a
8c
4
7b
10

PLATE LXIII.

PAGE

PHYSETOCRINUS ORNATUS (Hall) 597

Fig. 1. Antero-lateral view of a specimen with arms. (Coll. W. and Sp.)

2. Posterior view of the calyx. (Same collection.)

3. Ventral aspect, showing annular impression made by a *Capula*, which covered the anal opening. (Same collection.)

4. Anterior view of a large, slightly crushed specimen. (Same collection.)

PHYSETOCRINUS COPEI (Miller) 598

5. Side view of large specimen. (Same collection.)

PHYSETOCRINUS VENTRICOSUS (Hall) 593

6. Type of the variety *internodius* Hall. (Mus. Comp. Zoöl.)

PHYSETOCRINUS ASPER Meek and Worthen 596

7*a*. Posterior view of the type specimen. (Mus. Comp. Zoöl.)

7*b*. Ventral aspect of the same.

PHYSETOCRINUS LOBATUS W. and Sp. 599

8*a*. Side view of the calyx. (Coll. W. and Sp.)

8*b*. Ventral aspect of the calyx. (Same collection.)

TELEIOCRINUS ALTHEA (Hall) 632

9. Lateral view of the type specimen. (Mus. Comp. Zoöl.)

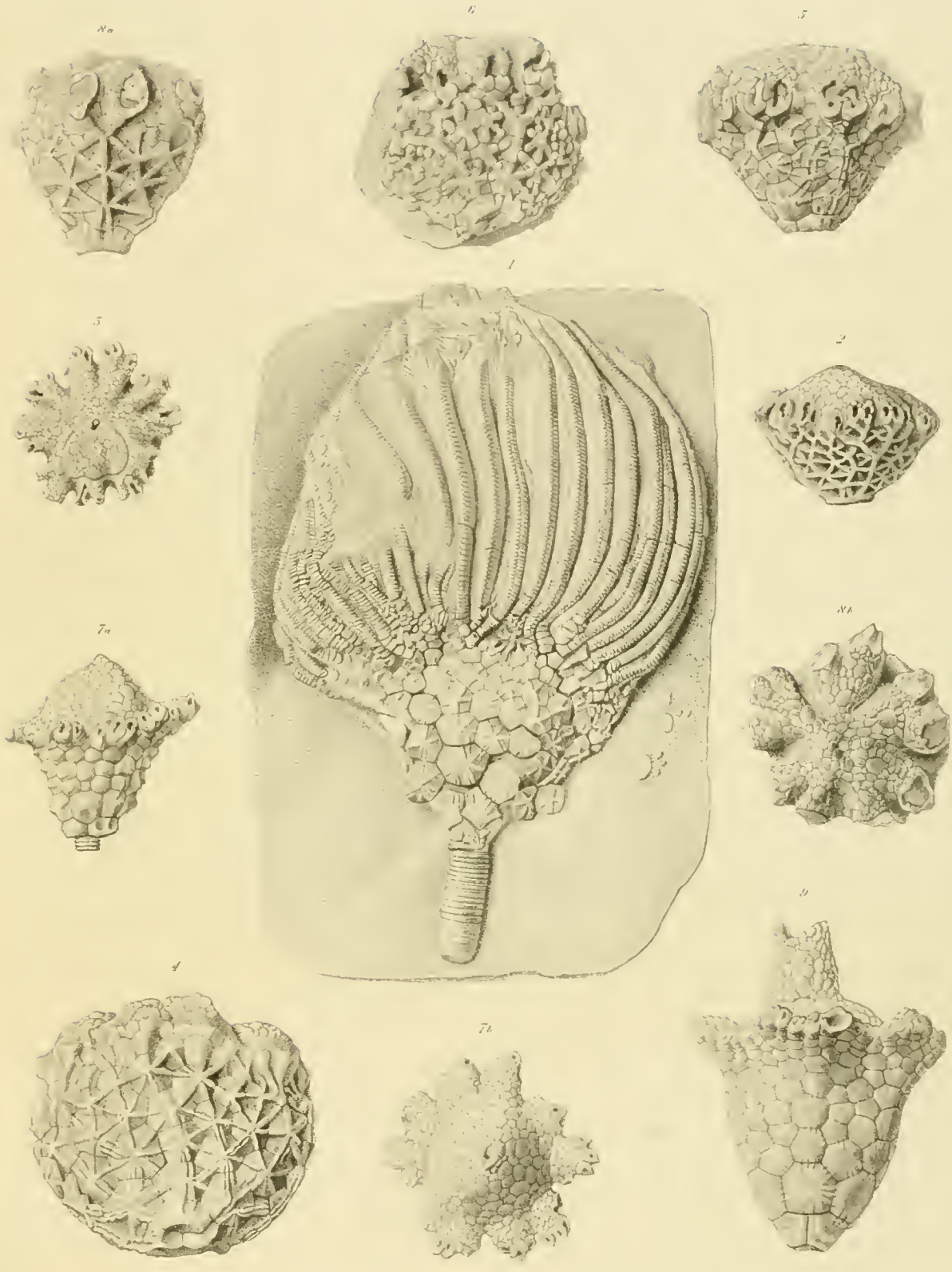


PLATE LXIV.

Page

Physetocrinus ventricosus (Hall) 593

Fig. 1. Specimen with arms, stem, and root.

2. Lateral view of the calyx.

3. Anterior view of the calyx.

4. Posterior view of a small elongate specimen.

5. Dorsal aspect of a depressed specimen of Hall's variety "*Actinocrinus*" *reticulatus*.

6. Anterior view of the calyx.

7. Anterior view of a specimen of the type of McChesney's "*Actinocrinus*" *subventricosus*.

8*a*. Specimen from the Lower Burlington limestone.

8*b*. Ventral aspect of the same specimen.

Physetocrinus dilatatus M. and W. 595

9. The type specimen. (After Meek and Worthen.)

10. Dorsal aspect of another specimen.

(All specimens, except Fig. 9, in the collection of Wachsmuth and Springer.)

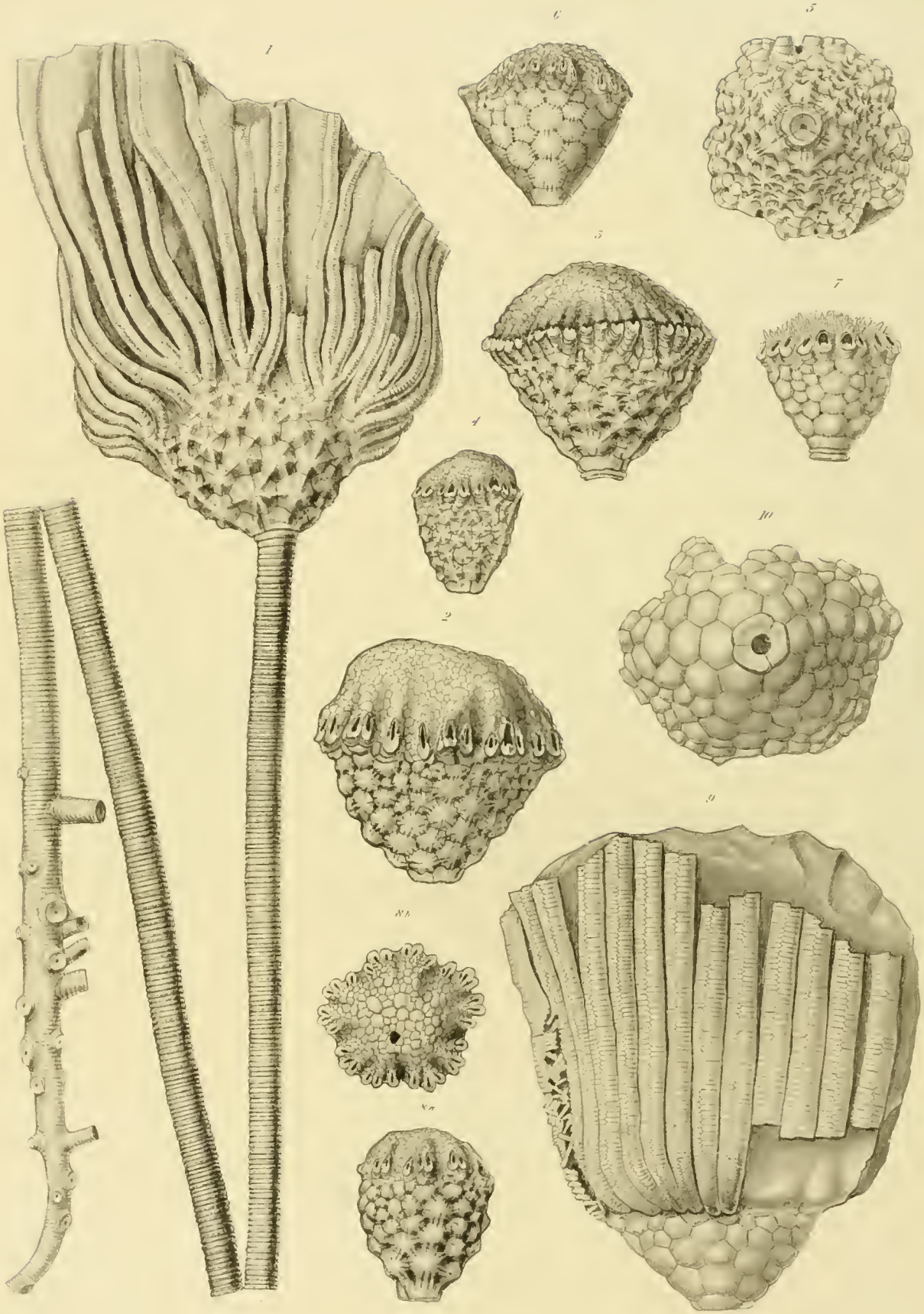

1
6
5
3
7
4
10
2
9
8b
8a

PLATE LXV.

PAGE

STROTOCRINUS REGALIS (Hall) 638

Fig. 1*a*. Lateral view of the calyx.

1*b*. Half of a ray to the fifth bifurcation, drawn from a large specimen.

1*c*. The extended rim of a large specimen, having portions of the dorsal cup broken away, exposing the subtegminal galleries at the inner floor of the tegmen, and the grooves passing out from the centre and diverging to the arms.

1*d*. Specimen showing the outer face of the tegmen.

STROTOCRINUS GLYPTUS (Hall) 640

2*a*. Dorsal aspect of a medium sized specimen.

2*b*. Tegmen of another specimen.

(All specimens in the collection of Wachsmuth and Springer.)

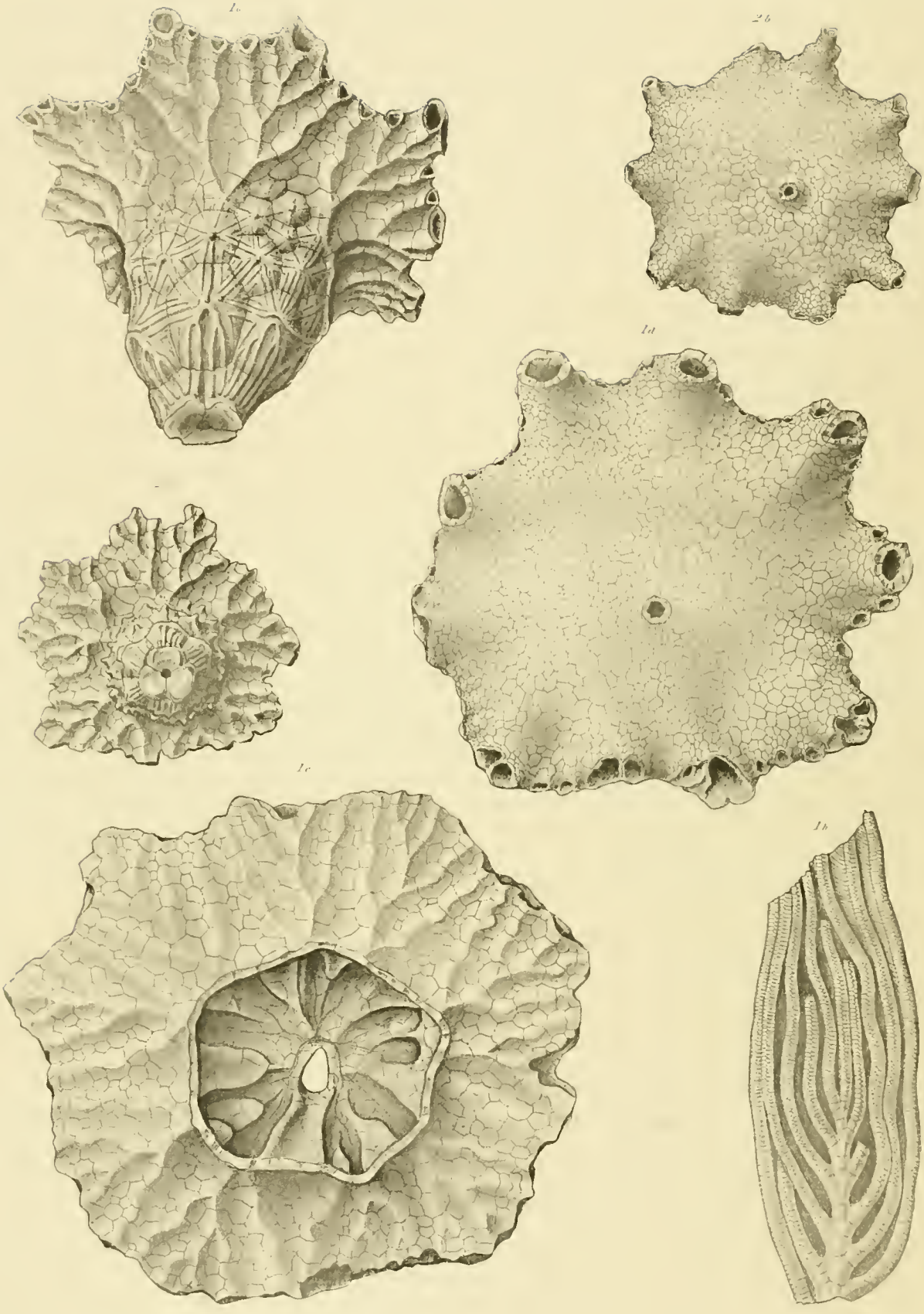


PLATE LXV.

Page

Strotocrinus regalis (Hall) 638

Fig. 1*a*. Lateral view of the calyx.

1*b*. Half of a ray to the fifth bifurcation, drawn from a large specimen.

1*c*. The extended rim of a large specimen, having portions of the dorsal cup broken away, exposing the subtegminal galleries at the inner floor of the tegmen, and the grooves passing out from the centre and diverging to the arms.

1*d*. Specimen showing the outer face of the tegmen.

Strotocrinus glyptus (Hall) 640

2*a*. Dorsal aspect of a medium sized specimen.

2*b*. Tegmen of another specimen.

(All specimens in the collection of Wachsmuth and Springer.)

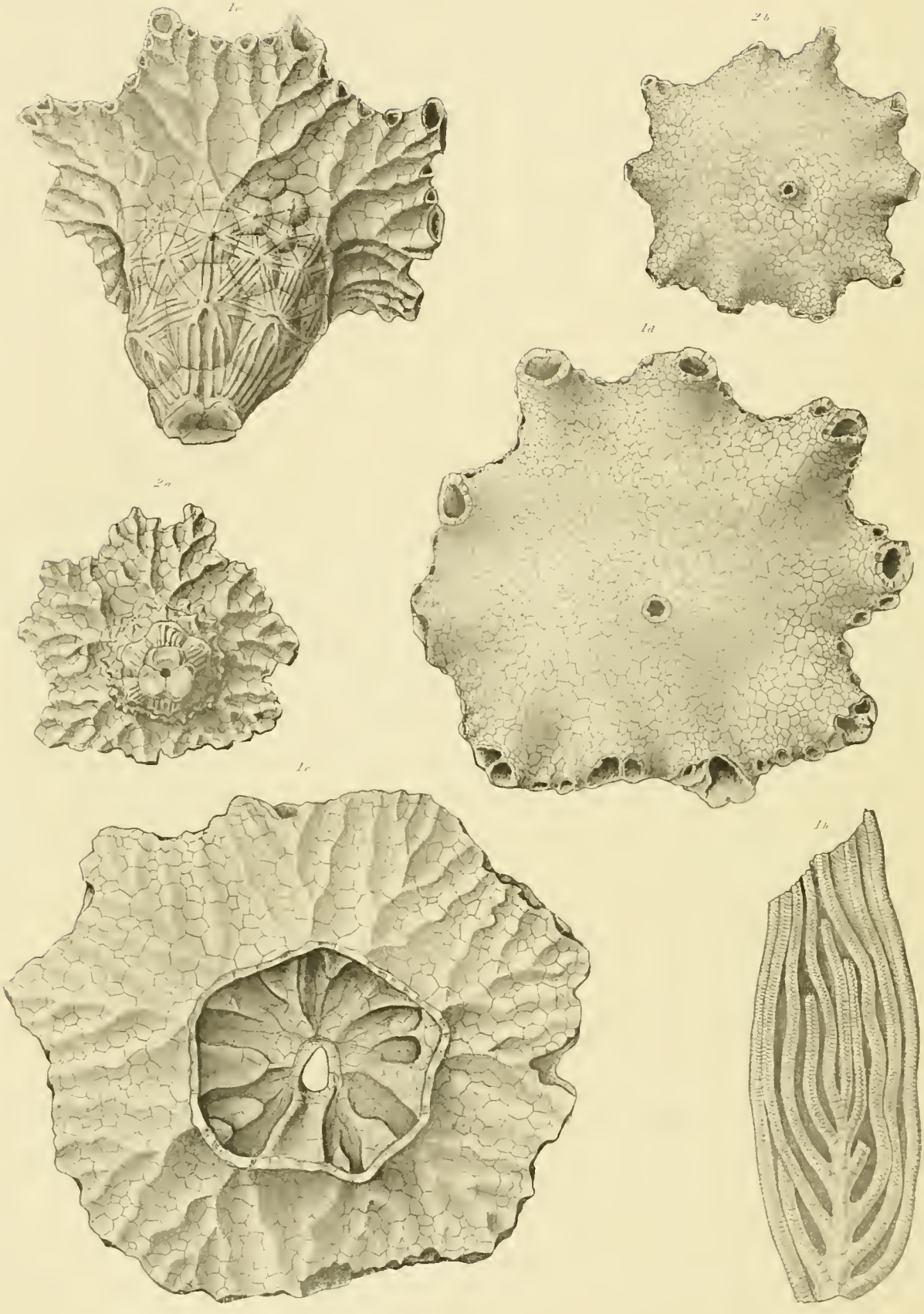

1c
2b
1a
2a
1c
1b

PLATE LXVI.

PAGE

PLATYCRINUS HEMISPHERICUS M. and W. 703

Fig. 1*a*. Specimen showing arms and stem.
1*b*. Dorsal aspect of another specimen with arms spreading, and a *Platyceras infundibulum* covering anal opening.
1*c*. Lateral view of the calyx; also a *Platyceras infundibulum* attached.
1*d*. Ventral aspect of another specimen.

PLATYCRINUS SUBSPINULOSUS Hall 684

2*a*. Lateral view of the dorsal cup; a very large specimen.
2*b*. Base of the same specimen.

PLATYCRINUS VERRUCOSUS White 705

3*a*. Lateral view of the dorsal cup.
3*b*. Dorsal aspect of the same.

PLATYCRINUS EXCAVATUS Hall 718

4. A specimen with arms. (The figure does not show sufficiently the abrupt depressions on the radials just below their facets.)

PLATYCRINUS NODO-STRIATUS W. and Sp. 698

5*a*. Dorsal aspect.
5*b*. Side view of a somewhat depressed specimen.

PLATYCRINUS YANDELLI O. and Sh. 706

6*a*. Dorsal aspect of a specimen with arms.
6*b*. Posterior view of calyx.
6*c*. Ventral aspect of the same specimen.

PLATYCRINUS SPINIFER W. and Sp. 708

7. The type specimen with arms.

PLATYCRINUS ORNIGRANULUS McChesney 701

8. A specimen with arms.

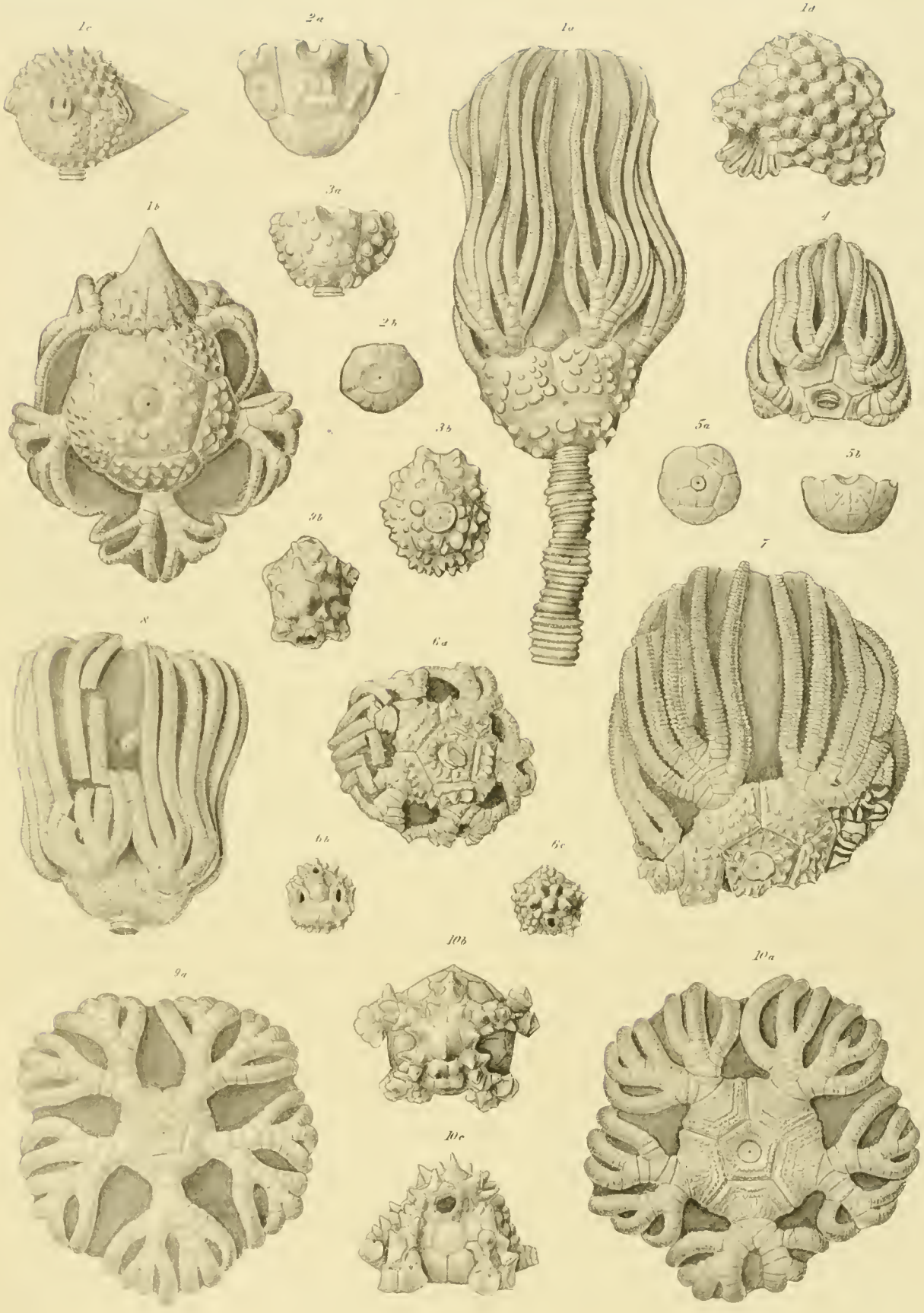
PLATYCRINUS SUBSPINOSUS Hall 717

9*a*. Dorsal aspect of a perfect specimen with arms. (Mus. Comp. Zoöl.)
9*b*. Ventral aspect of the calyx.

PLATYCRINUS DISCOIDEUS O. and Sh. 713

10*a*. Dorsal aspect of a specimen with arms, the outer parts of the latter slightly restored in two rays.
10*b*. Ventral aspect of the calyx.
10*c*. Posterior side of the same specimen.

(All specimens, except Fig. 9*a*, in the collection of Wachsmuth and Springer.)



Heliotype Printing Co. Boston

PLATE LXVII.

PAGE

PLATYCRINUS SAFFORDI Hall 694

Fig. 1. A fine specimen with arms and column, from Indian Creek, Ind. (Coll. W. and Sp.)

2. Side view of the calyx. (Same collection.)

3. Dorsal cup of a specimen from Burlington. (Same collection.)

PLATYCRINUS GLYPTUS M. and W. 693

4. Specimen with arms and column. (Coll. W. and Sp.)

5. Dorsal cup of a large, elongate specimen. (Same collection.)

PLATYCRINUS INCOMPTUS White 664

6. A young specimen with arms, showing the numerous bifurcations of the rays, and a faint rugose ornamentation.

PLATYCRINUS SPINIFER, var. ELONGATUS W. and Sp. 709

7. Lateral view of the calyx, showing portions of the arms. (Same collection.)

PLATYCRINUS CAVUS Hall 715

8*a* and *b*. Dorsal cup of two specimens. (Same collection.)

PLATYCRINUS WORTHENI Hall 702

9. The type specimen. (Illinois State collection.)

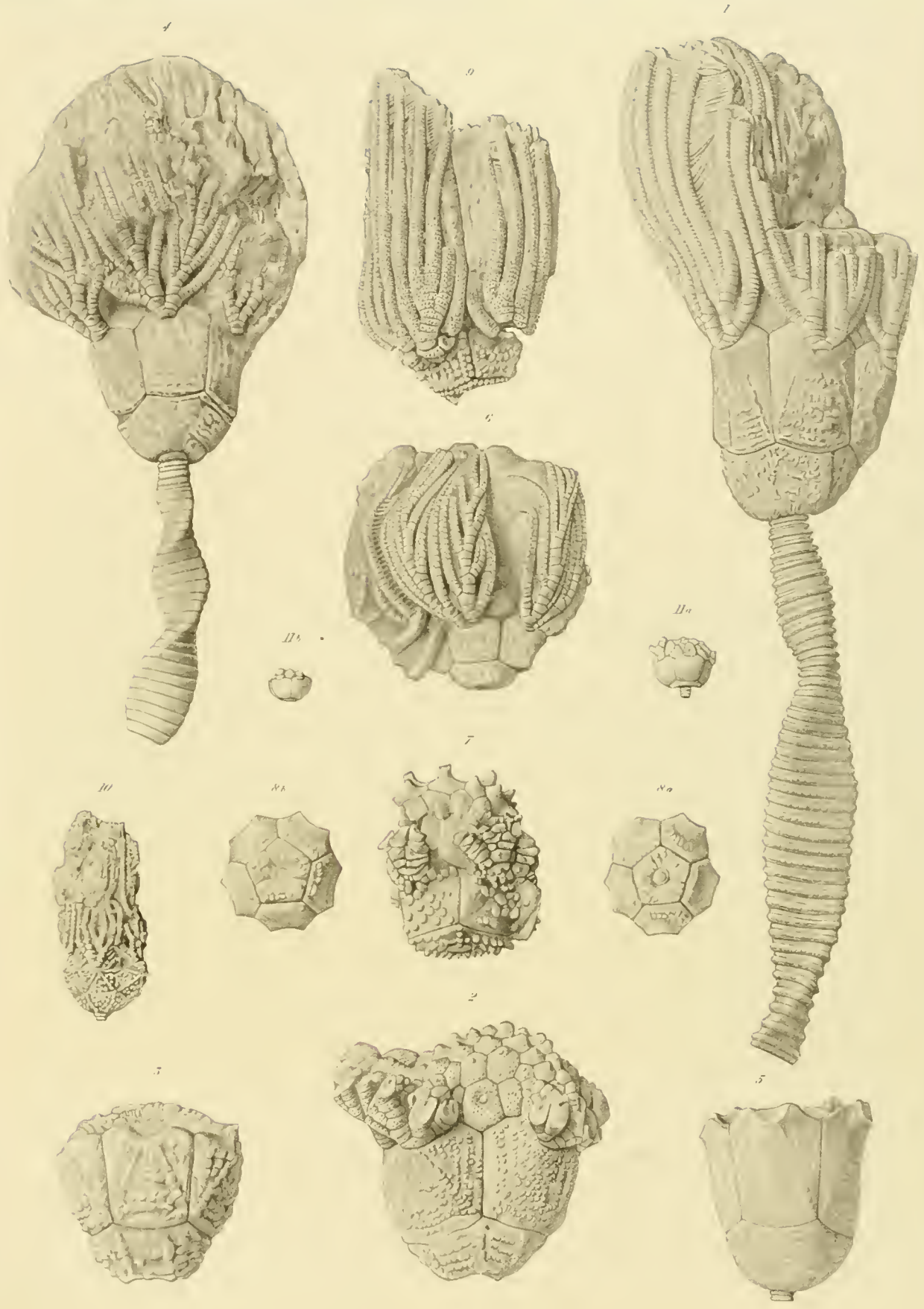
PLATYCRINUS GEOMETRICUS W. and Sp. 697

10. The type specimen. (Mus. Comp. Zoöl.)

PLATYCRINUS TRUNCATULUS Hall 675

11*a*. Side view of the calyx, showing the bases of the arms (enlarged).

11*b*. Side view of another specimen.



A. M. Westergren

Heliotype Printing Bolton

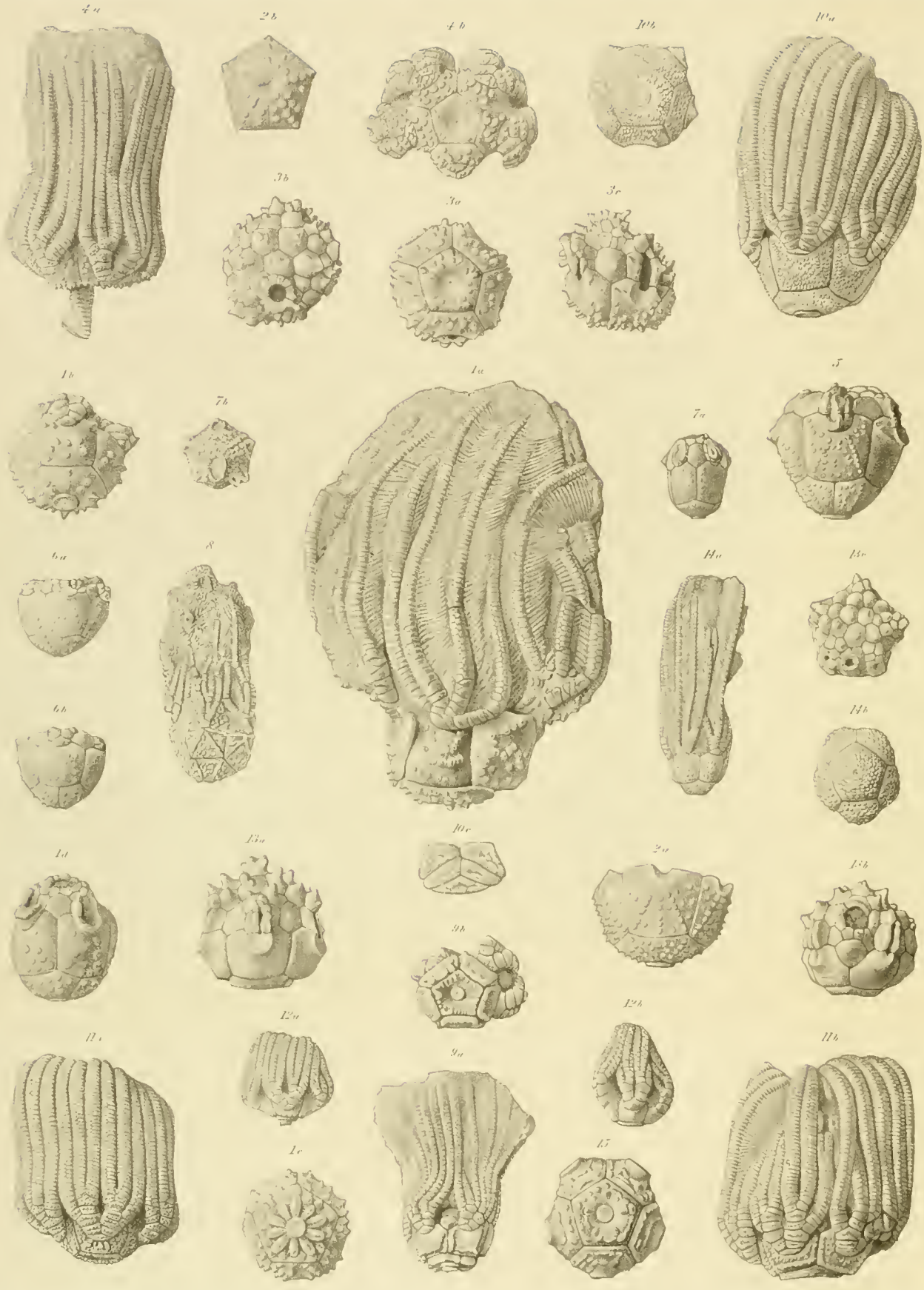

4a
2b
4b
10b
10a
3b
3a
3c
1b
7b
1a
7a
5
6a
8
14a
13c
6b
14b
10c
13a
2a
1c
9b
13b
12a
12b
11a
9a
11b
1c
15

PLATE LXVIII.

PAGE

PLATYCRINUS VERRUCOSUS White 705

Fig. 1*a*. The type specimen. (Mus. Comp. Zoöl.)

1*b*. Oblique view of the dorsal cup. (Coll. W. and Sp.)

1*c*. Another specimen; dorsal aspect of the calyx. (Same collection.)

1*d*. Lateral aspect of a variety from New Mexico, showing the anal opening. (Same collection.)

PLATYCRINUS POCILLIFORMIS Hall 706

2*a*. Lateral aspect of the dorsal cup (the ornamentation from another specimen). (Coll. W. and Sp.)

2*b*. Base of a specimen with larger nodes. (Coll. W. and Sp.)

PLATYCRINUS YANDELLI O. and Sh. 706

3*a*. Dorsal aspect of the calyx; a very mature specimen. (Same collection.)

3*b*. Ventral aspect of the same specimen.

3*c*. Posterior view of same.

PLATYCRINUS YANDELLI, var. PERASPER 708

4*a*. Lateral view of a specimen with arms. (Mus. Comp. Zoöl.)

4*b*. Dorsal aspect of the same specimen (the stem removed).

PLATYCRINUS SCULPTUS Hall 691

5. Specimen from New Mexico, lateral view of the calyx. (Coll. W. and Sp.)

PLATYCRINUS PARVINODUS Hall 696

6*a*. Side view of the type, the specimen somewhat flattened. (Mus. Comp. Zoöl.)

6*b*. Anterior view of another specimen less distorted. (Coll. W. and Sp.)

PLATYCRINUS PECULIARIS W. and Sp. 700

7*a*. Posterior view of the calyx; the nodes partly eroded by weathering. (Coll. W. and Sp.)

7*b*. Ventral aspect of the same specimen.

PLATYCRINUS GEOMETRICUS W. and Sp. 697

8. Another type specimen. (Coll. W. and Sp.)

Page

Platycrinus asper M. and W. 690

Fig. 9*a*. The type specimen. (Mus. Comp. Zoöl.)

9*b*. Basal view of another specimen. (Mus. Comp. Zoöl.)

Platycrinus ornigranulus McCh. 701

10*a*. A fine specimen with arms, representing the typical form. (Mus. Comp. Zoöl.)

10*b*. Dorsal aspect of a very short calyx; showing the ornamentation. (Coll. W. and Sp.)

10*c*. A costal and two pairs of distichals.

11*a*. A specimen with coarser ornamentation. (Same collection.)

11*b*. A specimen with a somewhat different ornamentation. (Same collection.)

12*a*. A young specimen. (Coll. W. and Sp.)

12*b*. A still smaller specimen ($\frac{1}{1}$). (Same collection.)

Platycrinus eminulus Hall 712

13*a*. Anterior view of calyx. (Mus. Comp. Zoöl.)

13*b*. Posterior view of another specimen. (Same collection.)

13*c*. Ventral aspect of the calyx. (Coll. W. and Sp.)

Platycrinus scobina M. and W. 695

14*a*. The type specimen. (Mus. Comp. Zoöl.)

14*b*. Dorsal aspect of the calyx. (Coll. W. and Sp.)

Platycrinus Gorbyi S. A. Miller 716

15. Dorsal aspect of the calyx. (Mus. Comp. Zoöl.)

PLATE LXIX.

PAGE

PLATYCRINUS SYMMETRICUS W. and Sp. 655

Fig. 1*a*. Specimen with arms and column.

1*b*. Ventral aspect of the calyx; a large specimen.

1*c*. Ventral aspect of a young specimen; the orals almost symmetrical.

PLATYCRINUS PLANUS O. and Sh. 668

2*a*. A large specimen with arms.

2*b*. Lateral view of the dorsal cup.

2*c*. A portion of the arms enlarged.

2*d*. A young specimen, apparently of this species.

PLATYCRINUS BURLINGTONENSIS O. and Sh. 653

3*a*. A medium sized specimen with arms. (After Meek and Worthen.)

3*b*. Lateral view of a large calyx.

3*c*. Ventral aspect of another large specimen, showing the anal tube.

3*d*. Posterior view of a smaller specimen.

3*e*. Ventral aspect of another small specimen.

3*f*. Dorsal cup of a young specimen. (Inadvertently drawn with left antero-lateral interradius at the top.)

3*g*. A very young specimen with zigzag arms, composed of single joints.

3*h*. Portion of an arm showing the lateral processes (enlarged).

3*i*. Portion of an arm in a dorsal aspect (enlarged).

PLATYCRINUS AGASSIZI W. and Sp. 669

4. A very large specimen with arms.

PLATYCRINUS PILEIFORMIS Hall 656

5. A specimen with arms (slightly restored).

PLATYCRINUS BONŒNSIS White 683

6. A specimen having six arms to the ray.

PLATYCRINUS SARÆ Hall 677

7. The type specimen. (After Hall.) Somewhat flattened.

(All specimens in the collection of Wachsmuth and Springer, except that of 3*a*, which is in the Museum of Comparative Zoölogy, and Fig. 7, which is in the Illinois State Museum.)

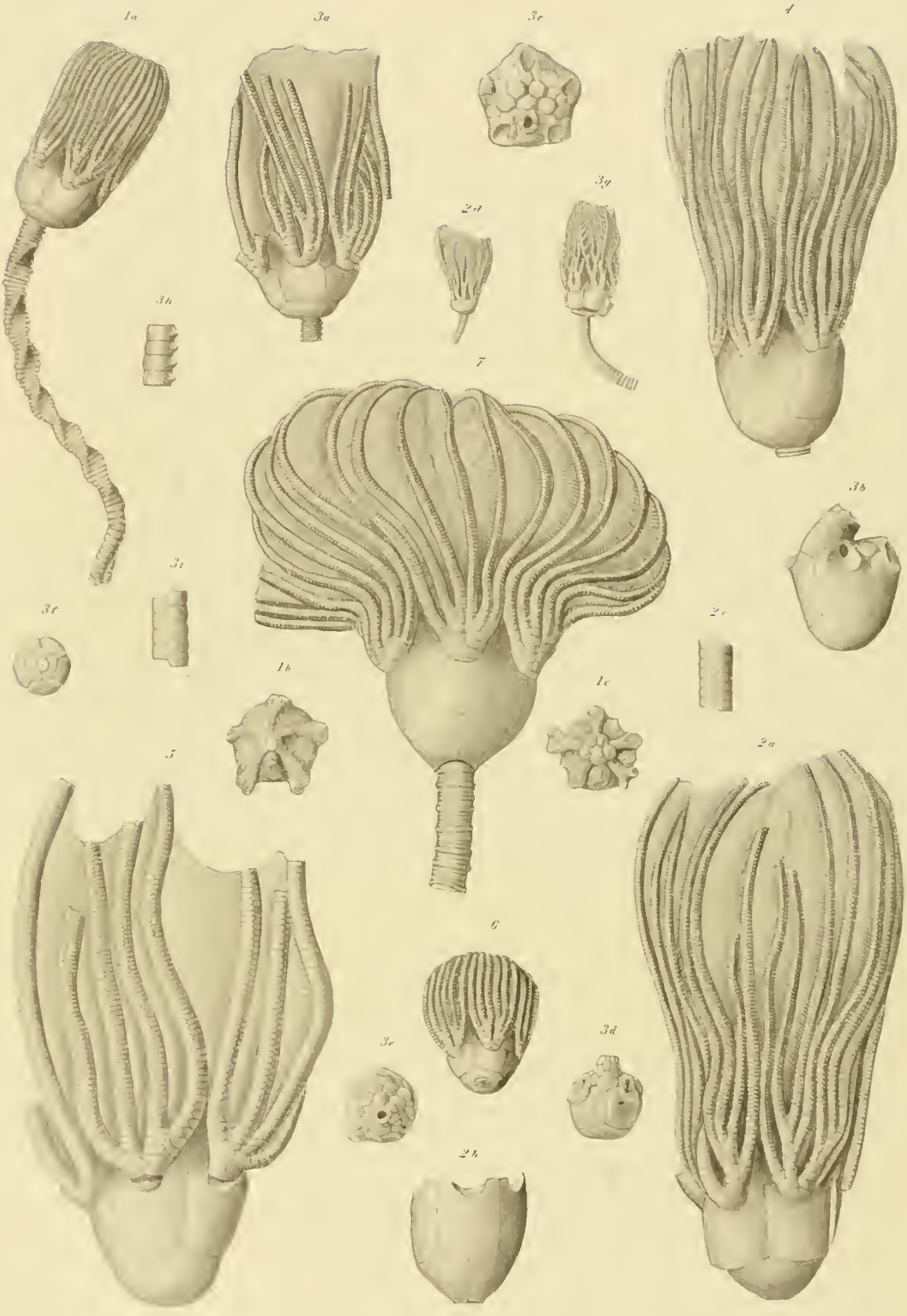

1a
3a
3c
4
2a
3g
3h
7
3b
3i
3f
2c
1b
1c
2a
5
6
3e
3d
2b

PLATE LXX.

PAGE

PLATYCRINUS SARÆ Hall 677

Fig. 1. Specimen with faintly ornamented plates.

PLATYCRINUS NODO-STRIATUS W. and Sp. 698

3. Specimen with six to the ray, the most frequent number.

4*a*. Lateral view of the calyx; an older specimen.

4*b*. Anal side of the same specimen.

4*c*. Ventral aspect of same.

PLATYCRINUS BREVINODUS Hall 688

2. Specimen from the upper part of the Burlington limestone; with column, root, and four arms to the ray.

5. Specimen from same horizon with six arms to the ray.

6*a* and *b*. Two specimens from the Keokuk group of Indian Creek, Ind.

PLATYCRINUS TENUIBRACHIATUS Meek and Worth. 687

7. A specimen with arms.

8. Another specimen, slightly differing in ornamentation.

PLATYCRINUS SUBSPINULOSUS Hall 684

9. A highly ornamented calyx.

PLATYCRINUS SAMPSONI S. A. Miller 673

10. Lateral view of the calyx.

PLATYCRINUS PRATTENI Worthen 671

11. A specimen with arms.

12. The basal disk.

PLATYCRINUS PILEIFORMIS Hall 656

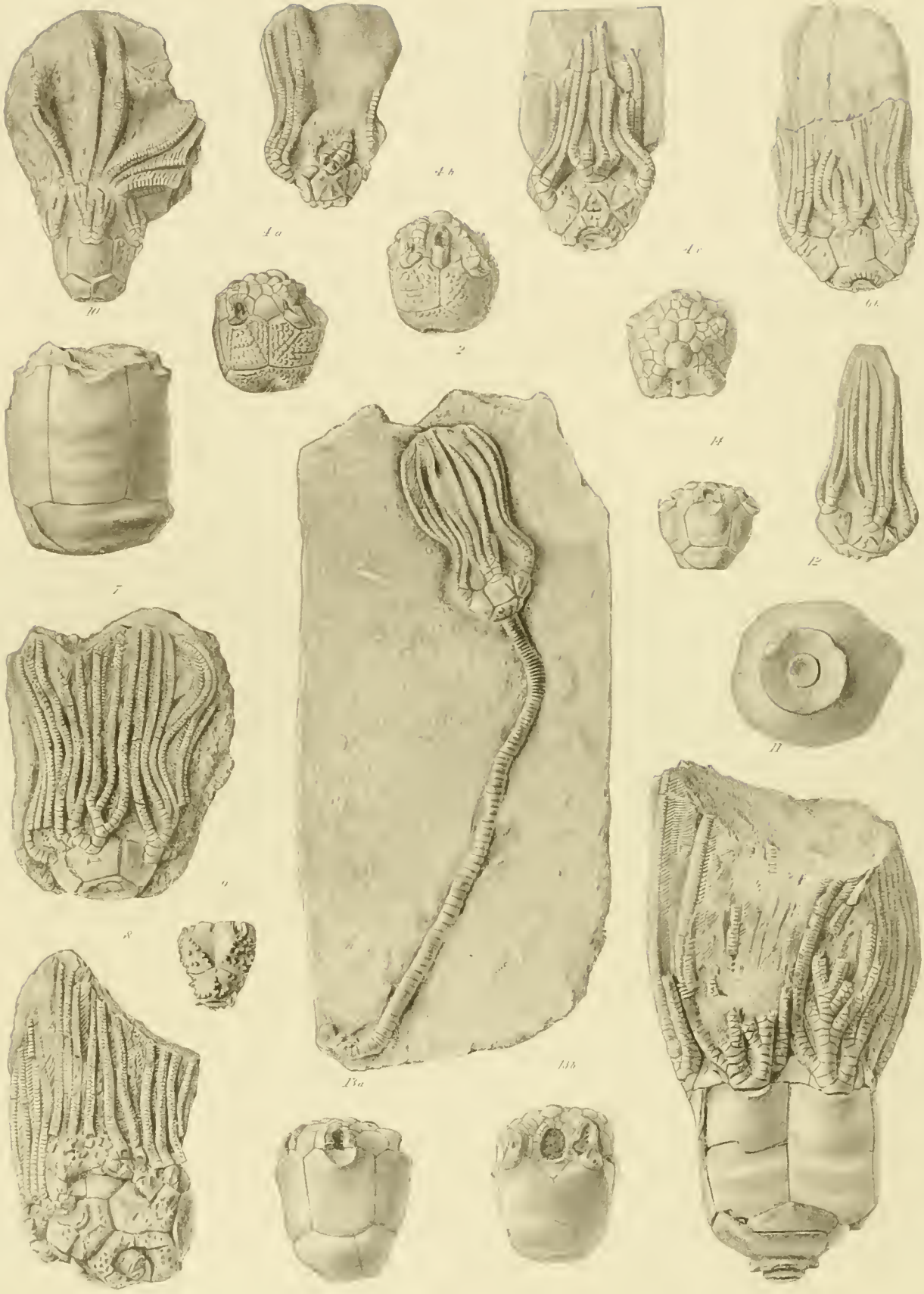
13*a*. Lateral view of the calyx.

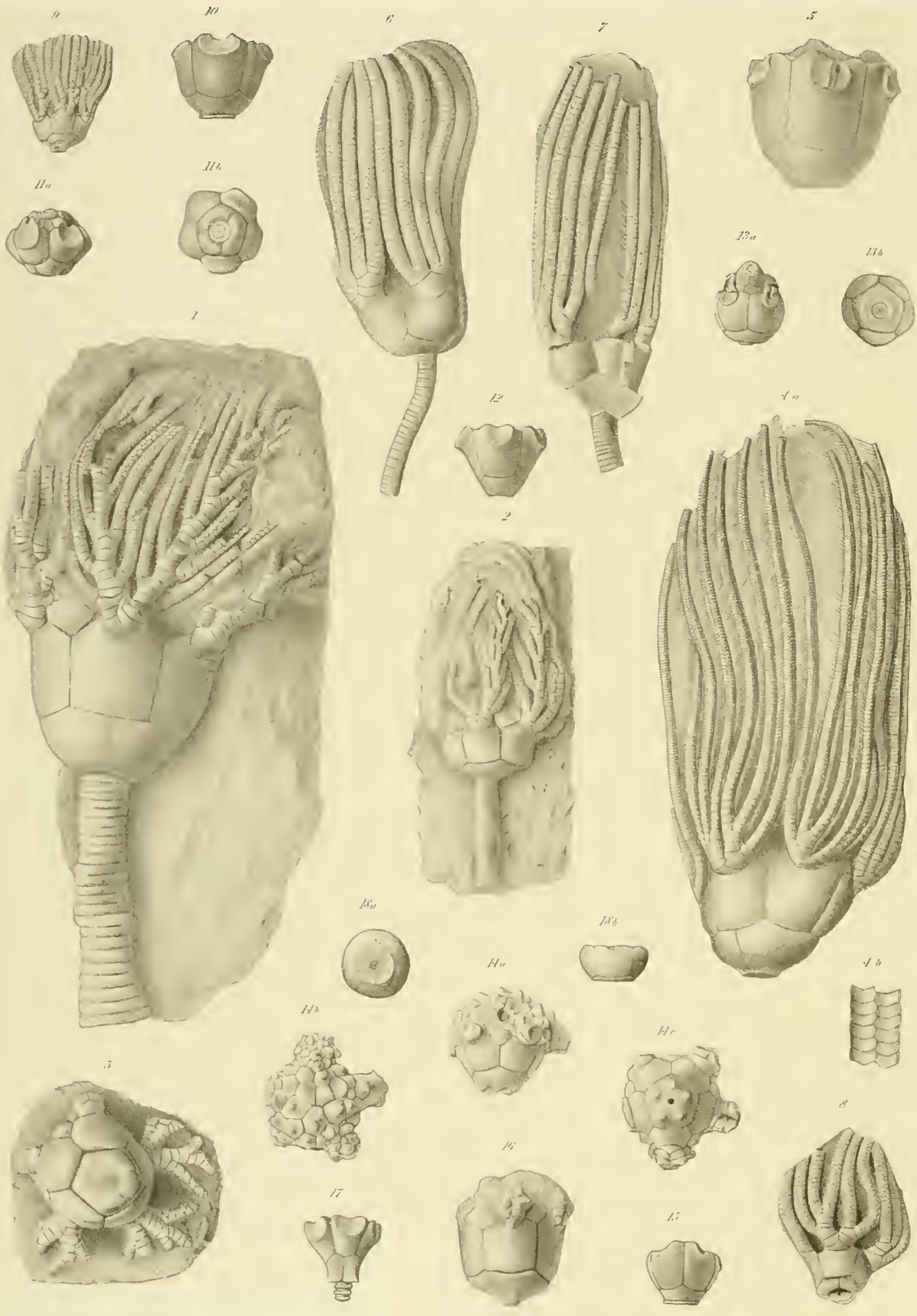
13*b*. Posterior side of the calyx.

PLATYCRINUS DAVISI W. and Sp. 684

14. Lateral view of the type specimen.

(All the specimens in the collection of Wachsmuth and Springer.)





Chas. J. Keyes, J. L. Ridgeway del.

Heliotype Printing Co. Boston.

PLATE LXXI.

PAGE

PLATYCRINUS INCOMPTUS White 664

Fig. 1. A very large specimen, showing the numerous ramifications of the arms. (Coll. W. and Sp.)

2. A small specimen, showing the same. (Same collection.)

3. The type specimen. (Mus. Comp. Zoöl.)

PLATYCRINUS ÆQUALIS Hall 674

4*a*. A very large specimen with arms. (Same collection.)

4*b*. Portion of an arm (enlarged).

5. The calyx, showing the radial facets and the small first costal. (Coll. W. and Sp.)

PLATYCRINUS LODENSIS Hall and Whitf. 666

6. The type specimen. (After Hall and Whitfield.)

PLATYCRINUS GRAPHICUS Hall and Whitf. 672

7. The type specimen. (After Hall and Whitfield.)

PLATYCRINUS CONTRITUS Hall and Whitf. 667

8. The type specimen. (After Hall and Whitfield.)

PLATYCRINUS NIOTENSIS Meek and Worthen 682

9. Specimen with arms (from Indiana).

PLATYCRINUS BRITTSI S. A. Miller 659

10. The type specimen. (Coll. F. A. Sampson, Sedalia).

PLATYCRINUS CORBULIFORMIS Rowley and Hare 657

11*a*. Dorsal cup in a side view.

11*b*. Dorsal aspect of the same specimen. (Coll. R. R. Rowley.)

PLATYCRINUS ÆQUITERNUS S. A. Miller 658

12. The type specimen. (Coll. F. A. Sampson.)

PLATYCRINUS PISUM Rowley and Hare 660

13*a*. The type specimen; posterior view. (Coll. R. R. Rowley.)

13*b*. Dorsal aspect of same.

Page

Platycrinus quinquenodus White 661

Fig. 14*a*. The type specimen; lateral view of calyx. (Mus. Comp. Zoöl.)

14*b*. Ventral aspect of same.

14*c*. Dorsal aspect of same.

Platycrinus insolens Rowley and Hare 659

15. The type specimen. (Coll. R. R. Rowley.)

Platycrinus peculiaris W and Sp. 700

16. The type, a rather large example. (Coll. W. and Sp.)

Platycrinus allophylus S. A. Miller 685

17. The type specimen. (Coll. F. A. Sampson.)

Platycrinus truncatulus Hall 675

18*a*. Dorsal aspect of the calyx. (Coll. W. and Sp.)

18*b*. Side view of the dorsal cup.

PLATE LXXII.

Page

PLATYCRINUS REGALIS Hall 710

Fig. 1. Specimen with arms, stem, and root. The calyx of this specimen is much distorted by pressure, and the surface ornamentation obscure, so that in some of the characters it gives an incorrect impression, and does not represent a typical example of the species. (Coll. W. and Sp.)

2. The type specimen. (Mus. Comp. Zoöl.)

EUCLADOCRINUS TUBEROSUS (Hall) 728

3. Specimen, showing the small branching arms given off from the tubular appendages. (Coll. W. and Sp.)

4*a*. Posterior side of the calyx. (Same collection.)

4*b*. Dorsal aspect of the same specimen.

4*c*. Ventral aspect of same.

EUCLADOCRINUS MONTANENSIS Meek 723

5. The type specimen. (National Museum at Washington.)

PLATYCRINUS HALLI Shumard 662

6*a*. Specimen with arms and stem. (Coll. W. and Sp.)

6*b*. Portion of an arm, enlarged.

7*a*. Posterior side of the calyx. (Same collection.)

7*b*. Ventral aspect of the same specimen.

PLATYCRINUS BOONVILLENSIS S. A. Miller 681

8*a*. The type specimen, showing the dorsal cup. (After Miller.)

8*b*. Dorsal aspect of the base. (Coll. W. and Sp.)

9. Another specimen. (Coll. F. A. Sampson.)

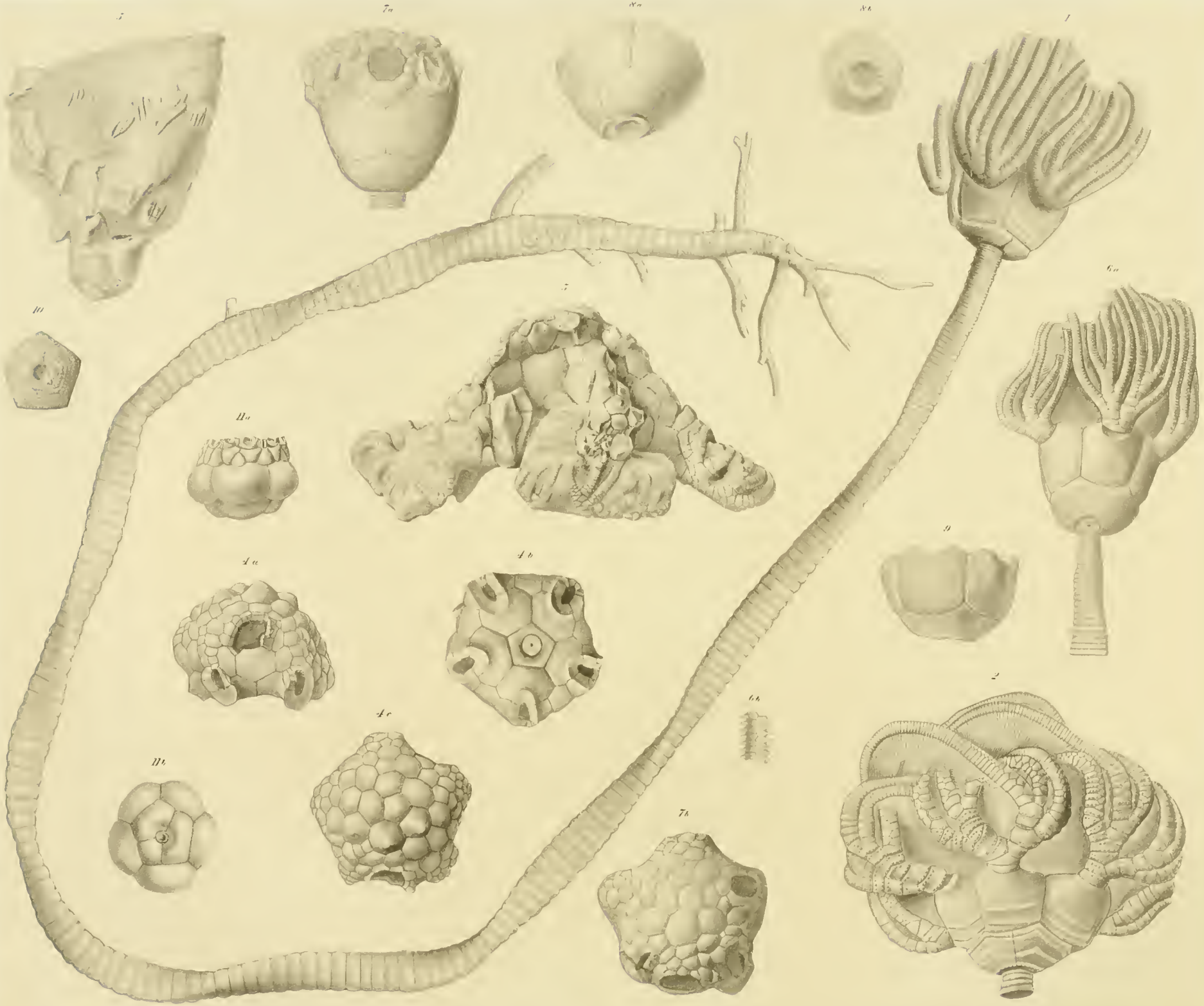
PLATYCRINUS ORNIGRANULUS McCh. 701

10. Basal disk, showing the ornamentation.

MARSUPIOCRINUS PRÆMATURUS (Hall and Whitf.) 734

11*a*. Side view of the type specimen.

11*b*. Dorsal aspect of the same. (After Hall and Whitfield.)



Chas R Keyes J L Ridgway del

Heliotype Printing Co Boston

PLATE LXXIII.

PAGE

EUCLADOCRINUS MILLEBRACHIATUS W. and Sp. 720

Fig. 1. A large specimen; the tubular appendages hanging over the calyx.

EUCLADOCRINUS MILLEBRACHIATUS, var. IMMATURUS W. and Sp. . . 722

2. Dorsal view of a small specimen; the tubular appendages directed horizontally.

3. Ventral aspect of a larger specimen, showing the bases of the arms.

EUCLADOCRINUS PLEUROVIMINEUS (White) 724

4. A large specimen, showing the dorsal side of the calyx.

EUCLADOCRINUS PRÆNUNTIUS W. and Sp. 726

5. One of the type specimens, showing calyx and portions of the arms.

PLATYCRINUS HUNTSVILLÆ (Troost) W. and Sp. 678

6. A large specimen with inflated arms; the plates of the calyx not ornamented.

7*a*. Another mature specimen with ornamented calyx plates, the arms gradually tapering.

7*b*. A portion of one ray enlarged, showing the spinous processes at the sides of the arm plates, the waving suture lines between the lower brachials, and the arrangement of the pinnules ($\frac{2}{1}$).

8*b*. An immature specimen; the arms uniserial to nearly one half of their length ($\frac{1}{1}$).

9. A more mature specimen ($\frac{1}{1}$).

10. A very young specimen, the arms composed of comparatively elongate plates, and uniserial almost to their tips ($\frac{2}{1}$).

11. The base of a highly ornamented specimen.

12. The base of a smooth specimen.

(All the specimens in the collection of Wachsmuth and Springer.)

PLATE LXXIV.

Page

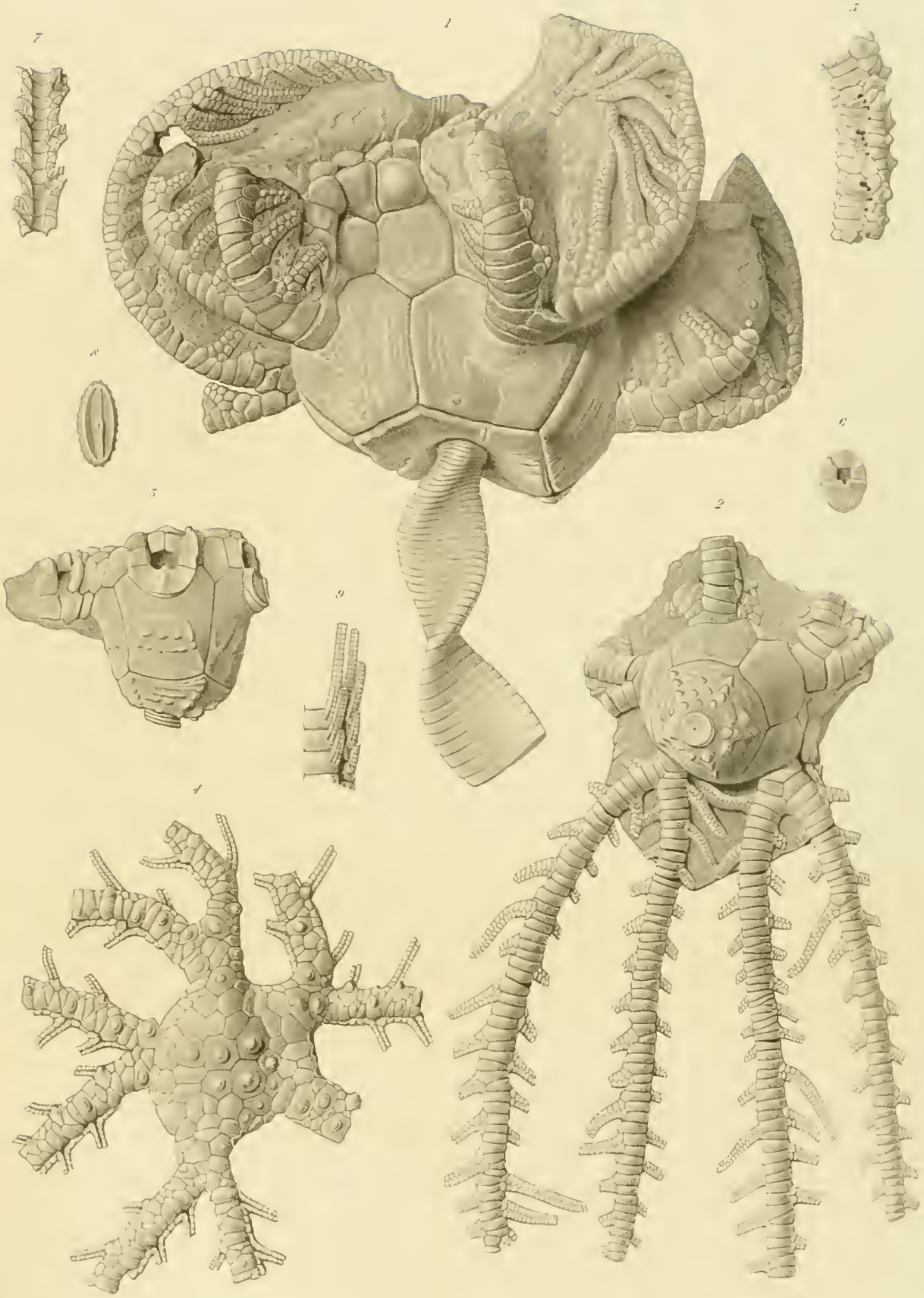
Eucladocrinus pleurovimineus (White) 724

Fig. 1. A magnificent specimen, showing the calyx, the tubular appendages, arms, and column.

Eucladocrinus millebrachiatus W. and Sp. 720

2. A moderately large specimen, showing the dorsal side of the calyx, tubular appendages, and arms.
3. Side view of the calyx.
4. Ventral aspect of a fine specimen, showing the rigid covering pieces of the tubular appendages, and the ventral furrows along the arms.
5. Lateral view of one of the tubular appendages, showing the arm openings, and the respiratory pores at the base of the arms.
6. Cross section of an appendage, showing the central cavity.
7. The appendage with the covering pieces removed.
8. Distal face of a stem joint from near the calyx, showing the transverse ridge, and the minute axial canal.
9. Portion of an arm enlarged, showing the pinnules.

(All the specimens in the collection of Wachsmuth and Springer.)



A. [illegible] del.

Heliotype Printing Co. Boston.

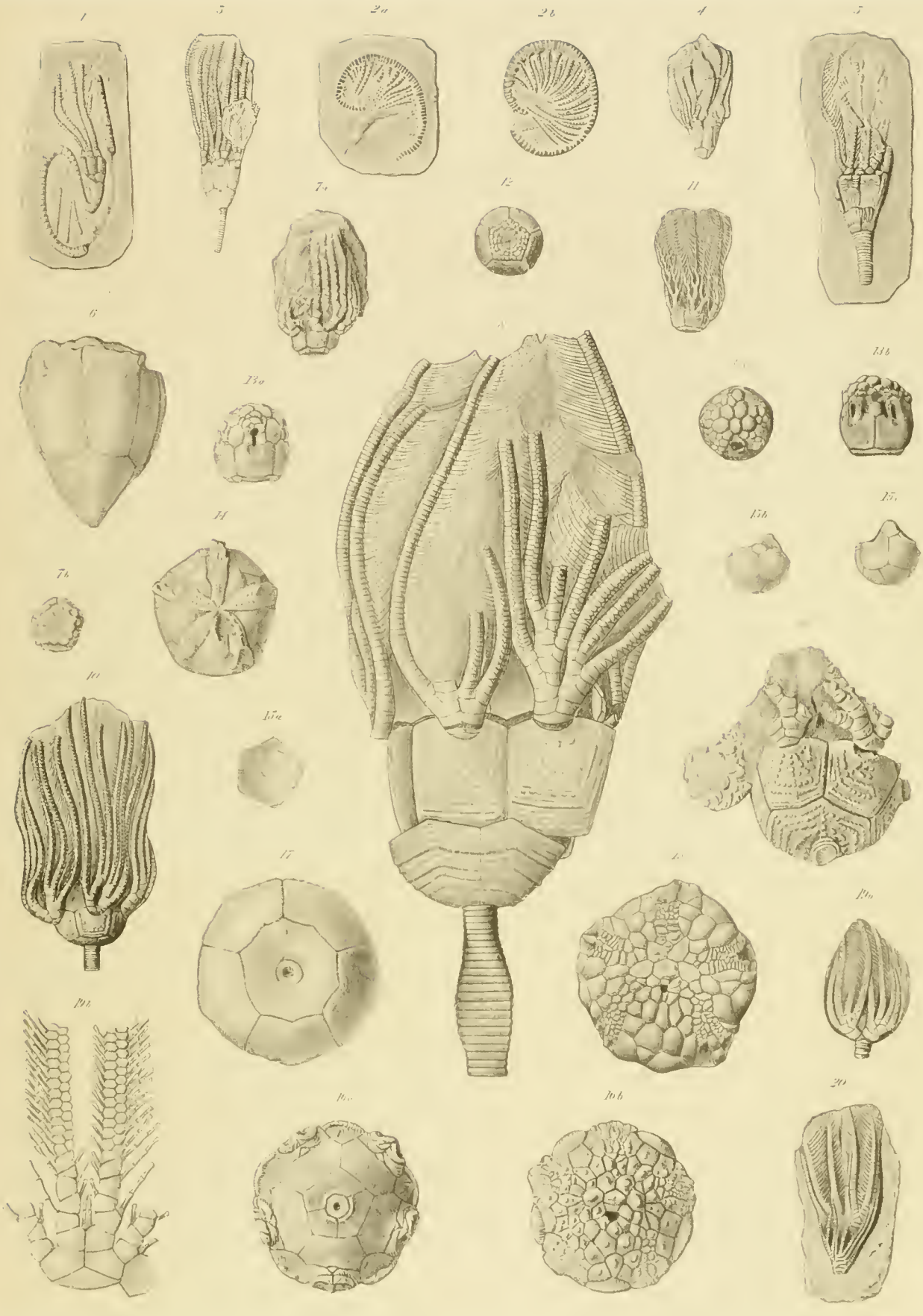


PLATE LXXV.

Page

Camptocrinus myelodactylus W. and Sp. 779

Fig. 1. A specimen with stem and cirri. (Coll. W. and Sp.)

2*a* and *b*. Portions of the coiled stem in different specimens, showing the cirri.

Dichocrinus Blairi S. A. Miller 778

3. The type specimen. (After Miller.)

Dichocrinus huntsvillæ W. and Sp. 773

4. The type specimen. (Coll. W. and Sp.)

Dichocrinus cinctus S. A. Miller 764

5. Specimen with arms. (Same collection.)

Dichocrinus conus Meek and Worthen 770

6. The type specimen. (Illinois State collection.)

Platycrinus canaliculatus Hall 689

7*a*. Specimen with arms. (Coll. W. and Sp.)

7*b*. Dorsal aspect of the calyx. (Same collection.)

Platycrinus sculptus Hall 691

8. A large specimen with arms. (Same collection.)

9. A smaller specimen. (Mus. Comp. Zoöl.)

Platycrinus americanus O. and Sh. 686

10. A mature specimen with arms; the latter biserial from above the last bifurcation. (Coll. W. and Sp.)

11. A young specimen; the arms uniserial and zigzag, the joints elongate, and the pinnules far apart. (Same collection.)

12. Dorsal aspect of the calyx. (Same collection.)

13*a*. Side view of the calyx of a large specimen. (Same collection.)

13*b*. Anal side of the same specimen.

13*c*. Ventral aspect of the same.

14. Natural cast, probably of Culicocrinus 735
From the Niagara group of Iowa. (Same collection.)

Page

Coccocrinus bacca F. Rœmer 739

Fig. 15*a*. Dorsal aspect of the calyx (drawn with the anal interradius at the lower left side).

15*b*. Right anterior side of the same specimen.

15*c*. Posterior side of same. (Same collection.)

Marsupiocrinus tennesseensis (F. Rœmer) 731

16*a*. Dorsal view of the calyx. (Coll. W. and Sp.)

16*b*. Ventral aspect of the same specimen.

Marsupiocrinus striatus W. and Sp. 732

17. Dorsal view of a rather small specimen. (Same collection.)

18. Ventral aspect of another specimen.

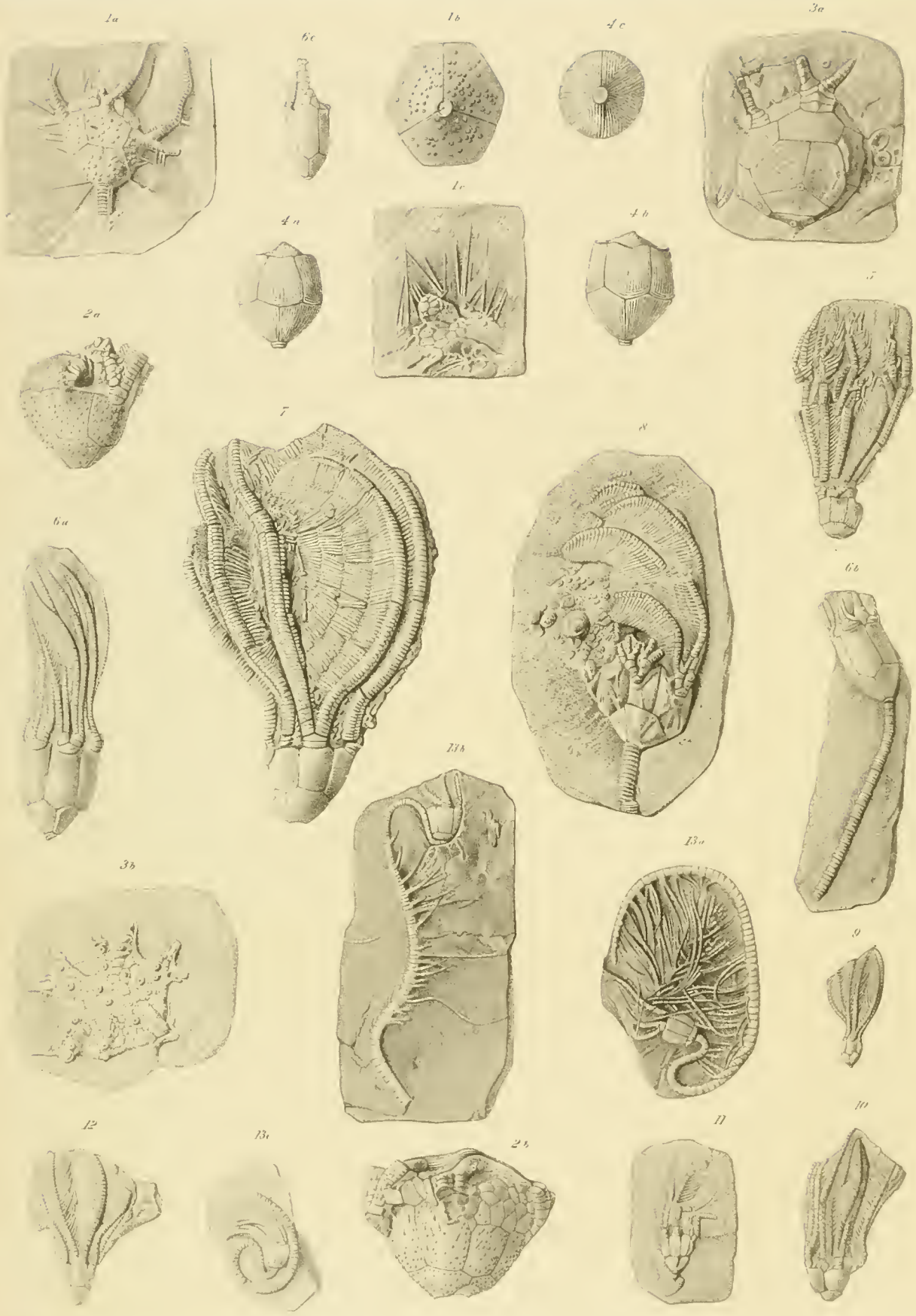
Marsupiocrinus tentaculatus (Hall) 733

19*a*. The type specimen. (After Hall.)

19*b*. Enlargement of one of its rays. (After Hall.)

Cordylocrinus plumosus (Hall) 737

20. The type specimen. (After Hall.)



A M Wöstergren del

PLATE LXXVI.

Page

Arthracantha ithacensis Williams 749

Fig. 1*a*. Lateral view of a specimen with arms. (Museum Cornell University.)
1*b*. Basal disk.
1*c*. The movable spines upon the tegmen.

Arthracantha punctobrachiata Williams 750

2*a*. Specimen showing spine bases. (Coll. W. and Sp.)
2*b*. Another specimen with some spines attached. (Coll. Prof. S. Calvin.)

Arthracantha depressa W. and Sp. 751

3*a*. Dorsal aspect of the type specimen. (Coll. W. and Sp.)
3*b*. Ventral aspect of the same specimen.

Dichocrinus lineatus Meek and Worthen 761

4*a*. The type specimen; posterior view of the calyx. (Mus. Comp. Zoöl.)
4*b*. Anterior view of the same specimen.
4*c*. Dorsal aspect of same.

Dichocrinus pisum Meek and Worthen 763

5. Specimen with arms. (Mus. Comp. Zoöl.)

Dichocrinus crassitestus White 769

6*a*. The type specimen; the anterior side exposed. (Same collection.)
6*b*. Another specimen with part of the column attached. (Coll. W. and Sp.)
6*c*. Posterior view of the calyx and anal tube. (Same collection.)

Dichocrinus ovatus Owen and Shumard 760

7. A fine specimen with arms. (Mus. Comp. Zoöl.)

Dichocrinus liratus Hall 759

8. Specimen with arms and part of column. (Same collection.)

Dichocrinus coxanus Worthen 763

9. The type specimen. (Coll. L. A. Cox.)

Dichocrinus hamiltonensis Worthen 772

10. The type specimen. (Same collection.)

Page

Dichocrinus angustus White 768

Fig. 11. Posterior view of a specimen with arms. (Coll. W. and Sp.)

Dichocrinus superstes W. and Sp. 766

12. Side view of the type specimen. (Same collection.)

Camptocrinus cirrifer W. and Sp. 780

13*a*. The type specimen, showing the curved cirrus-bearing stem; from the Kaskaskia group of Kentucky. (Coll. W. and Sp.)

13*b*. Another specimen from the Kaskaskia group. (Same collection.)

13*c*. A specimen from the St. Louis group of Huntsville, Ala. (Same collection.)

Heliotype Printing Co. Boston

PLATE LXXVII.

Page

Dichocrinus polydactylus Cass. and Lyon 756

1*a*. A large specimen with arms.
1*b*. Posterior view of calyx, showing the elevated dome and disk ambulacra.

Dichocrinus lachrymosus Hall 754

2*a*. Specimen with arms and stem.
2*b*. Posterior view of calyx.
2*c*. Ventral aspect of same.

Dichocrinus liratus Hall 759

3*a*. Specimen showing the arms and stem.
3*b*. Posterior view of the dorsal cup.

Dichocrinus cinctus Miller and Gurley 764

4*a*. Posterior view of specimen with arms.
4*b*. Ventral aspect of the calyx.
4*c*. Distal face of first distichal ($\frac{6}{1}$).

Dichocrinus plicatus Hall 758

5*a*. A small specimen with arms and stem.
5*b*. Another specimen, giving a side view of the dorsal cup.

Dichocrinus ornatus W. and Sp. 762

6. Specimen with arms and stem, from near Mt. Pleasant, Iowa.

Dichocrinus lævis Hall 765

7*a*. Specimen with arms. (Coll. Mr. Fultz of Burlington.)
7*b*. Another specimen. (Same collection.)
7*c*. Portion of an arm with pinnules (enlarged).

Dichocrinus ovatus O. and Sh. 760

8*a*. A specimen with arms.
8*b*. Posterior view of the dorsal cup.

Dichocrinus oblongus W. and Sp. 759

9. Posterior view of the type specimen.

PAGE

DICHOCRINUS PISUM M. and W. 763

Fig. 10. Posterior side of the dorsal cup. (After Meek and Worthen.)

DICHOCRINUS STRIATUS O. and Sh. 757

11*a*. Posterior side of the dorsal cup.

11*b*. Side view of another specimen.

DICHOCRINUS INORNATUS W. and Sp. 770

12*a*. Posterior view of a specimen with arms.

12*b*. Another specimen.

DICHOCRINUS DELICATUS W. and Sp. 766

13. The type specimen.

(All the specimens, except 7*a*, *b* and 10, are in the collection of Wachsmuth and Springer.)

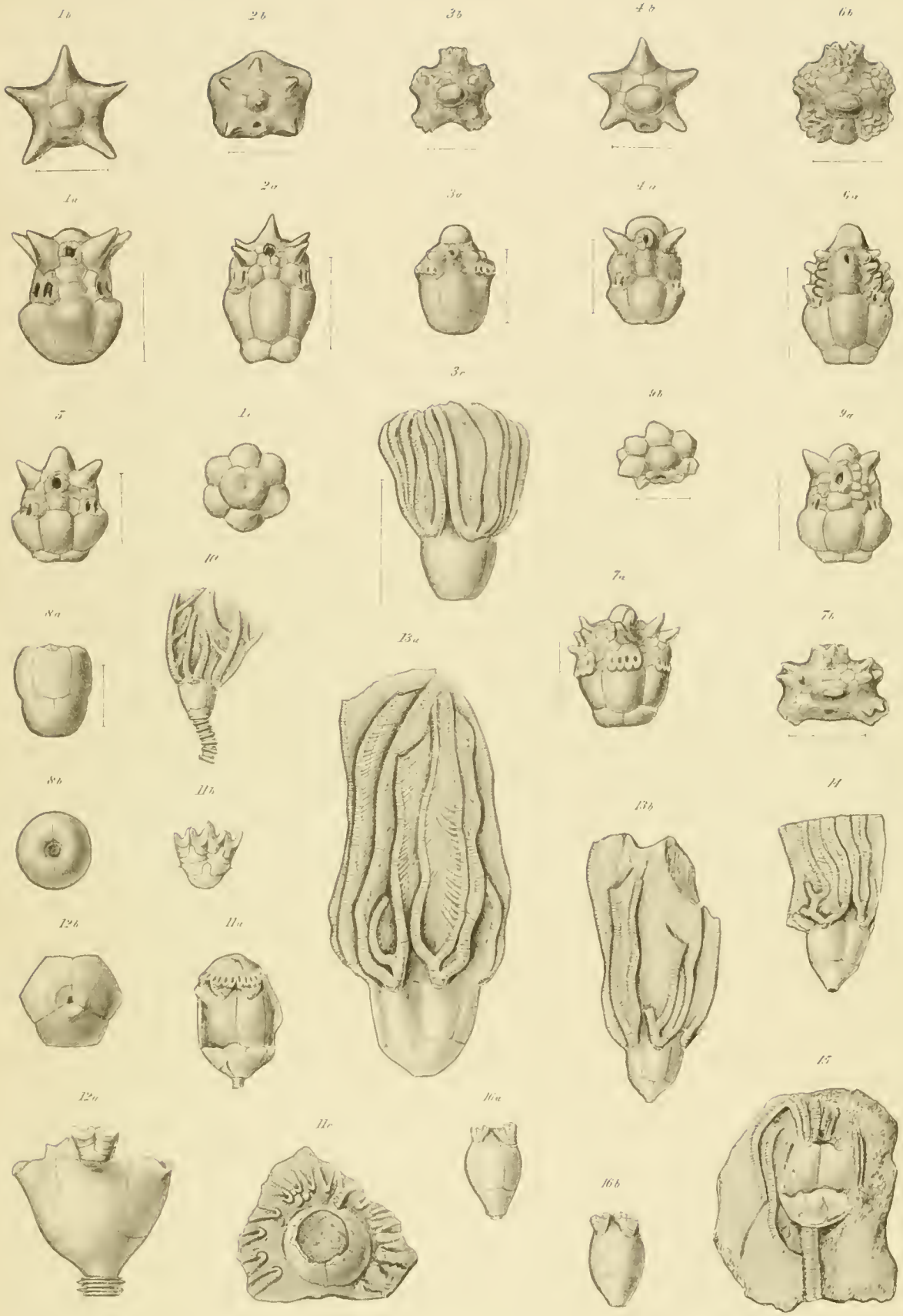

1b
2b
3b
4b
6b
1a
2a
3a
4a
6a
5
1c
3c
9b
9a
10
7a
8a
13a
7b
8b
11b
13b
11
12b
11a
12a
11c
16a
16b
15

PLATE LXXVIII.

Page

Talarocrinus sexlobatus (Shumard) 784

Fig. 1*a*. Posterior view of a specimen from Flagpont, Va. ($\frac{1.5}{1}$). (Coll. W. and Sp.)

1*b*. Ventral aspect of the same specimen ($\frac{1.5}{1}$).

1*c*. Dorsal view of the calyx. (Coll. W. and Sp.)

Talarocrinus ovatus Worthen 787

2*a*. Posterior view of the type specimen ($\frac{1.5}{1}$). (Illinois St. Coll.)

2*b*. Ventral aspect of the same specimen ($\frac{1.5}{1}$).

Talarocrinus decornis W. and Sp. 788

3*a*. Posterior view of the type specimen ($\frac{1.5}{1}$). (Coll. W. and Sp.)

3*b*. Ventral aspect of the same ($\frac{1.5}{1}$).

3*c*. Specimen with arms ($\frac{1.5}{1}$). (Same collection.)

Talarocrinus symmetricus (Cass. and Lyon) 786

4*a*. Posterior view of the calyx ($\frac{1.5}{1}$). (Coll. W. and Sp.)

4*b*. Ventral aspect of the same specimen ($\frac{1.5}{1}$).

5. Posterior view of type ($\frac{1.5}{1}$). (Coll. S. S. Lyon.)

Talarocrinus cornigerus (Shumard) 783

6*a*. Posterior view of a specimen from Pulaski Co., Ky. (Coll. W. and Sp.)

6*b*. Ventral aspect of the same specimen ($\frac{1.5}{1}$).

7*a*. Anterior view of the type specimen, from Alabama ($\frac{1.5}{1}$). (Mus. Washington University, St. Louis.)

7*b*. Ventral aspect of the same ($\frac{1.5}{1}$).

Talarocrinus simplex (Shumard) 790

8*a*. Anterior view of the dorsal cup ($\frac{1.5}{1}$). (Coll. W. and Sp.)

8*b*. Dorsal aspect of a larger specimen. (Same collection.)

Talarocrinus sp. (?)

9*a*. Posterior view of a specimen from Pulaski Co., Ky. ($\frac{1.5}{1}$). Perhaps an abnormal specimen of *T. sexlobatus*. (Coll. W. and Sp.)

9*b*. Oral plates of the same ($\frac{1.5}{1}$).

Hexacrinus occidentalis W. and Sp. 745

10. Anterior view of the type specimen. (Mus. Davenport Acad. Nat. Sci.)

Page

Dichocrinus pentalobus (Cass. and Lyon) 775

Fig. 11*a*. Lateral view of the type specimen; somewhat crushed. (Coll. S. S. Lyon.)

11*b*. The fixed brachials, enlarged ($\frac{6}{1}$).

11*c*. An imperfect specimen, showing parts of the pendant arms. (Coll. S. S. Lyon.)

Hexacrinus Leai (Lyon) 746

12*a*. Anterior view of type; the lower brachials and a few joints of the stem restored from another specimen. (Coll. S. S. Lyon.)

12*b*. Basal cup of same specimen.

Dichocrinus scitulus Hall 767

13*a*. Side view of a large specimen with arms, from the Lower Burlington limestone. (Coll. W. and Sp.)

13*b*. A small specimen from the Upper Burlington limestone. (Same collection.)

14. Side view of a specimen with arms from the same horizon. (Same collection.)

Dichocrinus pendens W. and Sp. 774

15. Specimen with pendent arms from the Upper Burlington limestone. (Coll. W. and Sp.).

Dichocrinus ficus Cass. and Lyon 774

16*a*. Posterior view of the calyx. (Coll. W. and Sp.)

16*b*. Side view of another specimen. (Same collection.)

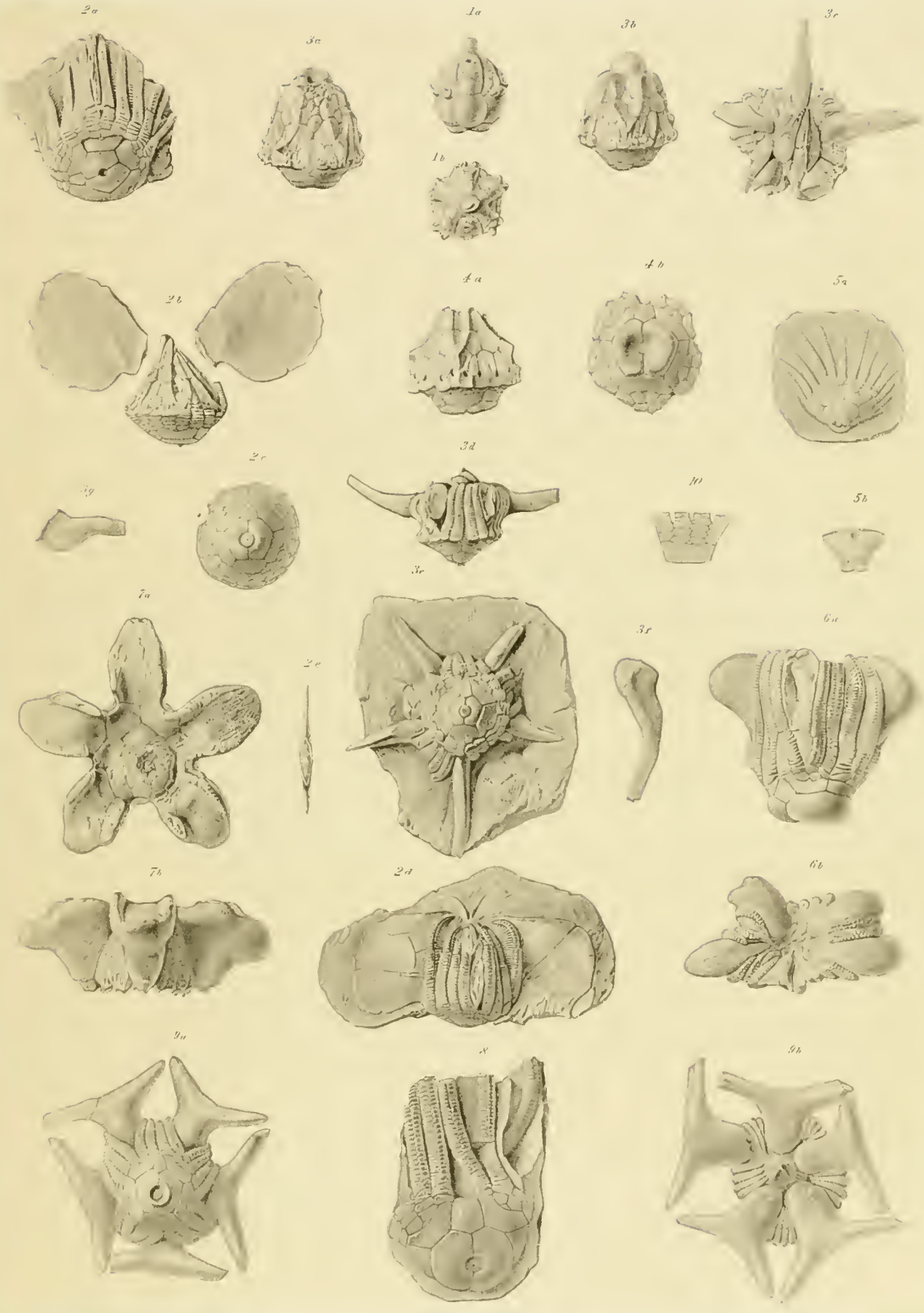

2a
1a
3b
3c
3a
1b
2b
4a
4b
5a
2c
3d
3g
3h
5b
3e
7a
2e
3f
6a
7b
2d
6b
9a
8
9b

PLATE LXXIX.

PAGE

TALAROCRINUS SUBGLOBOSUS W. and Sp. 789

Fig. 1*a*. Posterior view of the calyx. (Coll. W. and Sp.)

1*b*. Ventral aspect of the same specimen.

PTEROTOCRINUS DEPRESSUS Lyon and Cass. 796

2*a*. Lateral view of the type specimen. (Coll. S. S. Lyon.)

2*b*. Lateral view of the calyx, showing two of the wings. (Coll. W. and Sp.)

2*c*. Dorsal aspect of the calyx. (Same collection.)

2*d*. Another type specimen, showing the wings in position. (Coll. S. S. Lyon.)

2*e*. A wing, showing the face of attachment.

PTEROTOCRINUS ACUTUS Wetherby 799

3*a*. Posterior view of the calyx. (Coll. W. and Sp.)

3*b*. Anterior view of the same specimen.

3*c*. Ventral aspect of a specimen with two of the wings preserved, and the anus covered by a Gasteropod. (Same collection.)

3*d*. Another specimen, showing the wings in a side view. (Same collection.)

3*e*. Dorsal aspect of a fine specimen with arms and wings. (Same collection.)

3*f* and *g*. 2 wings of a different species. (Same collection.)

PTEROTOCRINUS PYRAMIDALIS Lyon and Cass. 798

4*a*. The type specimen; lateral view of the calyx. (Coll. S. S. Lyon.)

4*b*. Dorsal aspect of the same specimen.

PTEROTOCRINUS CHESTERENSIS Meek and Worthen 802

5*a*. One of the type specimens; lateral aspect. (After Meek and Worthen.)

5*b*. Another type specimen, showing the posterior side of the calyx. (After Meek and Worthen.)

PTEROTOCRINUS CAPITALIS Lyon 794

6*a*. Postero-lateral view of the type specimen. (Coll. S. S. Lyon.)

6*b*. Ventral aspect of the same.

PTEROTOCRINUS CORONARIUS Lyon 795

7*a*. Ventral aspect of the type specimen. (Same collection.)

7*b*. Side view of the same; the dorsal cup not preserved.

PAGE

PTEROTOCRINUS CRASSUS Meek and Worthen 801

Fig. 8. Posterior view of the type specimen. (After Meek and Worthen.)

PTEROTOCRINUS ACUTUS, var. BIFURCATUS Wetherby 801

9*a*. Dorsal aspect of the type specimen. (After Wetherby.)

9*b*. Ventral aspect of the same.

10. Diagram, showing the arrangement of the lower brachials in *Pterotocrinus*.

PLATE LXXX.

Page

Acrocrinus Shumardi Yandell 806

Fig. 1. Lateral view of the type specimen. (Dr. Yandell's collection.)

2. Fragmentary specimen from Huntsville, Ala. (Coll. W. and Sp.)

3. The lower part of the dorsal cup; from Pulaski Co., Ky. (Coll. W. and Sp.)

Acrocrinus amphora W. and Sp. 808

4. A large specimen with portions of the arms and stem.

5. A smaller specimen, enlarged ($\frac{2}{1}$).

6. The calyx somewhat flattened and enlarged ($\frac{2}{1}$).

The right posterior ray forming the median line of figure; the anal interradius occupying the left side.

7. Another specimen showing calyx and lower part of the arms ($\frac{2}{1}$).

8. Ventral aspect of a large specimen ($\frac{2}{1}$).

9. A specimen showing the calyx, the pendent arms, the turned up pinnules, and the stem.

(All in the collection of W. and Sp.)

Acrocrinus Wortheni Wachsmuth 807

10*a*. Diagram made from the type specimen in the Illinois State Museum.

10*b*. Showing the outlines of the specimen.

IIIa
IIIb

PLATE LXXXI.

Page

EUCALYPTOCRINUS CRASSUS Hall 342

Fig. 1. A very large specimen with arms. (Coll. W. and Sp.)

2. A smaller specimen with arms. (Same collection.)

3. Calyx with arms removed, leaving the partitions enclosing the arms. (Same collection.)

4. A specimen with an unusually broad base. (Same collection.)

5. Ventral view of calyx with arms and partitions removed, showing the places for the attachment of the arms. (Same collection.)

6. Showing the inner floor of the disk. (Same collection.)

14. Inner floor of the third ring of plates in the disk, enlarged. (After Hall.)

15. One of the plates of the third ring, enlarged.

EUCALYPTOCRINUS ELRODI S. A. Miller 339

7*a*. A perfect specimen with arms, from Waldron, Ind. (Mus. Comp. Zoöl.)

7*b*. Basal aspect of the same.

8. A specimen from Hartsville, Ind., covered with elongate nodules. (Coll. W. and Sp.)

9. Another specimen, showing the calyx and partition walls. (Same collection.)

10. Another, showing the plates which form the partitions. (After Hall.)

11. The plates covering and surrounding the anus. (Coll. W. and Sp.)

12. The plates constituting the ventral disk. Those forming the two lower rings showing the inner floor, those of the two upper the outer surface. (After Hall.)

13. Inner floor of basals and radials. (After Hall.)

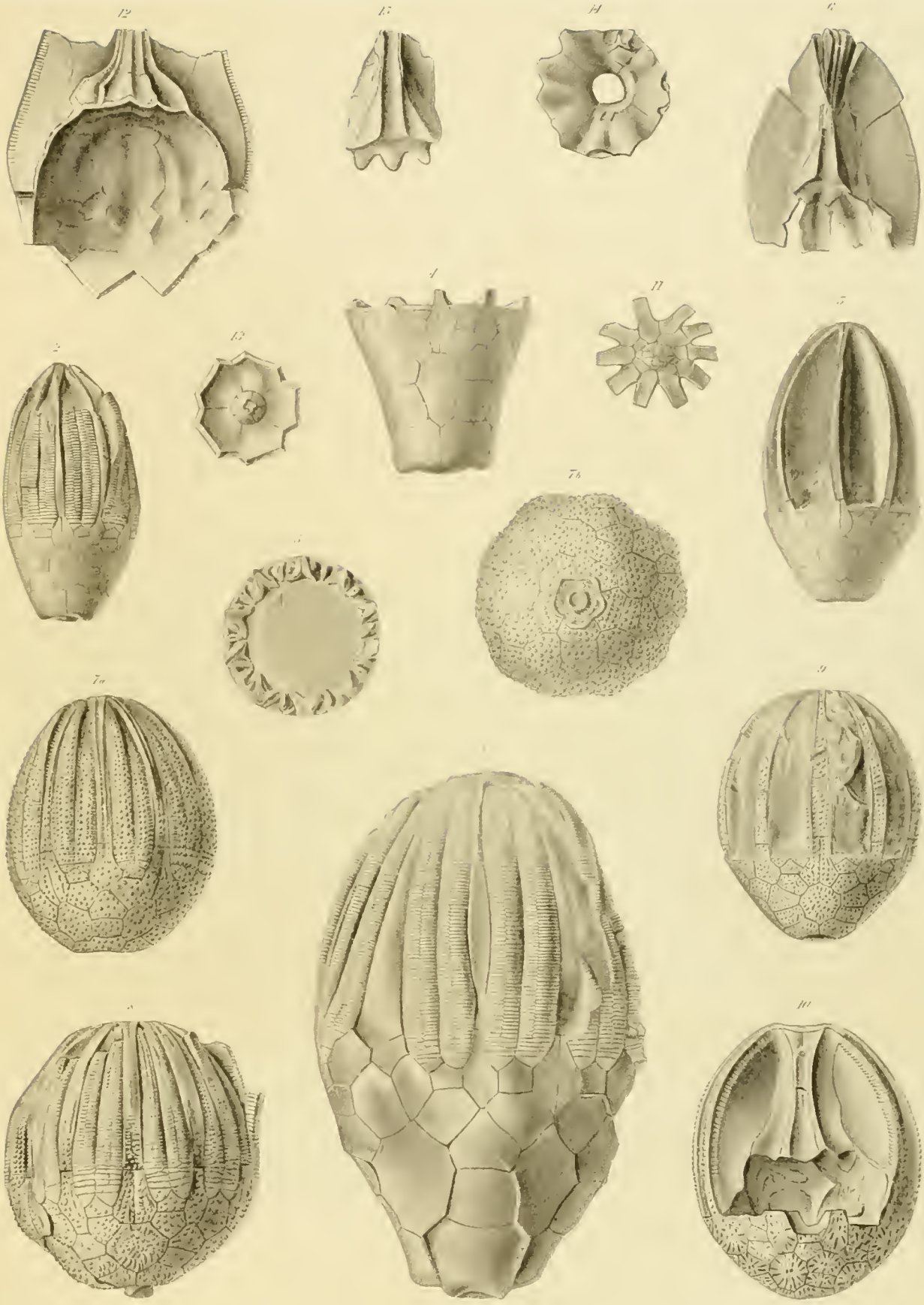


PLATE LXXXII.

PAGE

EUCALYPTOCRINUS OVALIS Hall 344

Fig. 1. Stem and root. (Coll. W. and Sp.)
2. Specimen with arms and part of stem. (Same collection.)
3. Another specimen showing the partition walls. (Same collection.)
4. A specimen with arms. (Same collection.)
5. Showing the arm facets. (Same collection.)
6. Showing the basals. (Same collection.)

EUCALYPTOCRINUS MAGNUS Worthen 348

7. Dorsal aspect of the calyx. (After Worthen, the basals corrected.)
8. Side view of Miller's type of *E. Gorbyi*. (After Miller.)

EUCALYPTOCRINUS LINDAHLI W. and Sp. 347

9. A fine specimen with arms. (Illinois State Collection.)

EUCALYPTOCRINUS ORNATUS Hall 340

10. Internal cast of the dorsal cup. (Coll. W. and Sp.)

EUCALYPTOCRINUS EGANI S. A. Miller 352

11. Internal cast of the calyx. (Coll. W. and Sp.)
12. The anal tube. (Coll. W. C. Egan.)

EUCALYPTOCRINUS TURBINATUS S. A. Miller 351

13. Internal cast of calyx. (Coll. W. and Sp.)

EUCALYPTOCRINUS PROBOSCIDALIS Miller 352

14. Internal cast; the type specimen. (After Miller.)

EUCALYPTOCRINUS DECORUS Phillips.

15. A specimen from Dudley, England. (Coll. W. and Sp.)
Figured for comparison with *E. decorus* Hall.

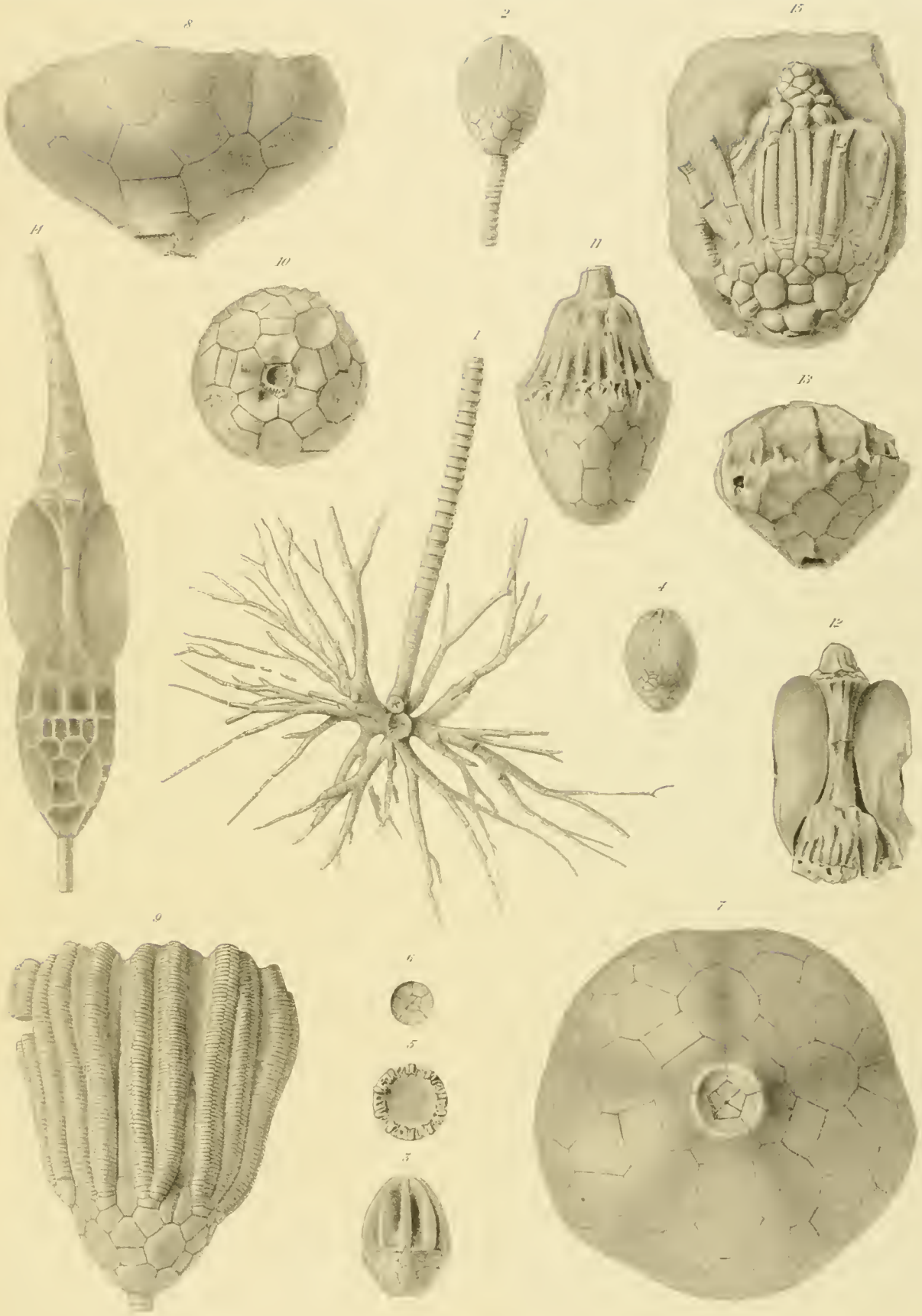

8
2
15
14
10
11
1
13
4
12
9
6
5
3
7

PLATE LXXXIII.

PAGE

EUCALYPTOCRINUS INCONSPECTUS Ringueberg 346

Fig. 1. The type specimen. (Coll. Dr. Ringueberg.)

2. A specimen with arms. (Same collection.)

EUCALYPTOCRINUS DEPRESSUS S. A. Miller 349

3. The calyx and the partition walls enclosing the arms. (Coll. W. C. Egan.)

4*a*. A natural cast of another specimen; lateral view. (Same collection.)

4*b*. Basal aspect of another specimen. (Same collection.)

EUCALYPTOCRINUS CÆLATUS Hall 336

5. A plump specimen from Rochester. (Coll. W. and Sp.)

6. A crushed specimen from Lockport, showing the ornamentation. (Coll. Dr. Ringueberg.)

7. A very young specimen referred to this species with some doubt (⅔). (Mus. Comp. Zoöl.)

EUCALYPTOCRINUS TUBERCULATUS S. A. Miller 337

8. One of the type specimens. (Mus. Comp. Zoöl.)

9. Another type specimen. (Same collection.)

10. Type of *E. muralis* Ringueberg (from his collection).

EUCALYPTOCRINUS VENTRICOSUS W. and Sp. 341

11. Specimen with arms. (Mus. Comp. Zoöl.)

12. Dorsal aspect of the calyx. (Coll. W. and Sp.)

EUCALYPTOCRINUS OBCONICUS Hall 353

13. Natural cast of the dorsal cup. (Coll. Thomas A. Greene.)

CALLICRINUS BEACHLERI W. and Sp. 355

14*a*. Lateral view of the calyx. (Coll. W. and Sp.)

14*b*. Another view of the same specimen, showing the partition walls to their full length.

CALLICRINUS CORNUTUS Hall 357

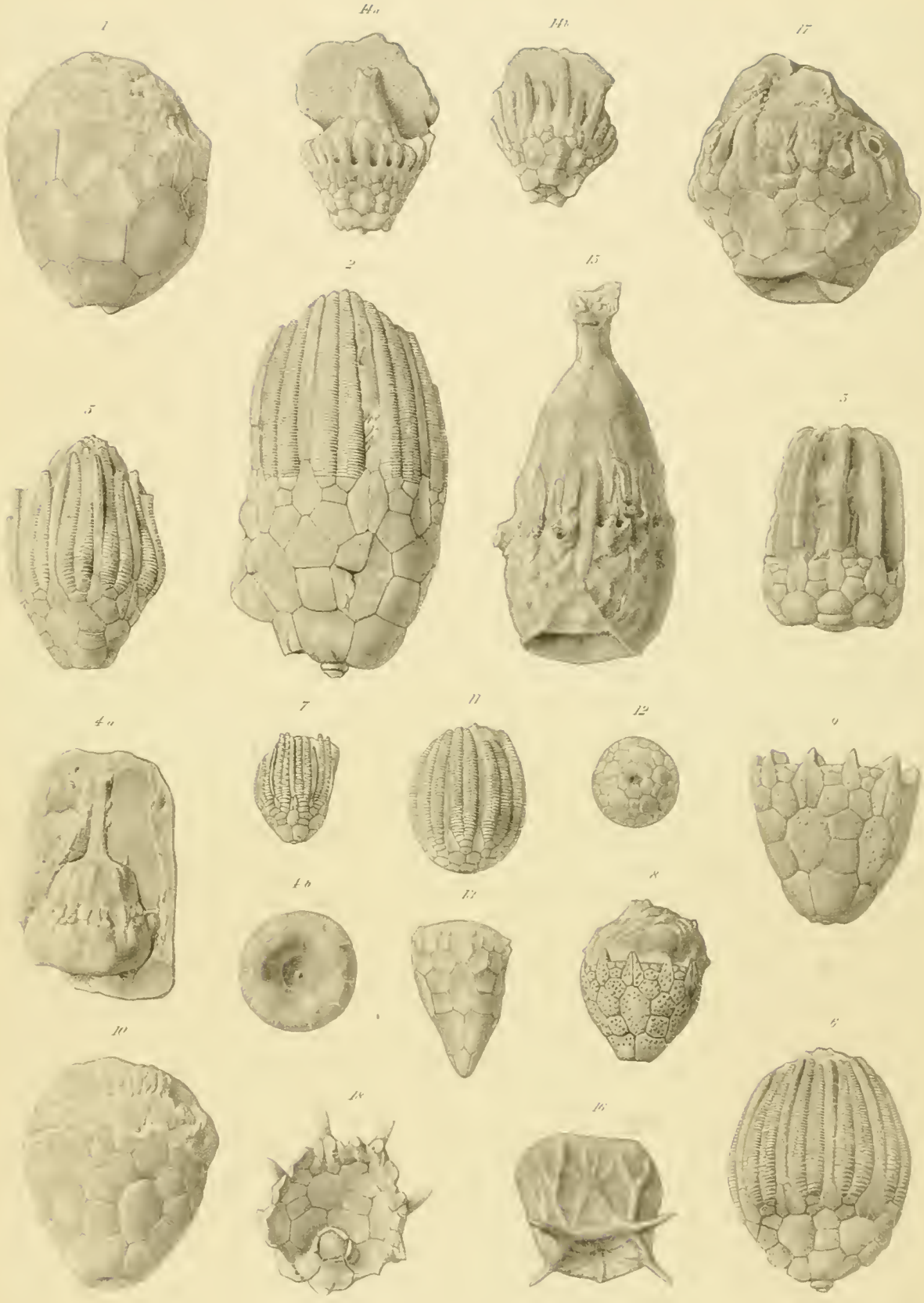
15. Natural cast of the calyx. (Coll. Thomas A. Greene.)

16. Impression from a natural mould. (Same collection.)

17. Probably an undescribed variety of *C. cornutus*. (Same collection.)

CALLICRINUS ACANTHINUS Ringueberg 356

18. Inner aspect of the dorsal cup; the type specimen. (Coll. Dr. Ringueberg.)



A. M. Westergren del.

[illegible] Printing [illegible]

Harvard MCZ Library
3 2044 066 301 094

PUBLICATIONS

OF THE

MUSEUM OF COMPARATIVE ZOÖLOGY

AT HARVARD COLLEGE.

There have been published of the BULLETINS Vols. I. to XXIX.; of the MEMOIRS, Vols. I. to XXII.

Vols. XXVIII. and XXX. of the BULLETIN, and Vols. XIX. and XXIII. of the MEMOIRS, are now in course of publication.

A price list of the publications of the Museum will be sent on application to the Director of the Museum of Comparative Zoölogy, Cambridge, Mass.

ALEXANDER AGASSIZ, *Director.*