

New York State Education Department

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# New York State Museum

JOHN M. CLARKE, Director

Memoir 14

## THE EURYPTERIDA OF NEW YORK

X

BY  
JOHN M. CLARKE  
AND

RUDOLF RUEDEMANN

THE DANIEL J. RICHARDSON  
OF OUR FAMILY  
OF THE  
UNIVERSITY OF CALIFORNIA  
LAJOLLA, CALIF.

VOLUME II  
PLATES

GIFT OF  
T. WAYLAND VAUGHAN

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EXPLANATIONS OF PLATES

PLATE I

441

**Strabops thacheri** Beecher

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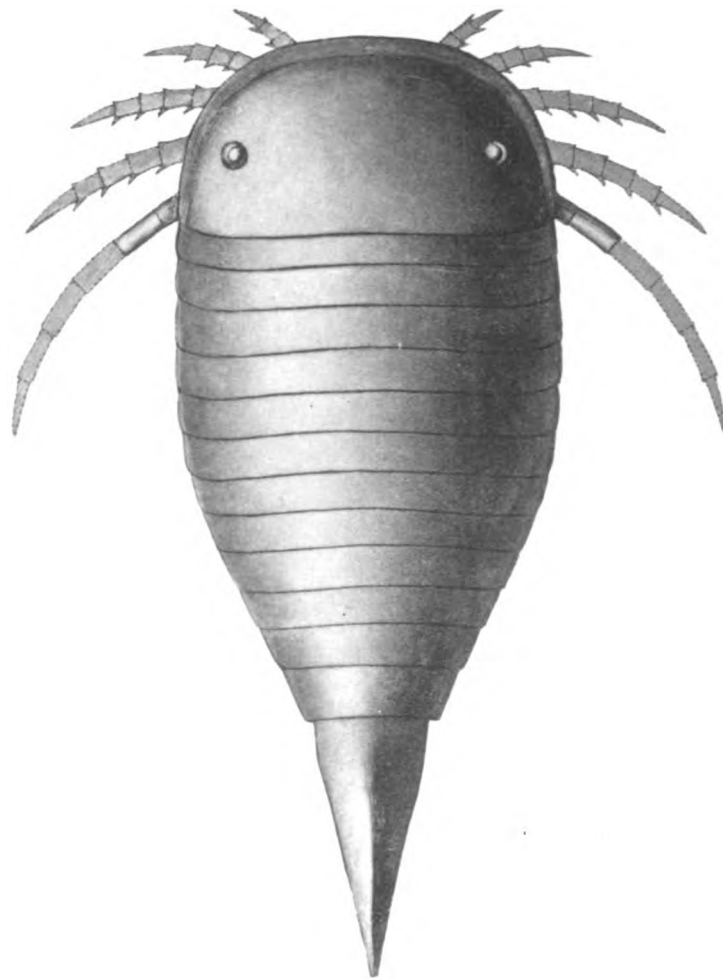
See plate 4, figure 5; plate 13, figure 2

- 1 Restoration of dorsal aspect. Natural size  
*Horizon and locality.* Potosi (Upper Cambrian) limestone. St. François  
county, Mo.

# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 1



G S Barkentin del

J B Lyon Co State Printer



PLATE 2

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**Eurypterus remipes** Dekay

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See plates 3-8

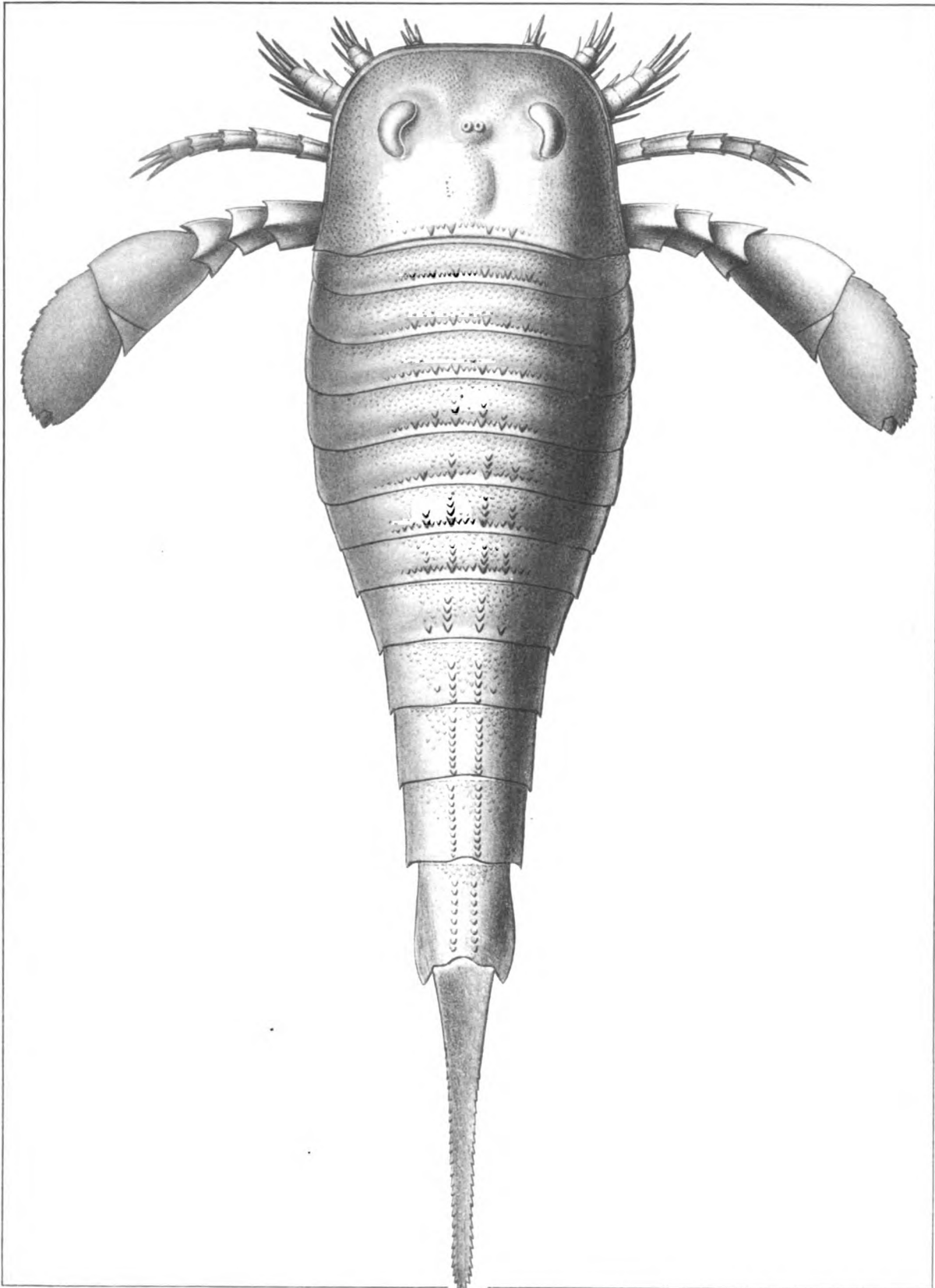
- 1 Restoration of dorsal aspect. Natural size  
*Horizon and locality.* Bertie (Siluric) waterlime. Herkimer county,  
N. Y.



# EURYPTERIDA

Memoir 14. N.Y. State Museum.

Plate 2.



J. S. Barkentin sc.

J. B. Lyon Co. Stone Printer



PLATE 3

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**Eurypterus remipes** Dekay

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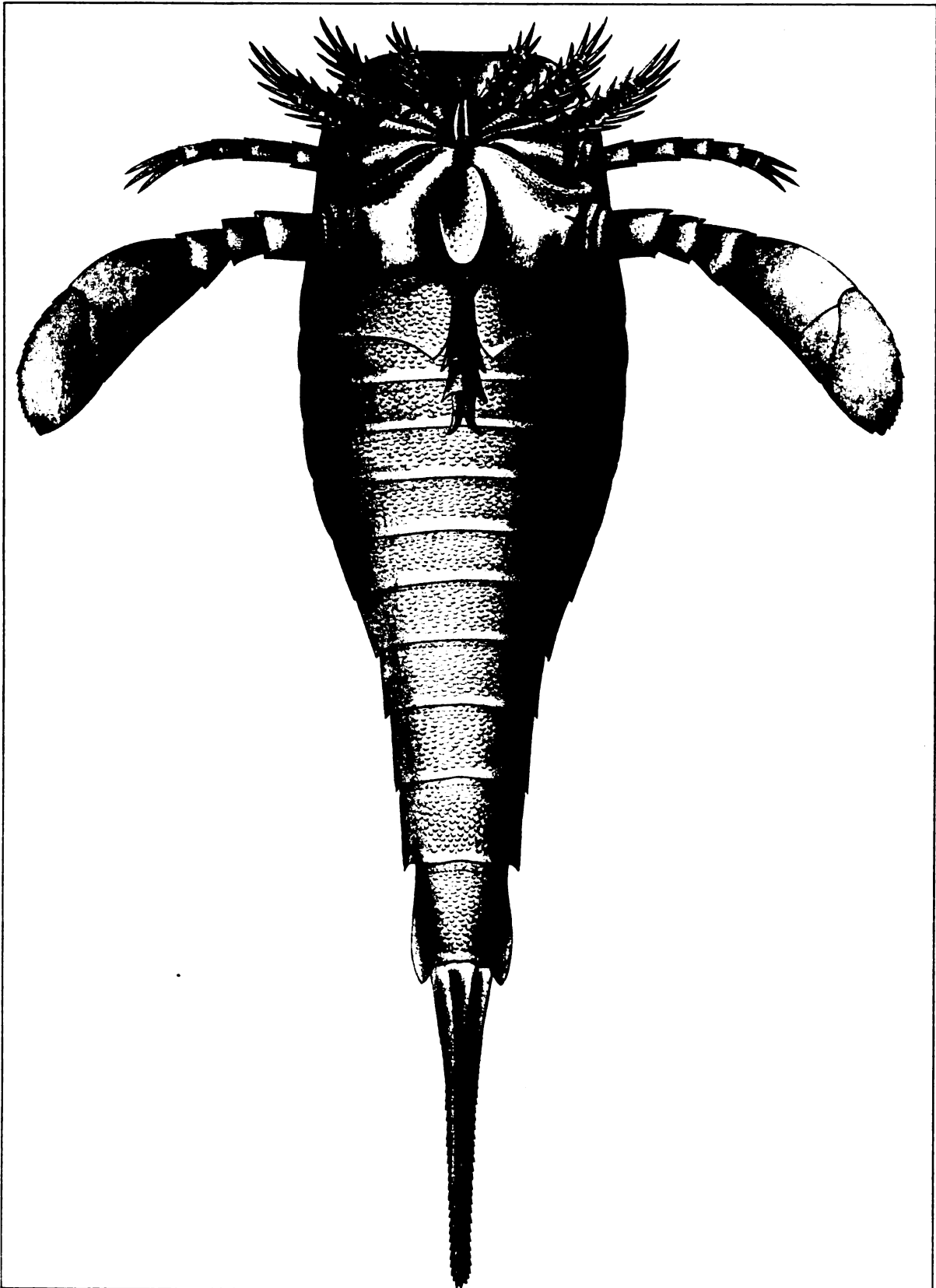
See plates 2, 4-8

- 1 Restoration of ventral aspect of female. Natural size  
*Horizon and locality.* Bertie (Siluric) waterlime. Herkimer county,  
N. Y.

# EURYPTERIDA

Memoir 14. N.Y. State Museum.

Plate 3.



G. S. Parvettin del.

W. H. Rouse, The College Printer.



PLATE 4

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### **Eurypterus remipes** Dekay

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See plates 2-3, 5-8

- 1 Original of Hall's figure [Palaeontology of N. Y., v. 3, pl. 80, fig. 1]. x 2.  
A young individual. See enlarged outline [text fig. 33]  
*Horizon and locality.* Bertie waterlime. Waterville, Oneida co., N. Y.
- 2 Original of Hall's figure [*op. cit.* pl. 80, fig. 2]. x 2
- 3 Young individual. x 2. Shows large lateral eyes and development of appendages
- 4 A later immature growth stage. x 3. Shows size of lateral and median eyes, segments in normal position, and character of dorsal sculpture  
*Horizon and locality.* Bertie waterlime. Litchfield, Herkimer co., N. Y.

### **Strabops thacheri** Beecher

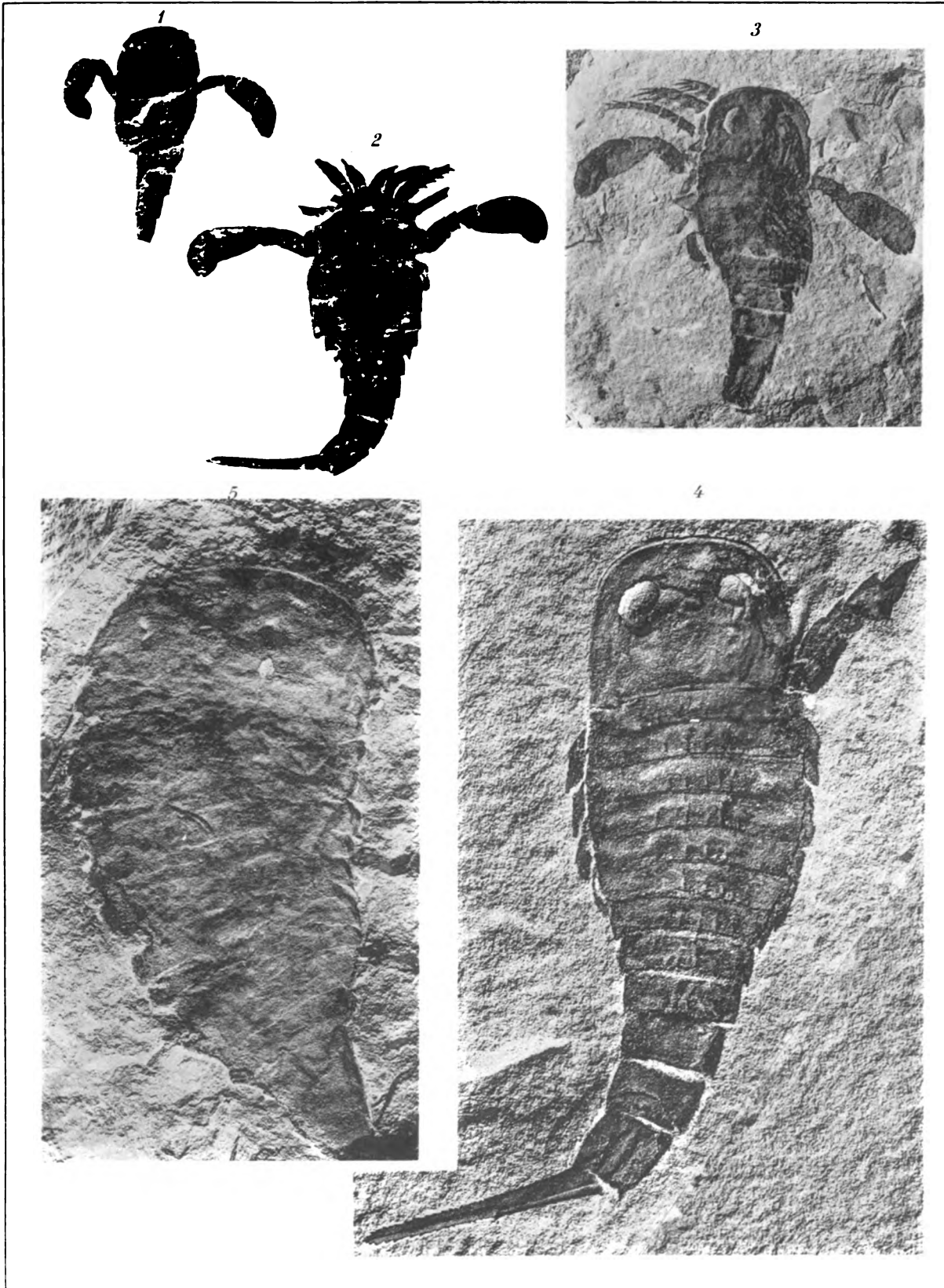
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See plates 1, 13

- 5 Counterpart of holotype. Natural size  
*Horizon and locality.* Potosi (Upper Cambrian) limestone. St. Francois county, Mo.  
All figures are from photographs. The originals of figures 1 and 2 are in the American Museum of Natural History; of figures 3 and 4 in the State Museum; of figure 5 in the geological museum of Columbia University



# EURYPTERIDA



J. A. Glenn et H. G. Wardell phot.

J. B. Lyon, N. Y. State Museum



PLATE 5

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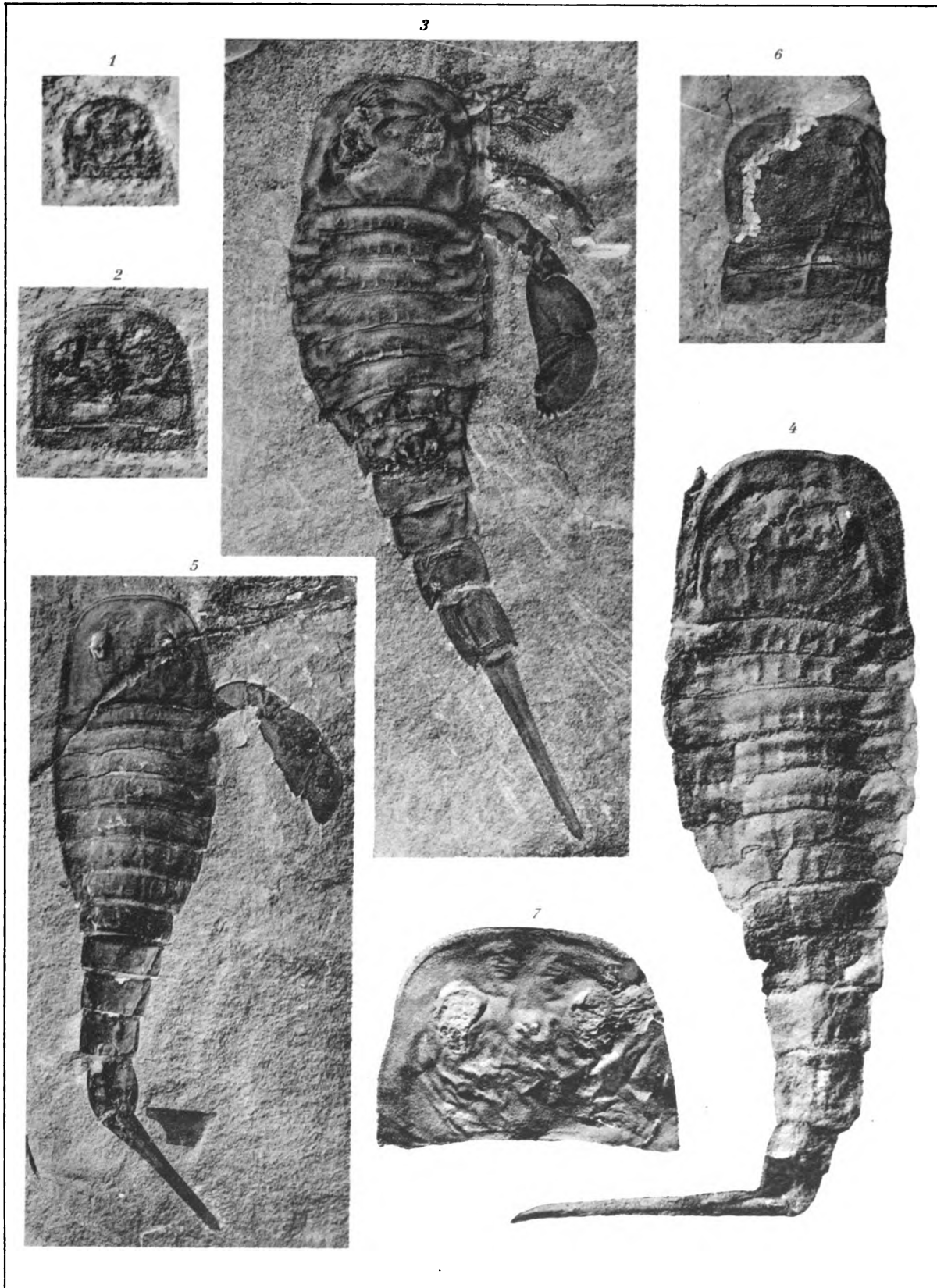
## **Eurypterus remipes** Dekay

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See plates 2-4, 6-8

- 1 Carapace of early neanic stage. x 5. Shows size and position of lateral eyes and size and prominence of ocellar mound. Compare with the later stage, plate 5, figure 5  
*Horizon and locality.* Bertie waterlime. Litchfield, Herkimer co., N. Y.
- 2 Carapace of later neanic stage. x 5  
*Horizon and locality.* Bertie waterlime. Paris hill, Oneida co., N. Y.
- 3 Young individual, x 2, partly retaining original convexity and ornamentation of dorsal side
- 4 Young individual, x 2, showing impression of marginal shield of underside of cephalothorax [comp. figure 6] and partly retaining original dorsal convexity
- 5 Older individual reproduced in natural size. Retains segments in normal position and original curvature. Shows convex rhachis and flat epimera of dorsal side
- 6 Carapace, in natural size, retaining in original position the marginal shield or membrane [see pl. 6, fig. 2] of the ventral side of the cephalothorax
- 7 Carapace, x 2, showing two circular, wrinkled spots in front, supposed to be muscle scars. The ocelli also are very distinctly seen  
*Horizon and locality.* Bertie waterlime. Litchfield, Herkimer co., N. Y. All figures are from photographs. The originals of all specimens are in the State Museum

# EURYPTERIDA



J.A. Glenn et H.C. Wardell phot.

J.B. Lyon, Co. State Printer



PLATE 6

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## **Eurypterus remipes** Dekay

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See plates 2-5, 7, 8

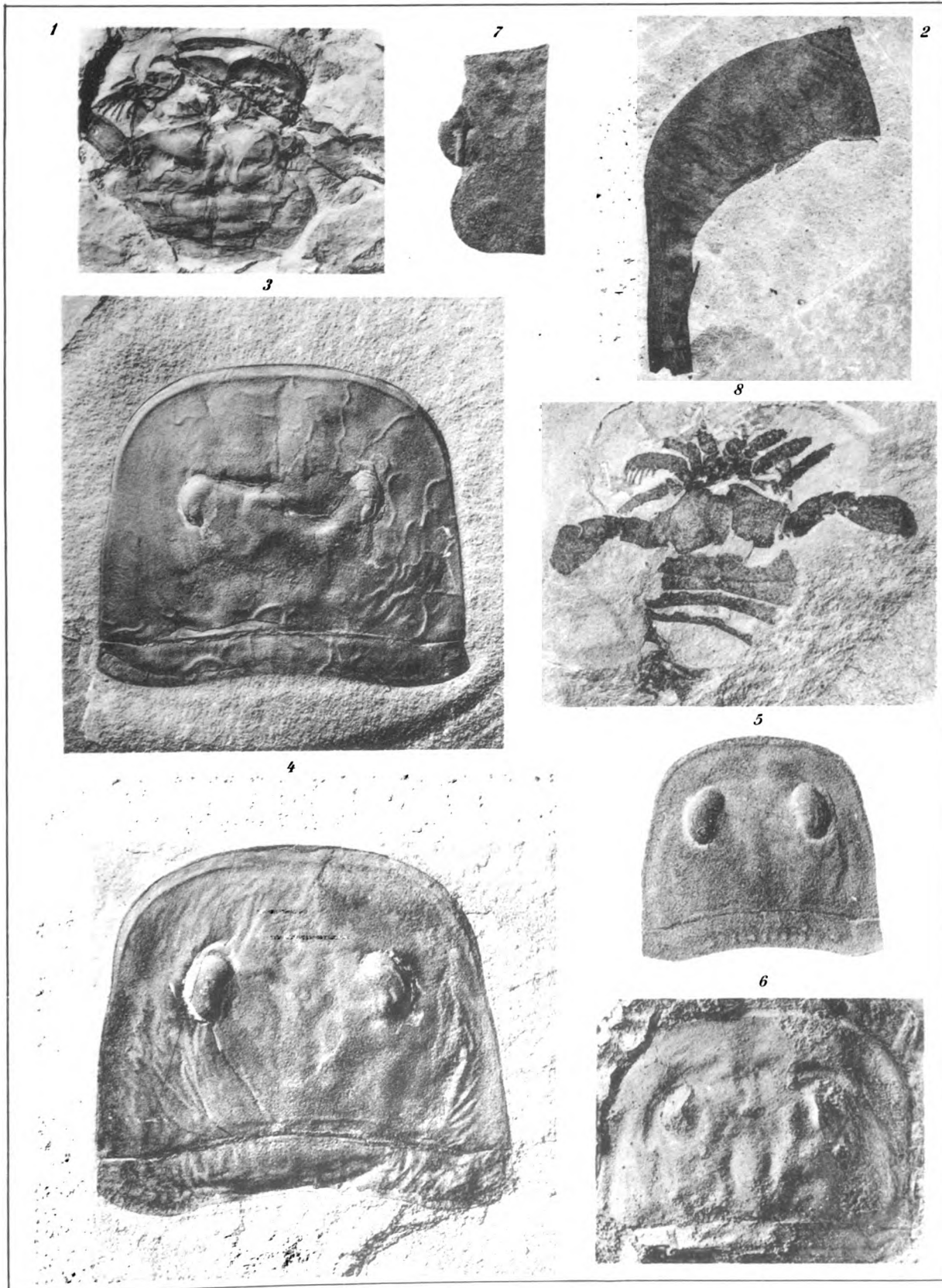
- 1 Ventral side of carapace. Shows the split between carapace and marginal shield of underside, through which the animal probably emerged in molting; also the median suture of the marginal shield, and the immature female genital appendage of the operculum. Natural size
- 2 A half doublure or marginal shield of carapace. x 2. Shows entire inner and outer margins and sculpturing  
*Horizon and locality.* Bertie waterlime. Jerusalem hill, N. Y.
- 3 Carapace with attached first tergite. Natural size. Shows typical outline of mature carapace, beveled margin, open slit between carapace and first tergite; and posterior doublure of first segment  
*Horizon and locality.* Bertie waterlime. Cranes Corners, N. Y.
- 4 Carapace with attached first tergite. x 2. Shows visual surface of right compound eye, ocelli, ornamentation of carapace and tergite, fulcra of posterior margin of carapace
- 5 Small carapace with first tergite. x 3. Preserved in partial relief. Shows the impression of the marginal shield of the underside with its median suture, the relatively great size of the lateral eyes [comp. fig. 3], and the transverse row of longer scales along the posterior margins of the first tergite  
*Horizon and locality.* Bertie waterlime. Jerusalem hill, N. Y.
- 6 Carapace preserved approximately in original relief, in a porous dolomite. Shows the glabellalike median ridge of the posterior portion and the prominence of the ocellar mound. From a gutta-percha squeeze. x 3  
*Horizon and locality.* Bertie waterlime. Morganville, Genesee co., N. Y.
- 7 Portion of right half of operculum with male appendage. x 3  
*Horizon and locality.* Bertie waterlime. Cranes Corners, N. Y.
- 8 Ventral side of young individual. x  $2\frac{1}{2}$ . Shows form and arrangement of young limbs and metastoma  
*Horizon and locality.* Bertie waterlime. Jerusalem hill, N. Y.  
All from photographs of which the originals are in the State Museum



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 6



J.A. Glenn phot.

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PLATE 7

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## Eurypterus remipes Dekay

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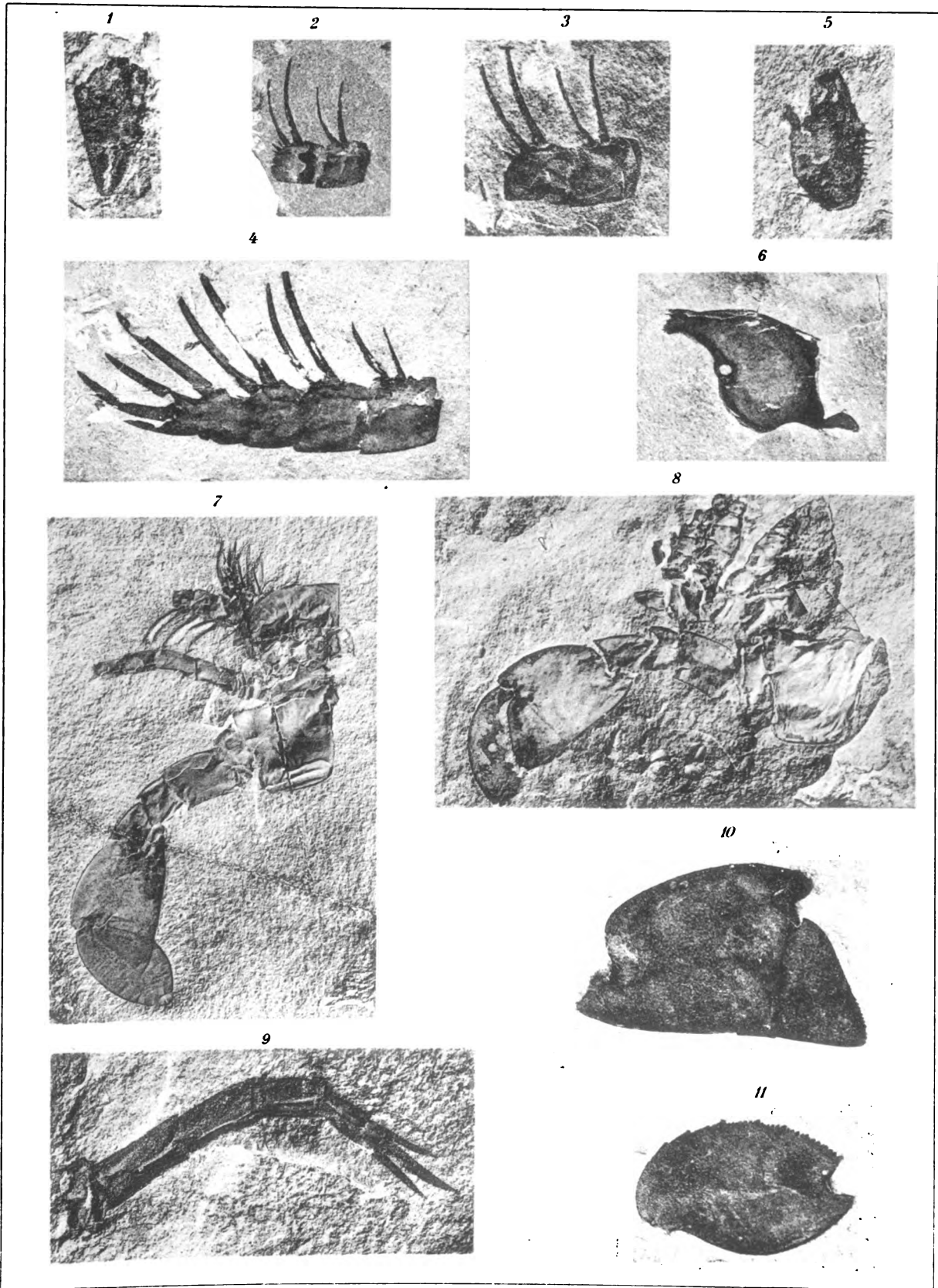
See plates 2-6, 8

- 1 Chelicera. x 4
- 2 Two segments of walking leg, x 3. They show different lengths of paired spines and small spines near anterior edge
- 3 Two segments of walking leg, x 3, showing articulation of spines  
*Horizon and locality.* Bertie waterlime. Jerusalem hill, N. Y.
- 4 The spiniferous portion of a walking leg. x 2. Shows the relative lengths of the spines and the terminal spine
- 5 Detached epicoxite, x 3, presumably belonging to this species  
*Horizon and locality.* Bertie waterlime. Cranes Corners, N. Y.
- 6 Coxa of fourth leg, x 2. Shows the gnathobase and circular perforation  
*Horizon and locality.* Bertie waterlime. Jerusalem hill, N. Y.
- 7 Part of underside of cephalothorax. Shows marginal shield with attached bases of limbs and complete swimming leg, seen from underside. The thickened edges of the flat joints forming the paddle are well seen. Natural size  
*Horizon and locality.* Bertie waterlime. Cranes Corners, N. Y.
- 8 Complete swimming leg, partly disjointed and showing the form of the segments. The terminal claw or ninth segment, and the articulation of the paddle with the preceding segment are clearly seen. Natural size  
*Horizon and locality.* Bertie waterlime. Kay's brook near Cedarville, N. Y.
- 9 Fourth endognathite or balancing leg. x 2  
*Horizon and locality.* Bertie waterlime. Cranes Corners, N. Y.
- 10 Seventh segment of swimming leg. x 2. Shows thickened edges, proximal and distal articulations and distal triangular guard lobe with finely serrated edge
- 11 Paddle plate of swimming leg. x 2. The terminal claw is broken out. The alternating series of larger and smaller teeth on the serrated outer edge is clearly shown  
*Horizon and locality.* Bertie waterlime. Jerusalem hill, N. Y.  
All are photographs of originals in the State Museum

# EURYPTERIDA

Memoir 14. N.Y. State Museum.

Plate 7.



J. A. Glenn, phot.

J. B. Lyon, Co. State Printer



PLATE 8

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## **Eurypterus remipes** Dekay

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See plates 2-7

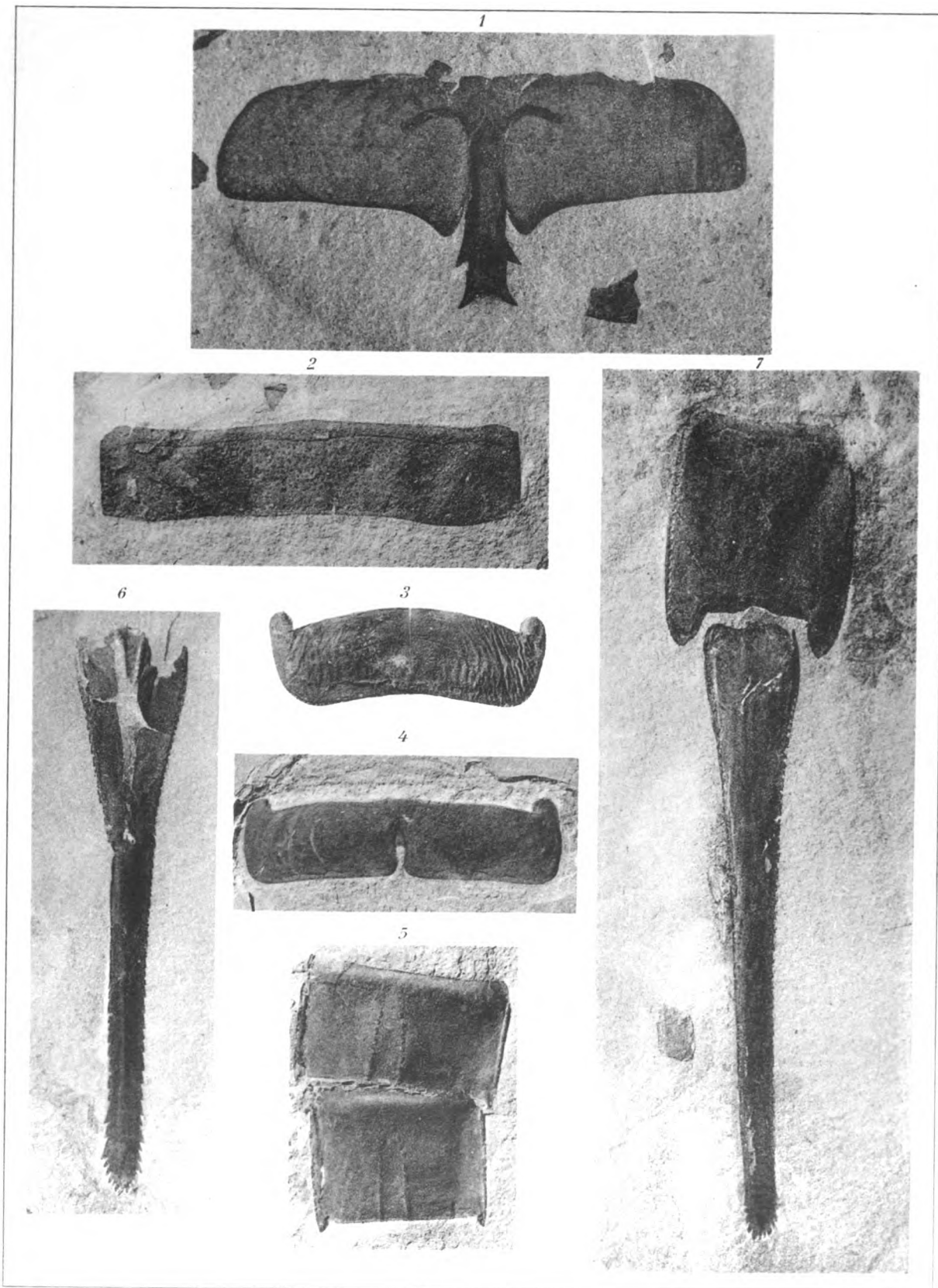
- 1 Nearly complete operculum. Shows the form of the plate, the female genital appendages, lacking the paired terminal pieces. The pentagonal plates in front of the genital lobes are faintly outlined and the two interior tubular appendages are very distinctly shown as curved dark lines. x 2
  - 2 Detached tergite. Shows outline and sculpturing. x 2  
*Horizon and locality.* Bertie waterlime. Jerusalem hill, N. Y.
  - 3 Posterior sternite, showing the "ears" or antelateral processes, the median suture and transverse sculpture line. Natural size  
*Horizon and locality.* Bertie waterlime. Cranes Corners, N. Y.
  - 4 Second sternite of a female, the appendage broken out, save the basal portion. Natural size  
*Horizon and locality.* Bertie waterlime. Jerusalem hill, N. Y.
  - 5 Dorsal view of two postabdominal segments. Shows anterior transverse row of scales and two median lines of larger scales, and the lateral epimera with their thickened edges and posterior lobes. x 2  
*Horizon and locality.* Bertie waterlime. Cedarville, N. Y.
  - 6 Telson, seen from underside and showing the median carina and marginal serration. x 2  
*Horizon and locality.* Bertie waterlime. Cranes Corners, N. Y.
  - 7 Last postabdominal segment and telson, seen from dorsal side, showing articulation of telson and posterior doublure of the segment. The margin of the segment and the lateral margin of the anterior portion of the telson show distinct rows of pores, presumably the sockets of bristles  
*Horizon and locality.* Bertie waterlime. Jerusalem hill, N. Y.
- All are from photographs of originals in the State Museum



# EURYPTERIDA

Memoir 14. N.Y. State Museum.

Plate 8.



J.A. Glenn phot.

J.B. Lyon Co State Printer

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· PLATE 9

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**Eurypterus lacustris** Harlan

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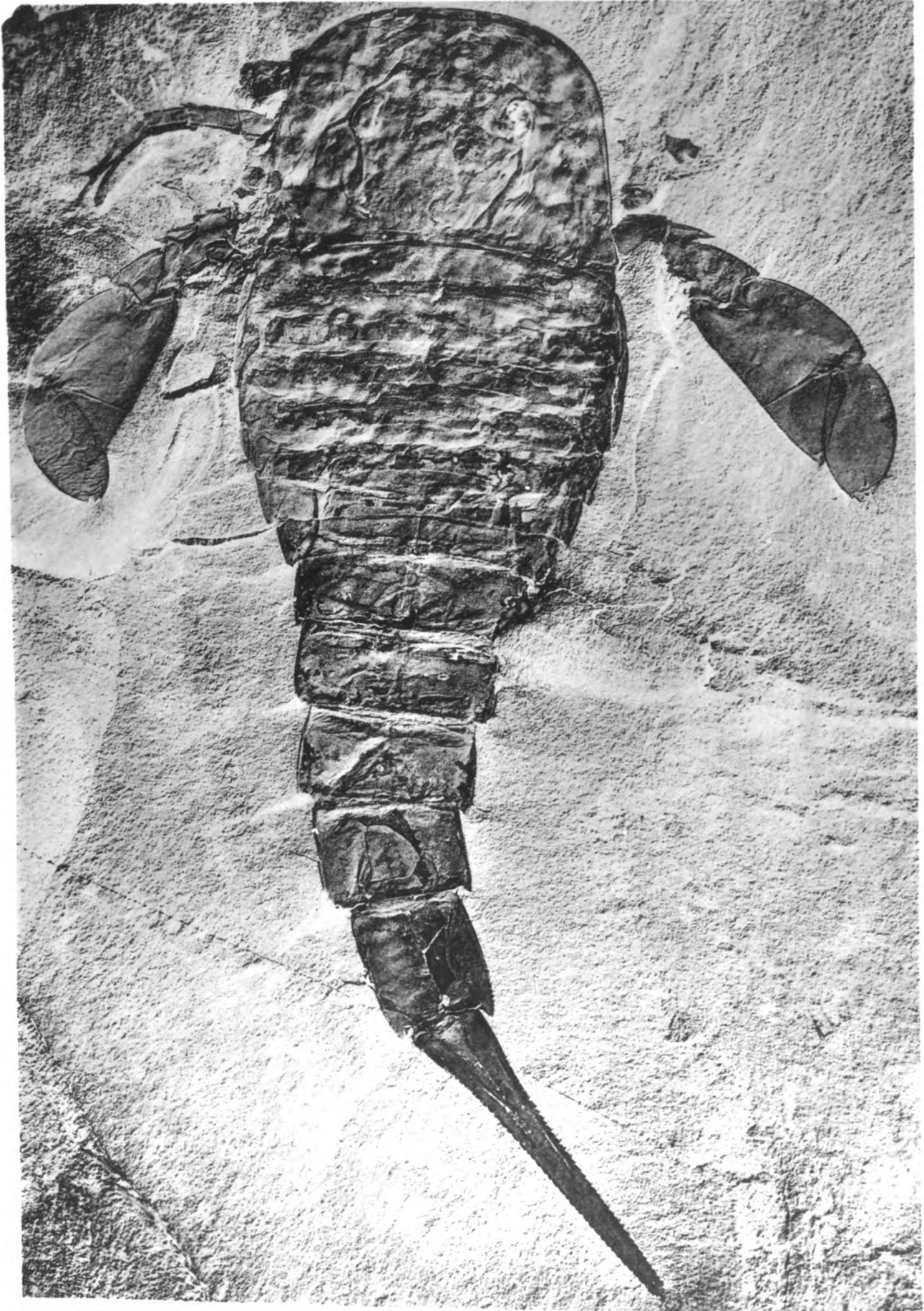
See plates 10-13

- 1 Specimen retaining approximately natural proportions. Interior view of dorsal side except the telson which is seen from the ventral side. Postabdomen stretched and showing connecting membranes  
*Horizon and locality.* Bertie waterlime. Williamsville, Erie co., N. Y.  
Photograph. Original in the museum of the Buffalo Society of Natural Sciences

# EURYPTERIDA

Memoir 14. N.Y. State Museum.

Plate 9.



J.A. Glenn phot

J.B. Lyon Co. State Printer



PLATE 10

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## **Eurypterus lacustris** Harlan

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See plates 9, 11-13

- 1 Ventral view of a female, showing well the ventral marginal shield of the cephalothorax, the three pairs of walking legs in their natural position, the balancing legs and swimming legs. The metastoma shows the cleft of the anterior margin indicating its origin from fusion of two plates. The first and second sternites are pushed together and the genital appendages broken off. The other sternites show the transverse middle line of scales and the median longitudinal suture. The last postabdominal segment exhibits the two longitudinal rows of scales of the dorsal side. Natural size

*Horizon and locality.* Bertie waterlime. Buffalo Cement Company's quarry, Buffalo

Photograph. Original in the State Museum



# EURYPTERIDA

Memoir 14. N.Y. State Museum.

Plate 10.



H C Wardell phot.

J B Lyon Co State Printer



PLATE II

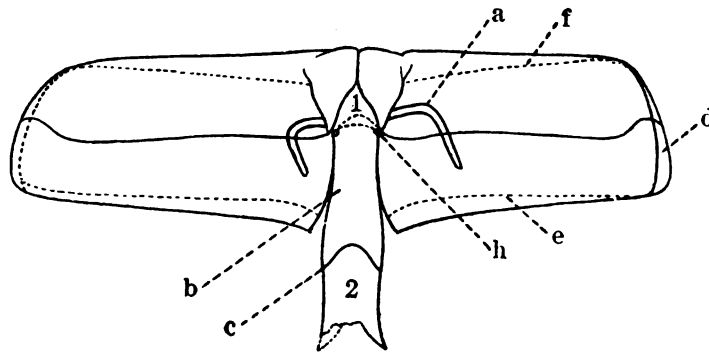
461

## Eurypterus lacustris Harlan

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See plates 9, 10, 12, 13

- 1 Young individual. Original of Hall's figure [Palaeontology of N. Y., v. 3, pl. 81, fig. 1] x 2. Shows well the outline of the carapace and the relatively large size of the compound eyes in the young. The preabdominal segments are shoved together, and the preabdomen appears therefore too short and wide and too abruptly contracted. The apparent posterior edges are partly fracture lines. The outline drawing of the specimen, inserted in the text, shows this condition more distinctly.
- 2 Ventral side of a specimen, showing the five sternites with their median sutures. The first four retain a certain amount of uniform convexity, the fourth is pushed inward and much arched, the fifth flattened and shows the relatively great length of these segments. The genital appendages of the first (opercular) and second sternites are broken out, leaving a cleft. Natural size
- 3 Operculum, original of Hall's figure, *op. cit.* pl. 81, fig. 8 [see diagram, text fig. 122]. The pentagonal pieces in front of the opercular appendage are seen. The principal median appendage is broken at *b*, its original extension indicated by an impressed line at *c*. The paired tubular



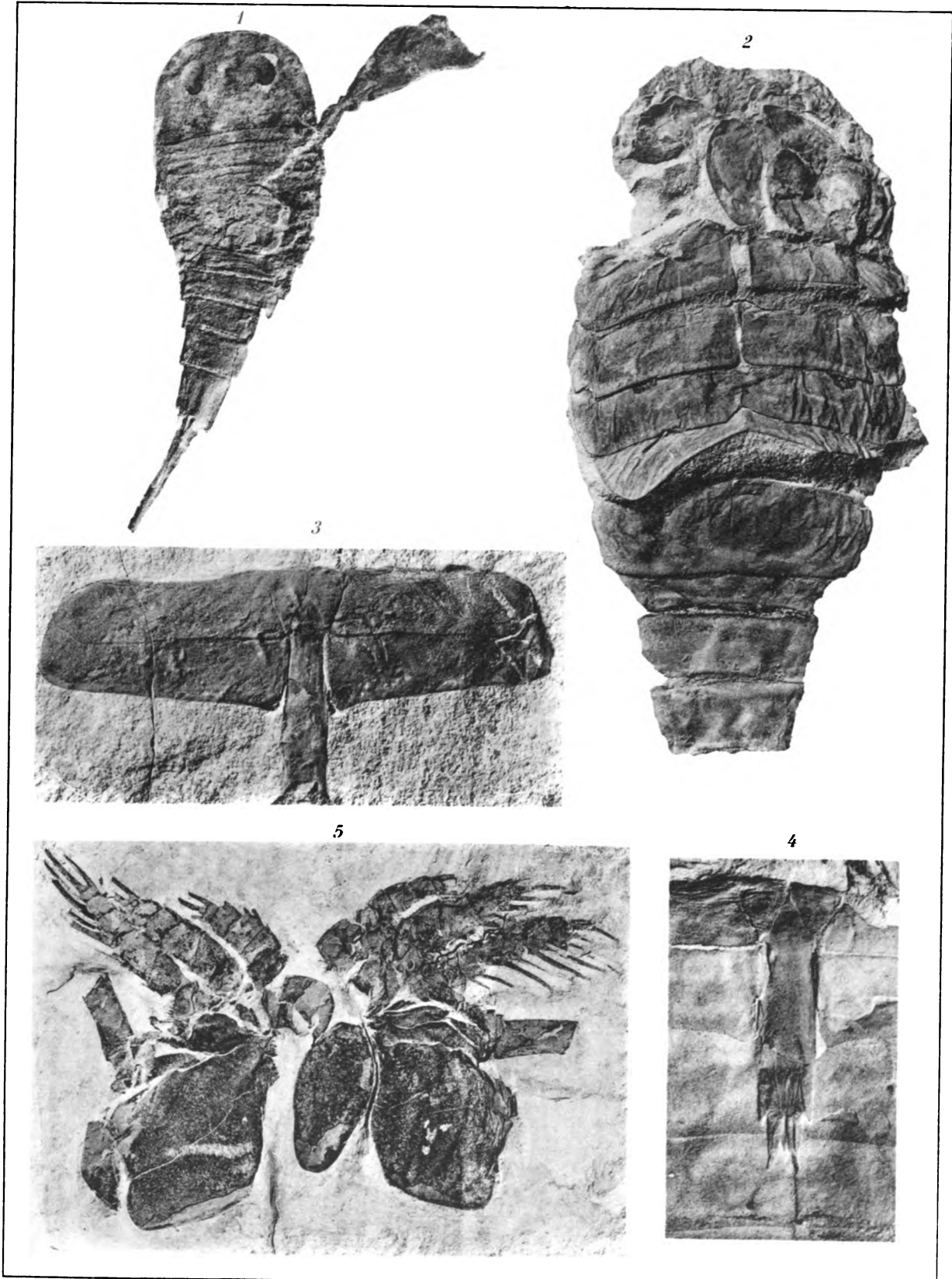
Text fig. 122 Diagram to pl. 11, fig. 3

appendages are recognized in outline at *a*, and the aperture seen at *h*. The posterior (*e*) and lateral (*d*) doublures, as well as fragments of the anterior connecting membrane, are also shown. Natural size

# EURYPYTERIDA

Memoir 14. N.Y. State Museum

Plate 11

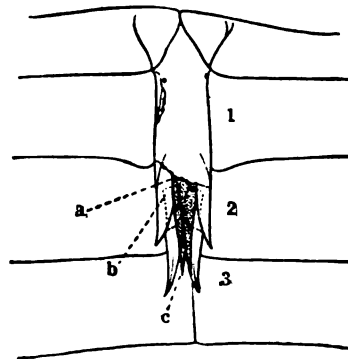


J.A. Glenn phot.

J.B. Lyon Co State Printer



- 4 Interior view of female opercular appendage. Original of Hall's figure, pl. 81, fig. 6 [see diagram, text fig. 123]. The outlines of the paired terminal appendages of the operculum (3 in diagram) and of the paired appendages of the second sternite (shaded in diagram, marked *c*) are seen; *a*, line along which the principal median appendage is broken, *b*, lateral flanges. x 2



- 5 Appendages of a cephalothorax, showing their proportions. The chelicerae are not preserved. The walking legs are seen from the underside and exhibit the bases of the smaller spines. The balancing legs are mostly broken away, and only the coxae preserved of the swimming legs. Natural size

Text fig. 123 Diagram to pl 11, fig. 4

All figures are from photographs. The originals are from the Bertie waterlime at Buffalo, Erie co, N. Y. Those of figures 1, 3 and 4 are in the American Museum of Natural History, that of figure 2 in the State Museum and of figure 5 in the Buffalo Society of Natural Sciences

PLATE 12

**Eurypterus lacustris** Harlan

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See plates 9-11, 13

- 1 Chelicera. x 3  
Anterior portion of a female opercular appendage, showing the two tubular lateral appendages, the test of the operculum being broken away. x 2

**Eurypterus lacustris** *var. pachychirus* Hall

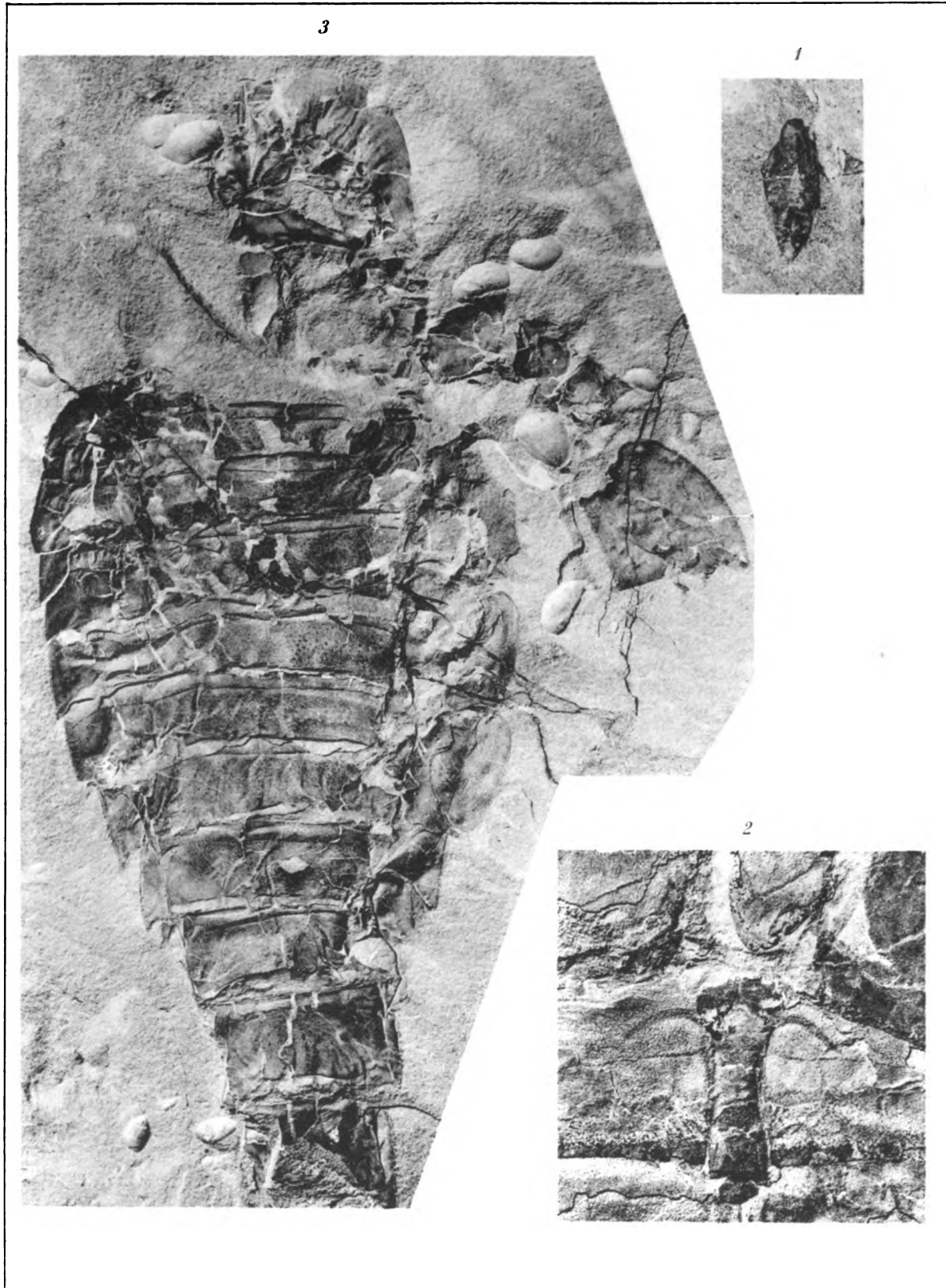
Page 179

See plate 19, figure 1

- 3 Hall's original in *Palaeontology of N. Y.*, v. 3, pl. 82, fig. 1. The abdomen is somewhat distended and the sculpturing well shown. The figures are from photographs. All specimens are from the Bertie waterlime at Buffalo, Erie co., N. Y. The originals of figures 1 and 2 are in the museum of the Buffalo Society of Natural Sciences, that of figure 3 in the State Museum



# EURYPTERIDA



J.A. Glenn phot

J.B. Lyon Co State Printer



PLATE 13

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**Eurypterus** sp.

- 1 Gill attached to sternite of an undetermined eurypterid, possibly *E. maria*. Shows fine anastomosing lines of the gill. x 3  
*Horizon and locality.* Shawangunk grit. Otisville, N. Y.

**Strabops thacheri** Beecher

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See plates 1, 4

- 2 Drawing of counterpart of holotype from guttapercha squeeze. Natural size  
*Horizon and locality.* Potosi (Cambric) limestone. St François co., Mo.

**Eurypterus lacustris** Harlan

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See plates 9-12

- 3 Adolescent specimen, showing well the general proportion of the parts in approximately original position. Natural size  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

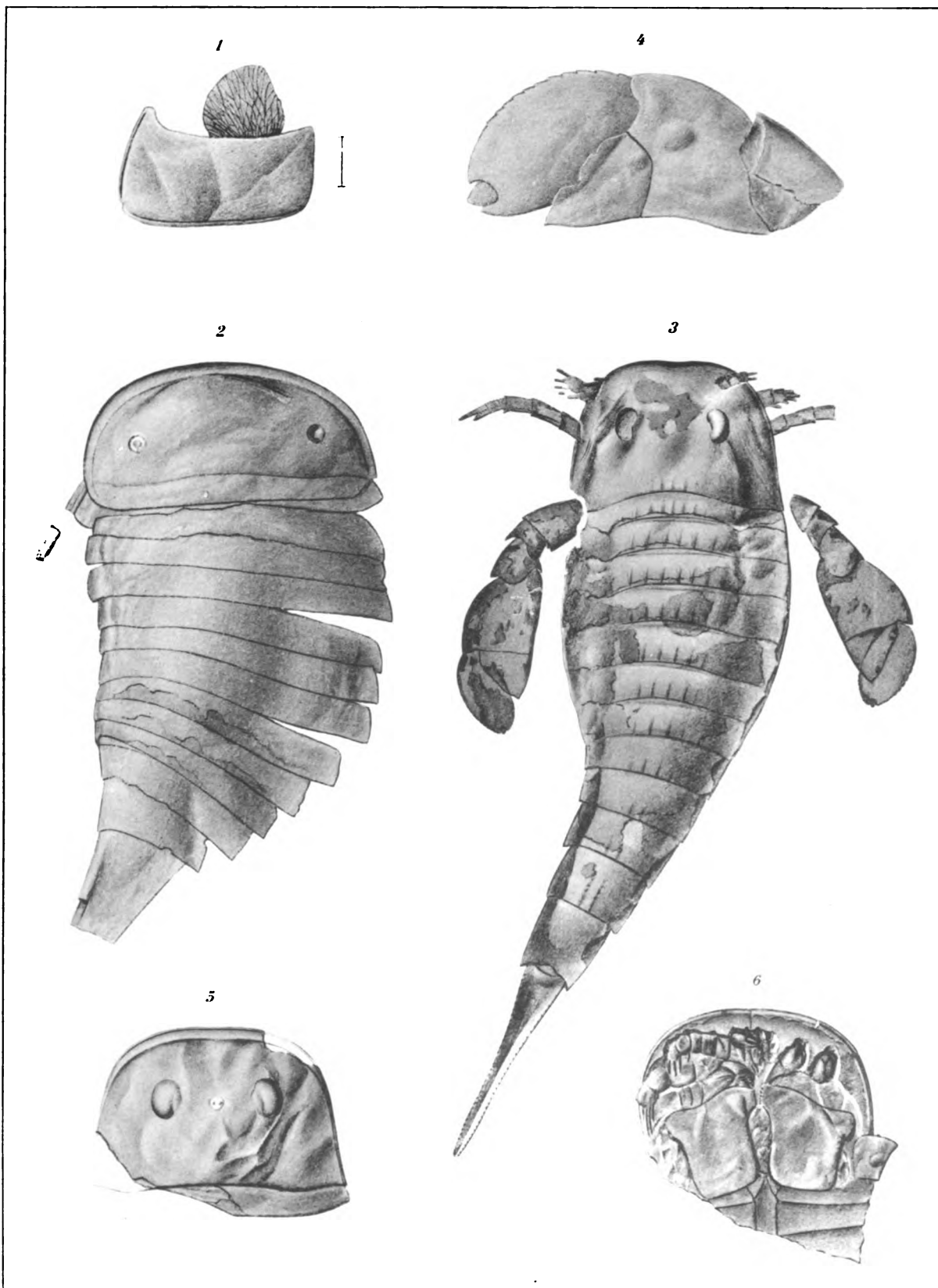
**Eurypterus pittsfordensis** Sarle

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See plates 14-18

- 4 Seventh and eighth segments of swimming leg, showing the formation of the slightly expanded blade, the subtriangular inner appendage ("guard") of the seventh, the incised margin of the eighth segment (palette) and the minute claw inserted in the same. x 2½. One of Sarle's cotypes
- 5 Carapace of young (adolescent) individual showing the broad frontal shelving edge, the position of the lateral and median eyes and the posterior edge. Natural size
- 6 Upper view of appendages of cephalothorax. Shows one chelicera on left frontal side, two walking legs and the coxae of the swimming legs. One of Sarle's types [*op. cit.* pl. 10, fig. 7]; original drawing slightly corrected. Natural size  
*Horizon and locality.* Pittsford shale. Pittsford, Monroe co., N. Y. The original of figure 2 is in Columbia University, the others are in the State Museum

# EURYPTERIDA



G. S. Barkentin del.

J. B. Lyon Co. Stone Engraver



PLATE 14

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**Eurypterus pittsfordensis** Sarle

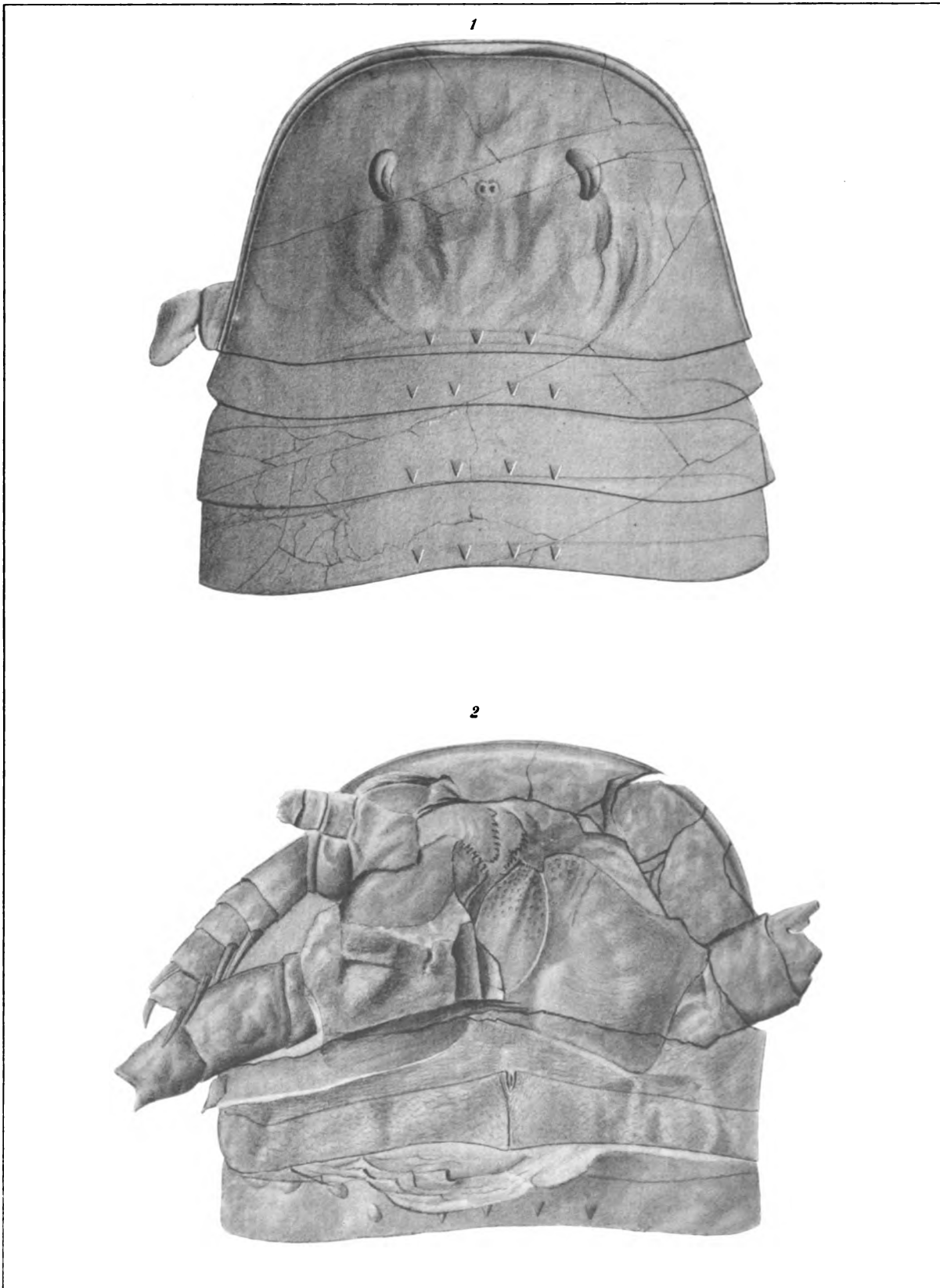
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See plates 13, 15-18

- 1 Carapace with three tergites; the largest observed. Natural size
  - 2 Broken cephalothorax and portion of preabdomen, showing two walking legs with their coxal joint in position. The metastoma is partly seen, and a view from the interior of the operculum and male appendage. One of Sarle's originals. Natural size
- Horizon and locality.* Pittsford shale. Pittsford, Monroe co., N. Y.  
Originals in the State Museum



# EURYPTERIDA



G. S. Barzantini del.

J. B. Ford sculp. & color.



PLATE 15

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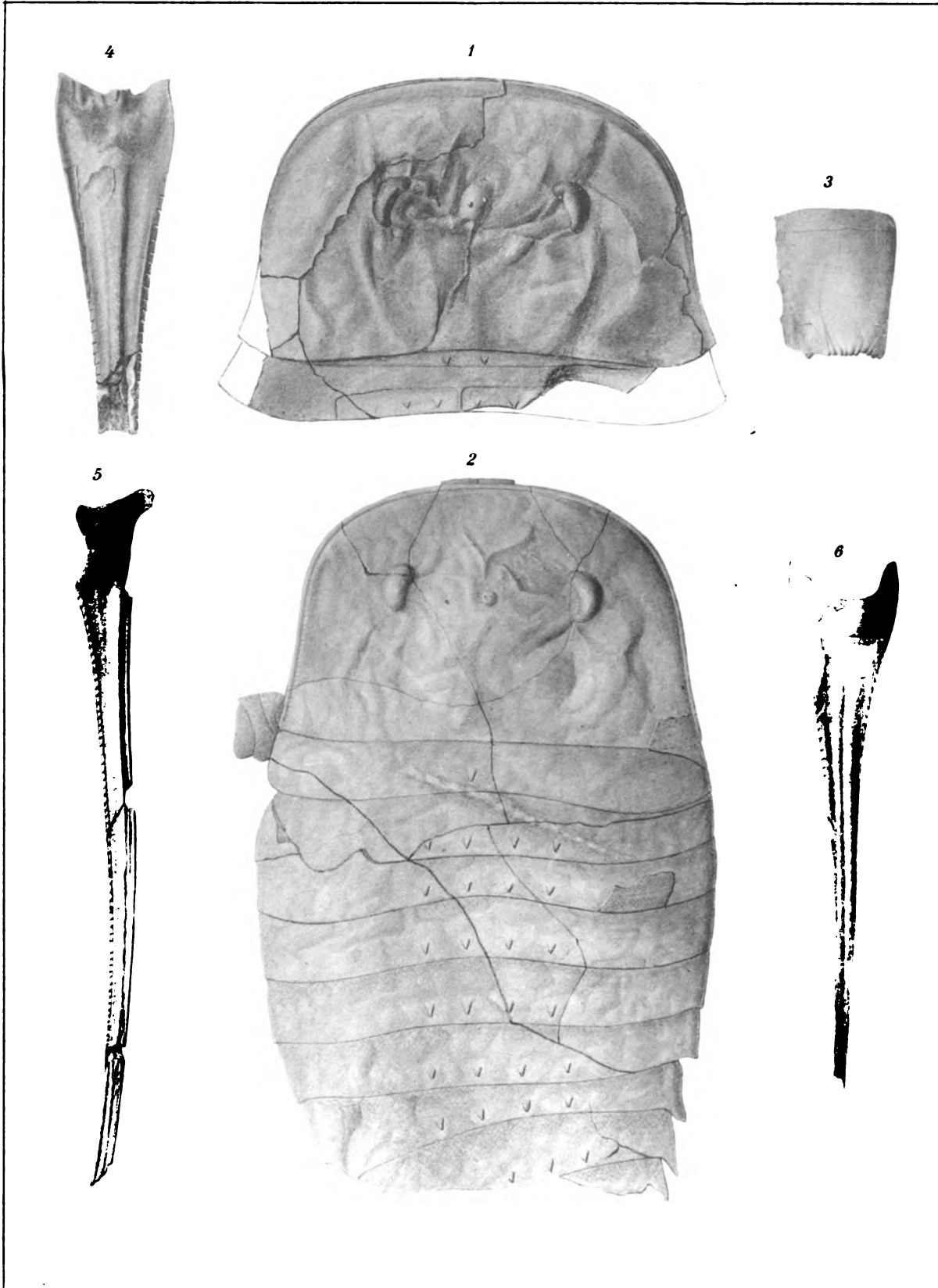
### **Eurypterus pittsfordensis Sarle**

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See plates 13, 14, 16-18

- 1 Relatively broad carapace and first tergite, showing the triangular scales at the base. Natural size
  - 2 Carapace, preabdomen and two postabdominal segments, showing eyes, ocellar mound, surface sculpture of tergites, and the postlateral lobes of the postabdominal segments. Natural size
  - 3 Dorsal view of last postabdominal segment, showing posterior emargination. Natural size
  - 4 Ventral view of proximal portion of telson, showing hinge and carina. The apparent incisions of the margin are due to cracking of the thickened edge. Natural size
  - 5 Ventral view of an obliquely crushed telson. Natural size
  - 6 Dorsal view of nearly complete telson. Natural size
- Originals (Sarle's cotypes) are from the Pittsford shale, Pittsford, Monroe co., N. Y., and in the State Museum

# EURYPTERIDA



G S Barkentin del

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PLATE 16

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**Eurpyterus pittsfordensis Sarle**

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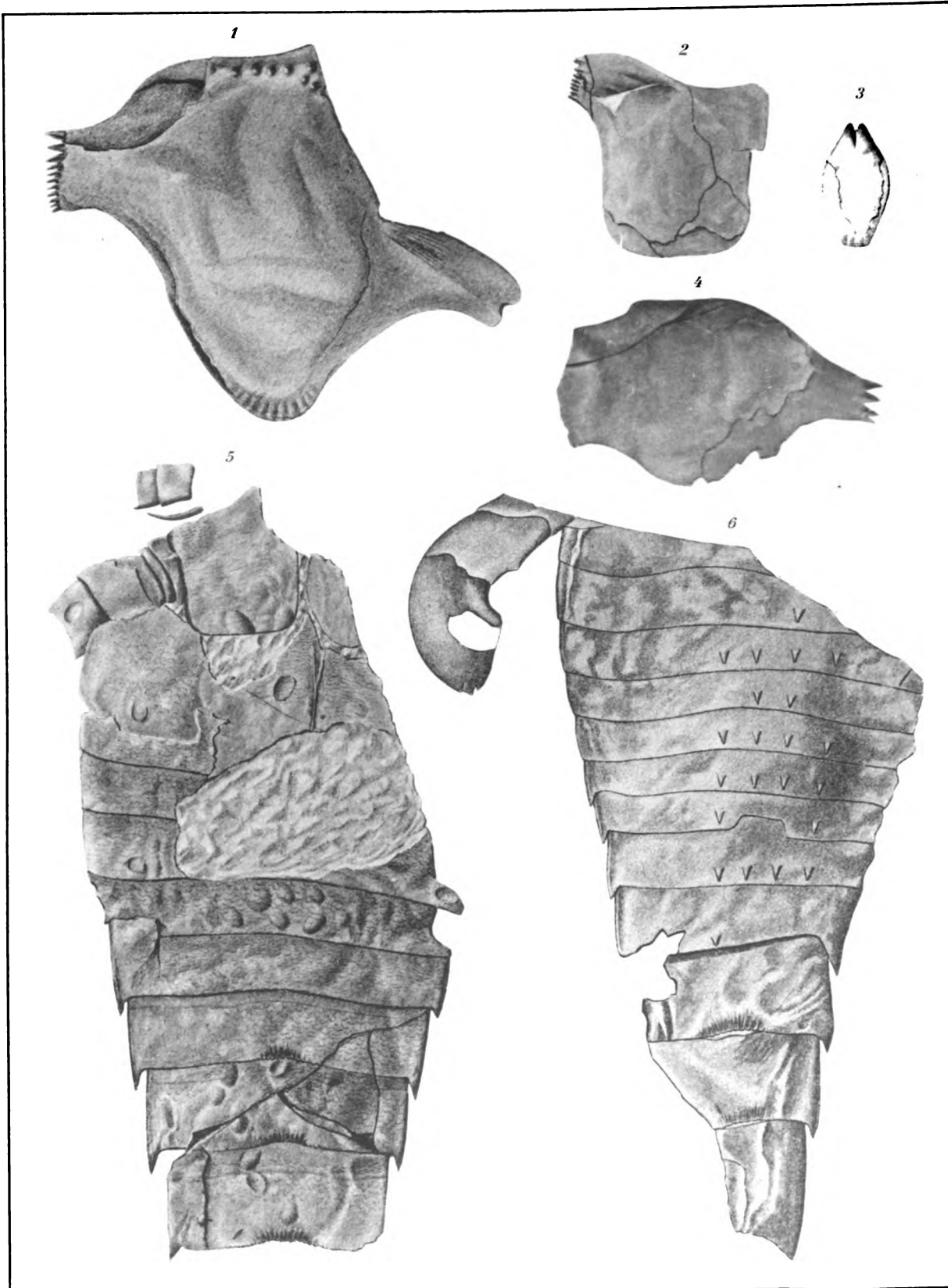
See plates 13-15, 17, 18

- 1 Coxa of left third walking leg. Natural size
- 2 Coxa of left swimming leg. Natural size
- 3 Metastoma showing notch and minute dentation of anterior end. Natural size
- 4 Coxa of right balancing leg (fourth endognathite). Natural size
- 5 Fragmentary ventral side of abdomen, showing five segments, including coxa, of swimming leg; the five sternites and four postabdominal segments with their fringed posterior emargination. Impressions of Leperditiae cover the surface. Natural size
- 6 Fragmentary abdomen. Shows character of tergites, notably their relative shortness and the four triangular scales on each preabdominal and on the first two postabdominal ring segments, while the succeeding two show their ventral characters. The swimming leg is also partially shown. Natural size

Originals (Sarle's cotypes) are from the Pittsford shale, Pittsford, Monroe co., N. Y., and in the State Museum



# EURYPTERIDA



G S Barkentin del

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PLATE 17

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**Eurypterus pittsfordensis** Sarle

Page 106

See plates 13-16, 18

- 1 Large sternite, showing transverse suture and antelateral "ears."  
Natural size
- 2 Female second sternite, showing genital appendages. Natural size
- 3 Half of sternite showing transverse suture and cleft. Natural size
- 4 Male opercular appendage. Operculum shows median cleft and transverse suture. Natural size
- 5 Fragment of sternite, showing median cleft, transverse suture and lobe of antelateral angles. Natural size
- 6 View of two postabdominal segments and telson in approximate positions.  
Natural size

*Horizon and locality.* Pittsford shale. Pittsford, N. Y.

**Eurypterus ranilarva** nov.

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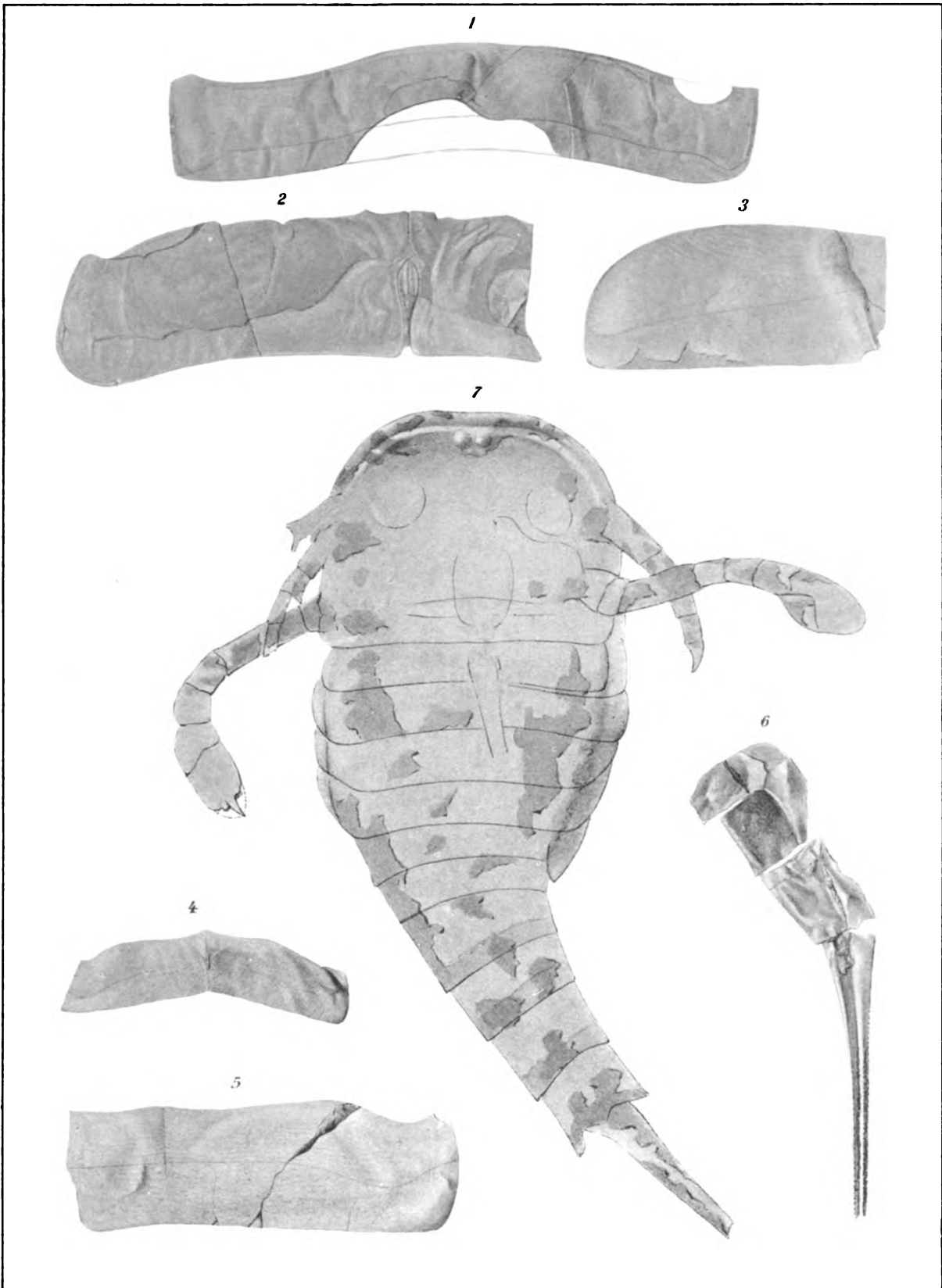
See plate 18

- 7 Ventral view of average specimen. Holotype. Natural size  
*Horizon and locality.* Kokomo waterlime. Kokomo, Ind.  
Originals of figures 1-6 are in the State Museum, that of figure 7 is in the collection of Chicago University (no. 12905)

# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 17



G S Barkentin del

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PLATE 18

475

**Eurypterus ranilarva** nov.

Page 208

See plate 17

- 1 Ventral view of average specimen (paratype). Shows outline of carapace, walking legs, coxae and other segments of swimming legs and the sternites. Natural size
- 2 Dorsal view of a specimen retaining a swimming leg (paratype). Natural size

*Horizon and locality.* Kokomo waterlime. Kokomo, Ind.

**Eurypterus pittsfordensis** Sarle

Page 106

See plates 13-17

- 3 Portion of endognathite, probably the fourth, doubtfully referred to this species. Natural size
- 4 First endognathite or walking leg probably belonging to this species. Natural size
- 5 Female opercular appendage. Natural size
- 6 Dorsal view of last postabdominal segment, showing the postlateral striated lobes and the median denticulate notch of the posterior edge. Natural size
- 7 Section through postabdomen of a very large individual. Natural size
- 8 Cross section of postabdomen, showing the triangular scales on the tergite. Natural size

*Horizon and locality.* Pittsford shale. Pittsford, N. Y.

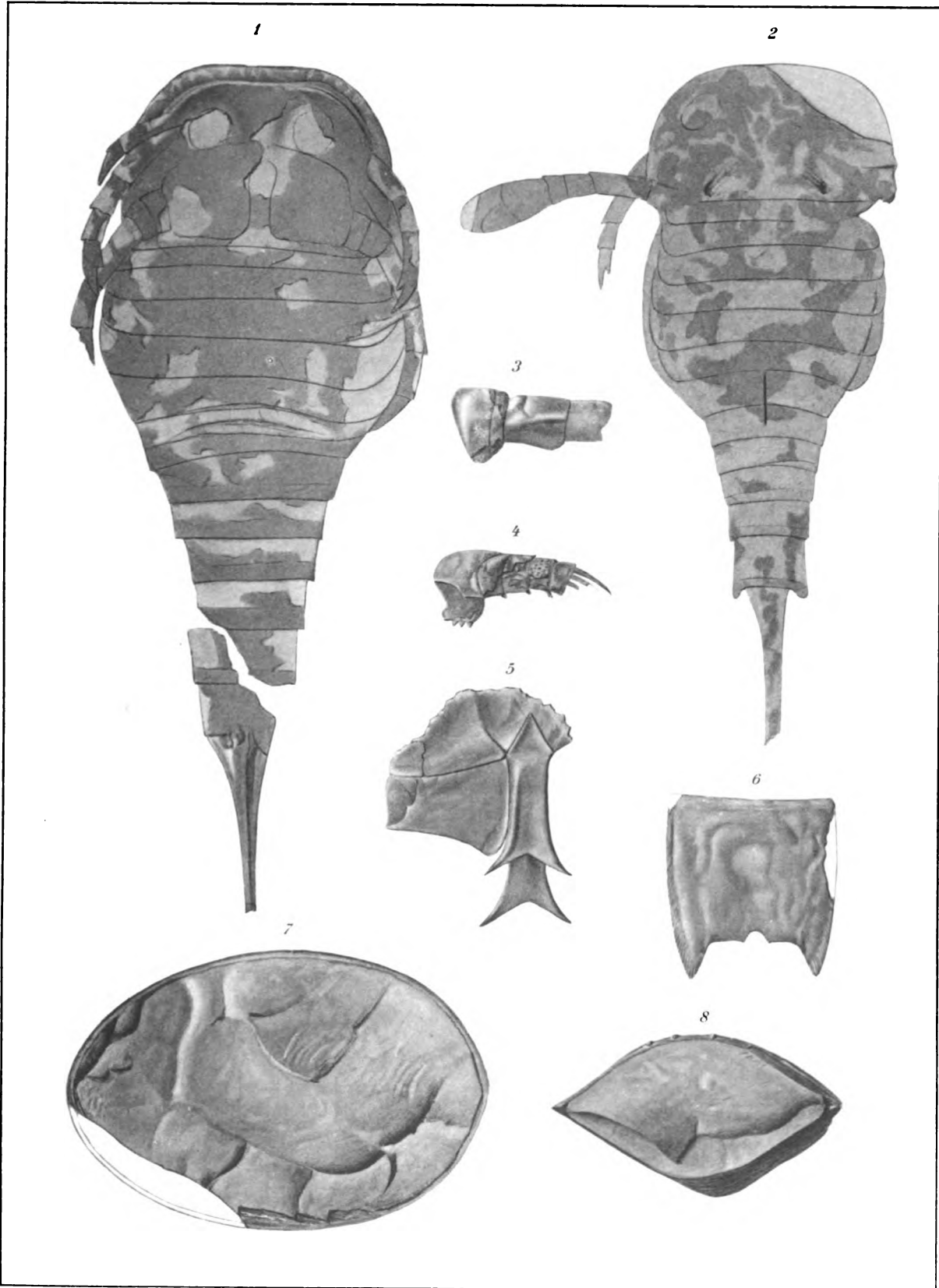
Originals (Sarle's cotypes) of figures 1 and 2 in the museum of Chicago University (nos. 12907 and 12906); those of figures 3-8 in the State Museum



# EURYPTERIDA

Memoir 14. N.Y. State Museum.

Plate 18.



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PLATE 19

477

**Eurypterus lacustris** Harlan *var.* **pachychirus** Hall

Page 179

See plate 12

- 1 A right swimming leg; original of Hall's type [Palaeontology of N. Y. v. 3, pl. 82, fig. 3], showing the great width of the seventh joint. Natural size

**Eurypterus dekayi** Hall

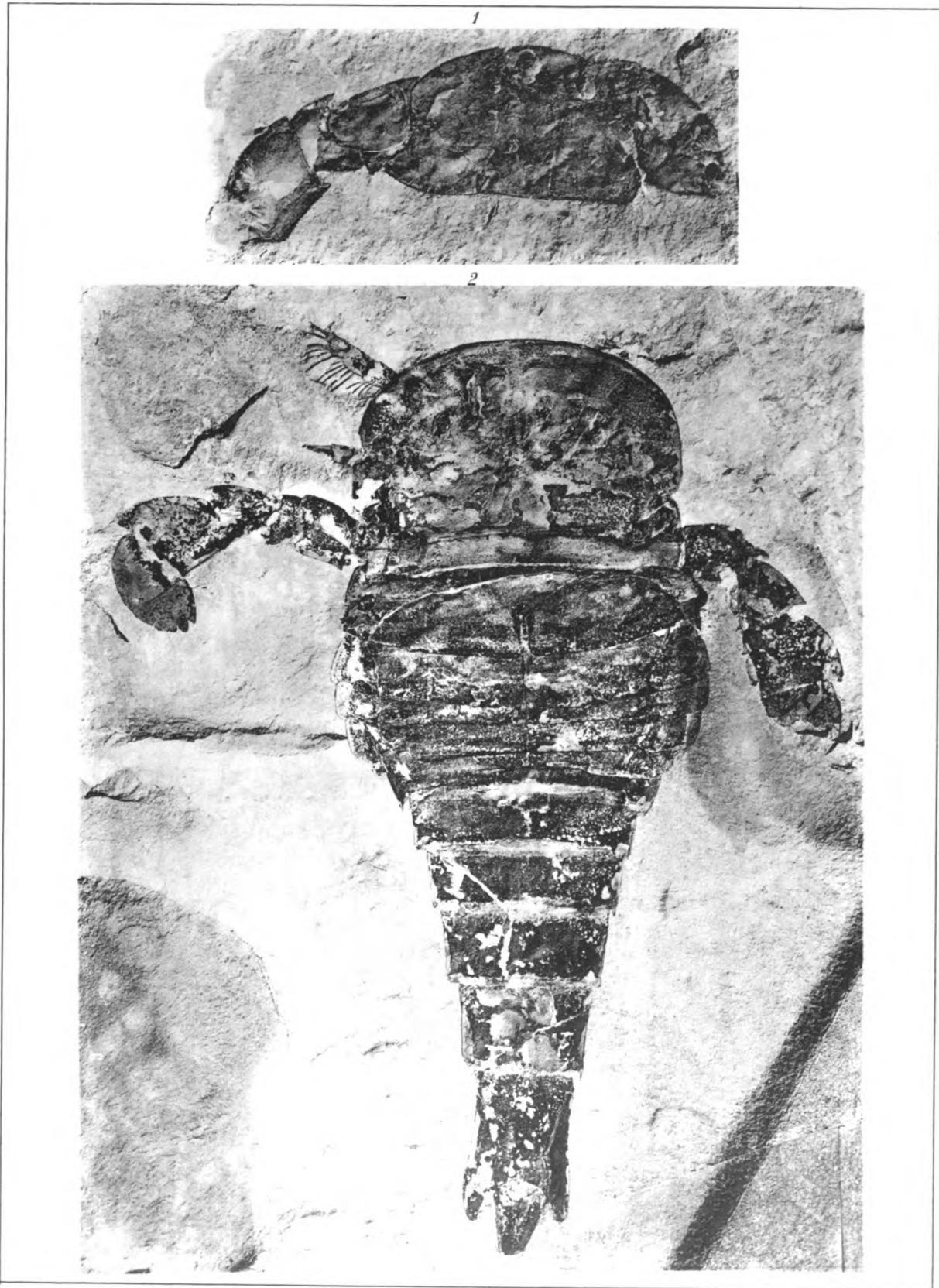
Page 181

See plate 20, figure 1

- 2 Nearly entire specimen, exposing the ventral view of the abdomen and the interior view of the carapace. The posterior portion of the pre-abdomen is contracted. The specimen shows the broad carapace, the great number of long spines on each segment of the walking leg, the form of the swimming leg and the long postlateral lobes of the last segment. Natural size

The figures are from photographs. Originals are from the Bertie water-lime, Buffalo, N. Y.; that of figure 1 is in the State Museum, of figure 2 in the museum of the Buffalo Society of Natural Sciences

# EURYPTERIDA



J.A. Glenn phot.

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PLATE 20

479

### **Eurypterus dekayi Hall**

Page 181

See plate 19

- 1 Hall's type [Palaeontology of N. Y., v. 3, pl. 82, fig. 1]. Interior view of the ventral side of the cephalothorax and of the preabdomen, and ventral view of postabdomen and telson. Natural size  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

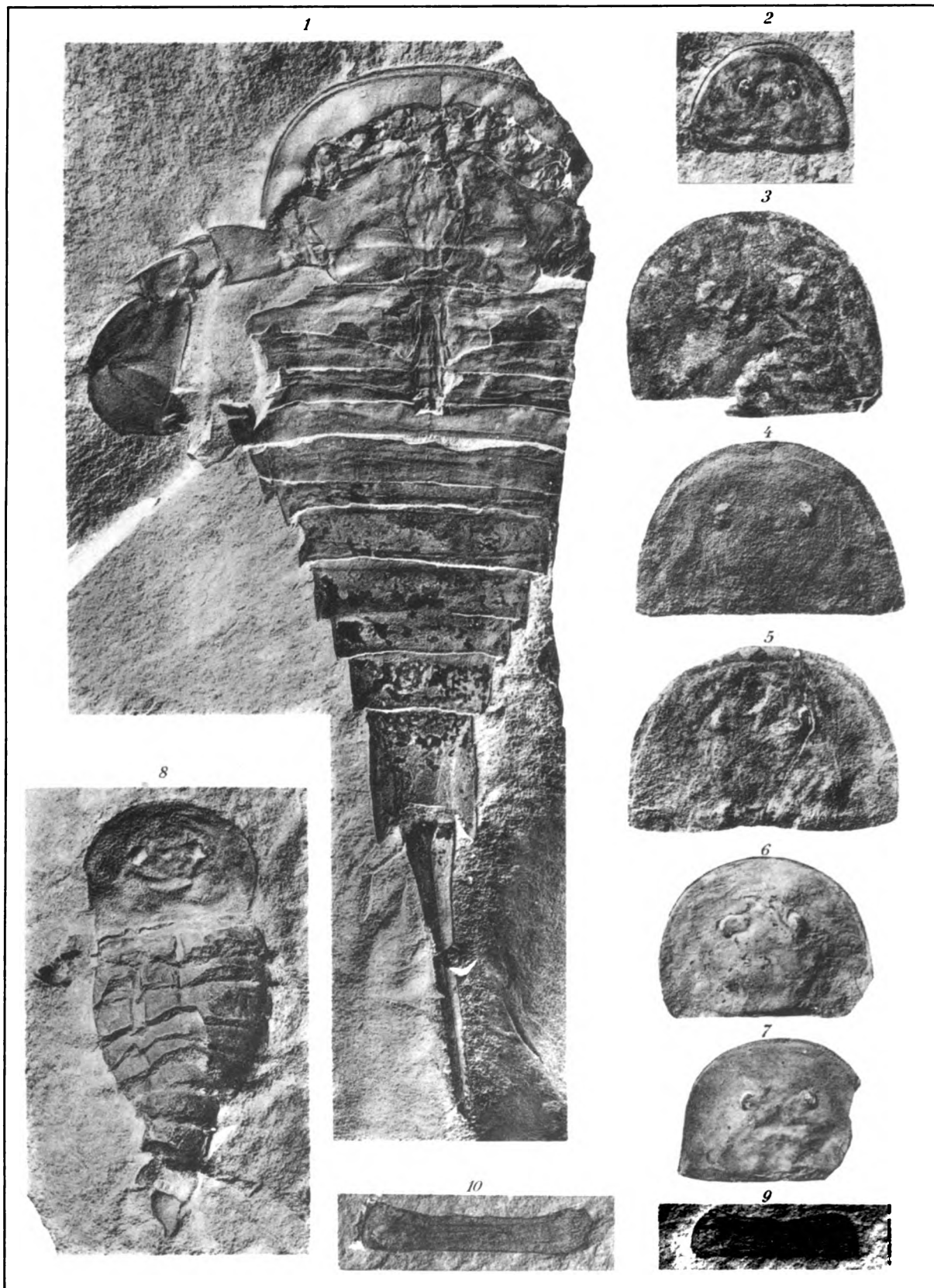
### **Eurypterus microphthalmus Hall**

Page 192

- 2 Carapace, relatively little compressed and showing the lateral eyes and ocellar tumescence. Natural size  
*Horizon and locality.* Manlius limestone. Litchfield, Herkimer co., N. Y.
  - 3 Type specimen. x 2. [Palaeontology of N. Y., v. 3, pl. 80A, fig. 7]  
*Horizon and locality.* Manlius limestone boulder in drift at Cazenovia, N. Y.
  - 4 Large carapace showing broad frontal rim and small lateral eyes. Natural size
  - 5 Large carapace showing somewhat different outline. Natural size  
*Horizon and locality.* Manlius limestone. Cranes Corners, N. Y.
  - 6, 7 Types of *E. eriensis* Whitfield. Natural size  
*Horizon and locality.* Hydraulic (Monroe) limestone of Beach point, Put-in-Bay island, Lake Erie, O.
  - 8 Only specimen with abdomen observed. Shows inner view of carapace and ventral view of preabdomen and of three postabdominal segments. Natural size  
*Horizon and locality.* Manlius limestone boulder in drift of Onondaga Valley near Syracuse, N. Y.
  - 9 First and second tergites. Natural size
  - 10 Posterior tergite. Natural size  
*Horizon and locality.* Manlius limestone. Cranes Corners, Herkimer co., N. Y.
- All figures are from photographs. Originals of figures 1, 2, 4, 5, 8-10 are in the State Museum, that of figure 3 is in the American Museum of Natural History and those of figures 6 and 7 in Columbia University



# EURYPYTERIDA



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PLATE 21

481

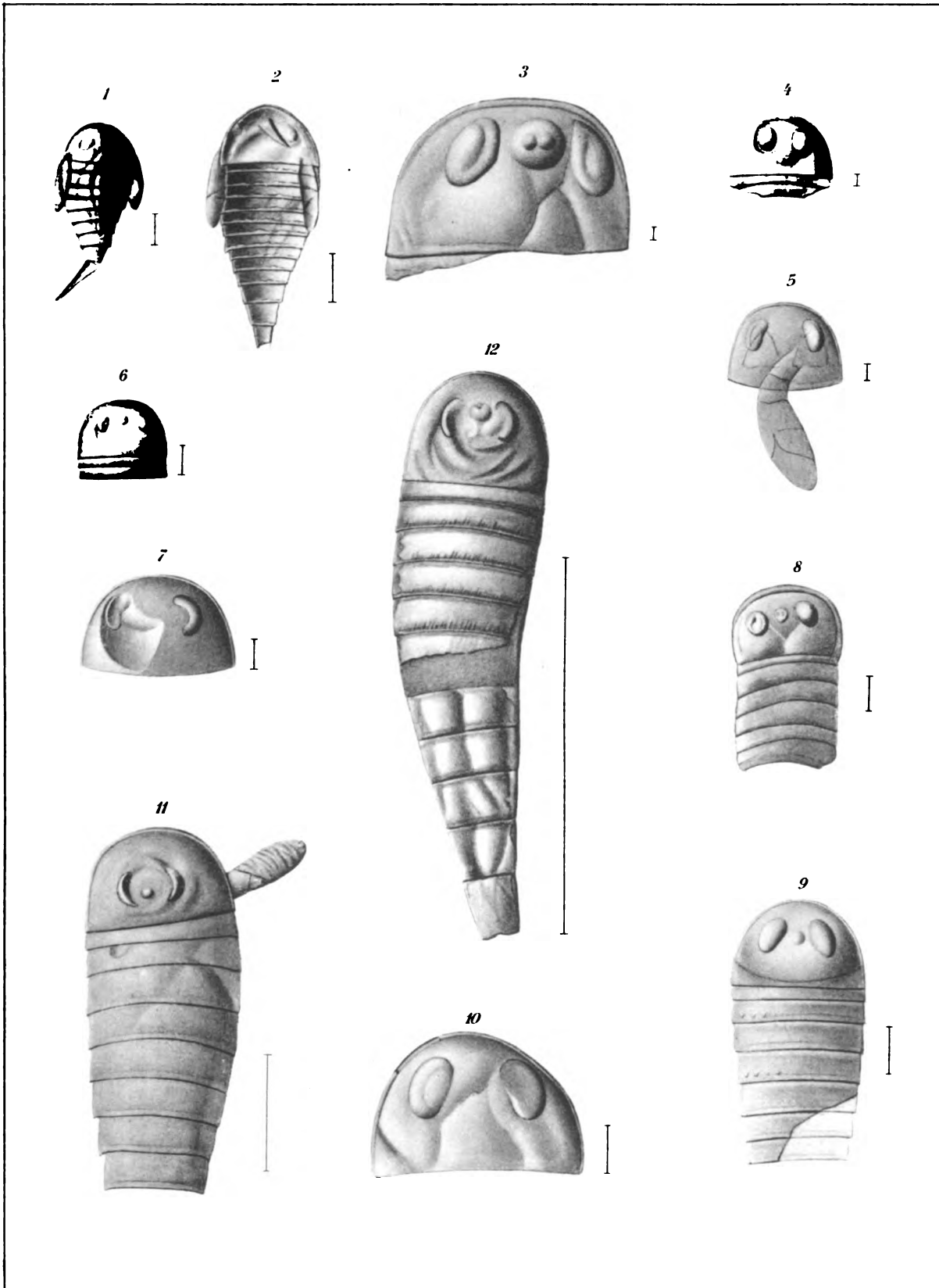
## **Eurypterus maria** Clarke

Page 84

See plate 22

- 1 Smallest specimen observed. Shows broad short carapace; broad pre-abdomen; large eyes; swimming legs; abdomen with apparently but eight segments and short telson. Paratype. x 6. (length 5.5mm)
- 2 Somewhat older individual, having 12 segments, but still retaining the broad carapace and preabdomen. Paratype. x 5. (length 8mm)
- 3 Carapace of young individual, showing the great width of carapace, the large lateral eyes with ocular node and visual area and prominent ocellar tumescence. x 18. (length 1.8mm)
- 4 Carapace and first tergite of somewhat older individual, still showing large prominent lateral eyes. x 6
- 5 Young carapace with a swimming leg. Eyes show ocular node and visual area. x 12
- 6 A larger carapace with smaller eyes, retaining both the ocular node and visual area. x 3
- 7 Another carapace, showing the crescentlike form of the visual area. Paratype. x 3
- 8 Very young individual, retaining carapace and preabdomen; with slight lateral compression. Shows rim and very prominent lateral eyes and ocellar mound or tumescence. x 5
- 9 Another young individual, retaining more nearly the original form and strong traces of ornamentation on tergites. Paratype. x 5½. (length 8mm)
- 10 An older carapace retaining the large sized lateral eyes of the immature condition. x 3. (length 7.9mm)
- 11 A young individual showing the carapace with the swimming leg and eight segments
- 12 The type specimen; a probably mature individual. Natural size  
All originals are from the Shawangunk grit, Otisville, Orange co., N. Y., and are in the State Museum

# EURYPTERIDA



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PLATE 22

483

### **Eurypterus maria Clarke**

Page 84

See plate 21

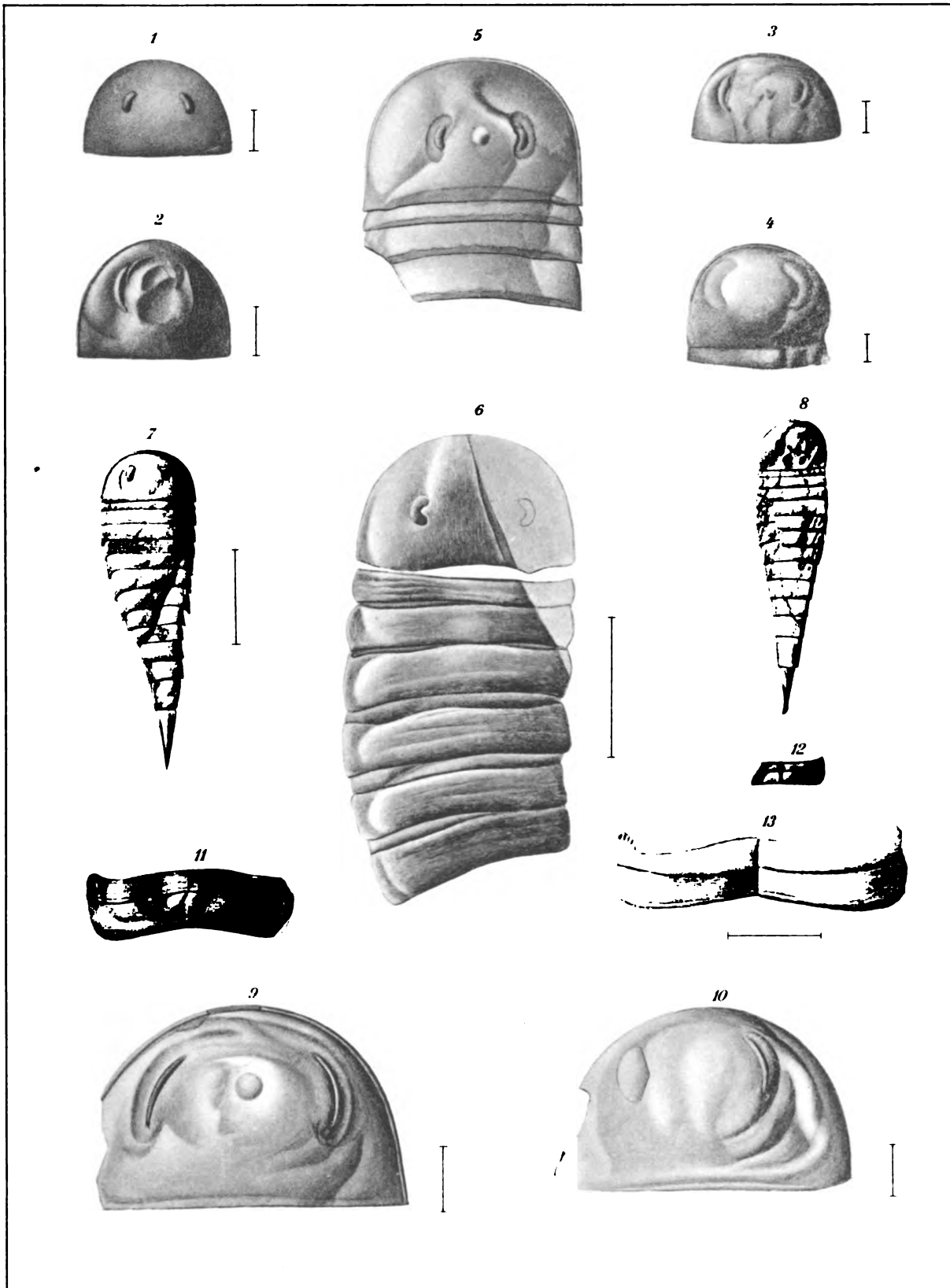
- 1-4 A series of carapaces showing notable variation in the position and size of the eyes, partly due to different direction of compression [*see* text fig. 37]. Paratypes. x 2
  - 5 A carapace and three tergites. The carapace shows fairly normal outline and position of eyes. The ocular nodes are preserved while the surrounding visual areas are broken out. This condition produces in fully compressed specimens the apparently very small size of the eyes, seen in figure 1. x 3
  - 6 Specimen showing the form of the six tergites. x 3
  - 7 A young entire specimen, still retaining a trace of the broader carapace and preabdomen. x 3
  - 8 An older individual, with mature characters. Natural size
  - 9, 10 Two abnormally compressed carapaces. Figure 9, x 3; figure 10, x 3½
  - 11, 12, 13 Sternites showing the median suture, the transverse line and the antelateral lobes. Figures 11, 12 natural size; figure 13, x 3
- All specimens are from the Shawangunk grit at Otisville, Orange co., N. Y., and are in the State Museum



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 22



E.W.C.L. et G.S.B. del.

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**PLATE 23**

485

**Eurypterus pustulosus Hall**

Page 201

See plate 24

- 1 Well preserved carapace and first tergite. Type of *E. giganteus* Pohlman. Natural size
  - 2 Fragment of a very large carapace. Interior view. Natural size  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.
- The figures are from photographs. The original of figure 1 is in the museum of the Buffalo Society of Natural Sciences; that of figure 2 in the National Museum
- .

# EURYPTERIDA



J A Glenn phot

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PLATE 24

487

### **Eurypterus pustulosus Hall**

Page 201

See plate 23

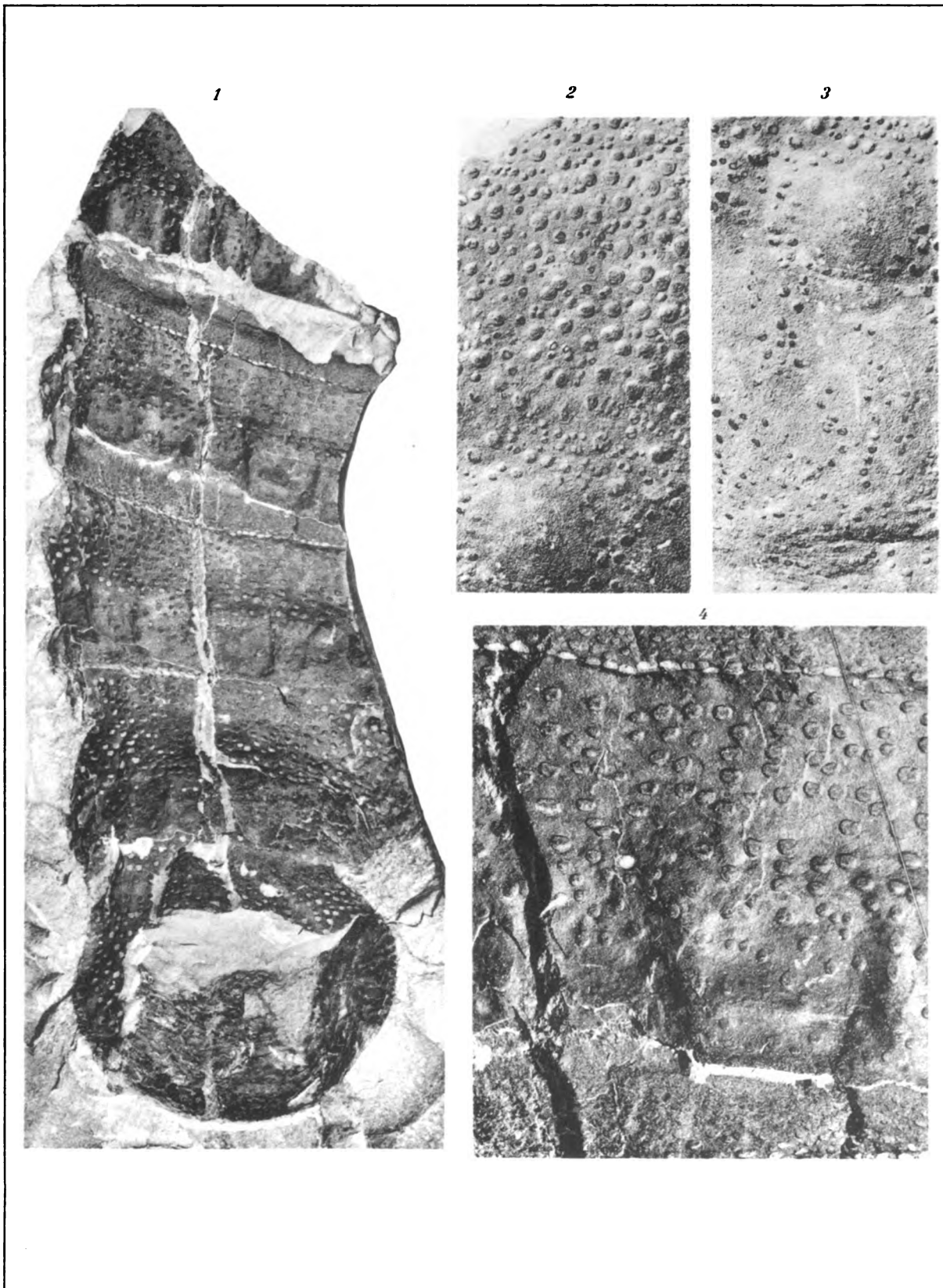
- 1 Interior view of postabdomen, lacking the last segment. Original of *Pterygotus globicaudatus* Pohlman. Natural size
- 2 Enlargement of anterior portion of a carapace, reproduced in plate 23, figure 1, showing character of ornamentation and margin. Ocellar mound with traces of ocelli in lower left corner. x 3
- 3 Enlargement of posterior portion of the same carapace, to show character of ornamentation. Ocellar mound in front. x 3
- 4 Enlargement of portion of specimen represented in figure 1 to show character of scales on tergite

*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

All figures are from photographs, of which the originals are in the museum of the Buffalo Society of Natural Sciences



# EURYPTERIDA



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PLATE 25

489

**Eurypterus (Onychopterus) kokomoensis Miller & Gurley**

Page 212

See plate 26

- 1 The type (holotype) redrawn. Ventral view of specimen, retaining in part the two pairs of walking legs, the balancing legs and swimming legs. The last joint of the swimming leg is developed into a spine. The operculum with the opercular appendage and the attachment areas of the gill plates on the sternites are seen. Natural size
- 2 A larger specimen showing faint outline of lateral eyes, and some of the legs

*Horizon and locality.* Kokomo waterlime. Kokomo, Ind.

**Stylonurus (Drepanopterus) longicaudatus nov.**

Page 316

See plates 54-56

- 3 Ventral view of a young individual (paratype) showing the outline of carapace and its broad rim, position of eyes, some of the legs and the styliform telson. Natural size

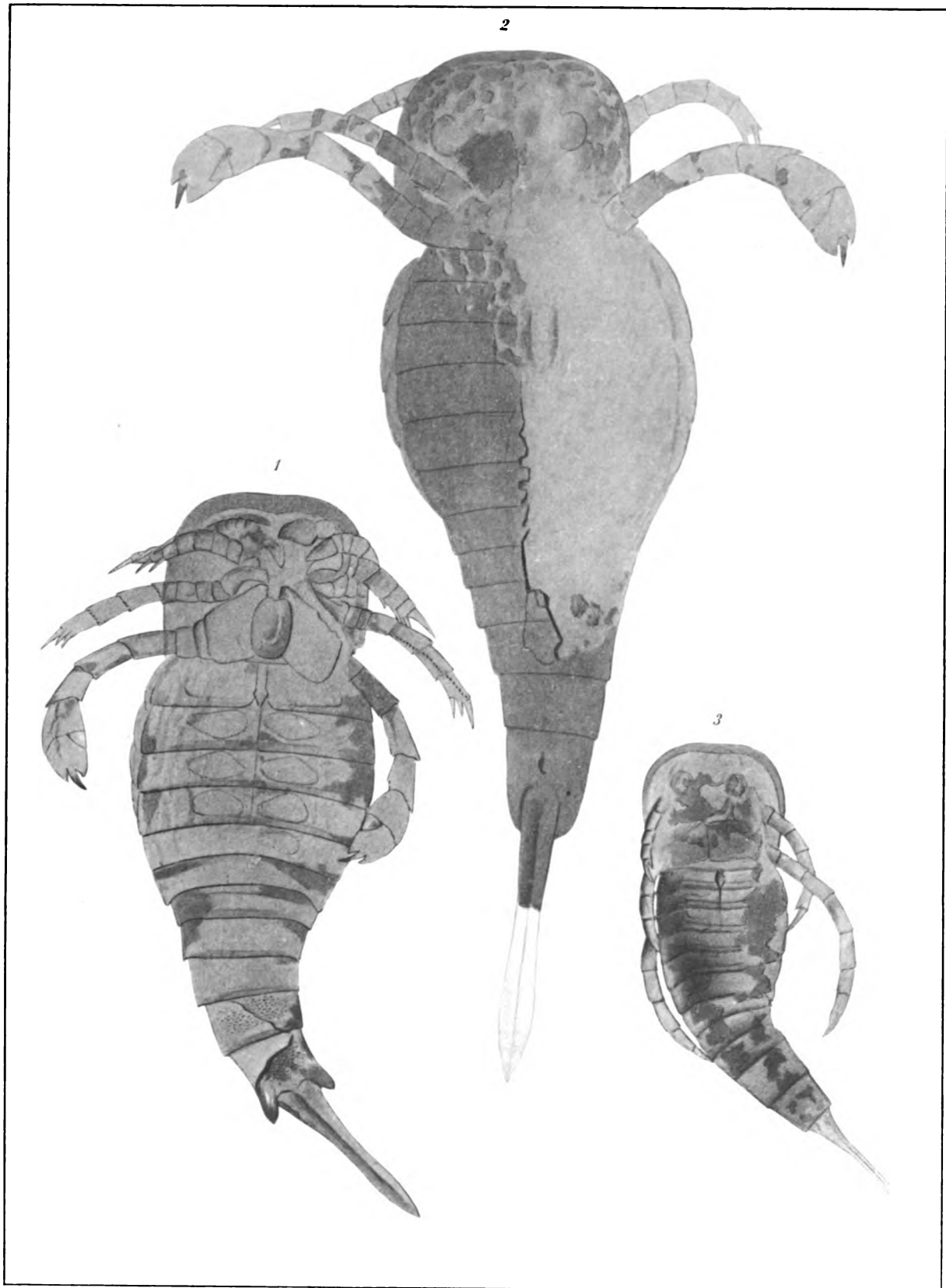
*Horizon and locality.* Kokomo waterlime. Kokomo, Ind.

The originals of figures 1 and 3 are in the museum of Chicago University, that of figure 2 in the State Museum

# EURYPTERIDA

Memoir 14 N.Y. State Museum.

Plate 25



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PLATE 26

491

**Eurypterus (Anthraconectes) mazonensis Meek & Worthen**

Page 223

- 1 Counterpart of type (holotype). Compare diagram text figure 51, p. 224. The specimen shows the general outline of the carapace, the form and position of the lateral eyes, portions of the legs and the impression of the dorsal side of the abdomen with the characteristic sculpture. Along the median line faint impressions of the opercular appendages are seen. The circular impressions apparently are muscle spots and probably paired. An outline sketch of this counterpart was given by Hall in 1884 [2d Geol. Surv. Pennsylvania, PPP, p. 25]. Natural size  
*Horizon and locality.* Lower Coal Measures. Mazon Creek, Grundy co., Ill.

**Eurypterus (Onychopterus) kokomoensis Miller & Gurley**

Page 212

See plate 25

- 2 Ventral view of a specimen, showing the gill plates, the female opercular appendage and the posterior doublures of the segments as dark bands. Natural size  
*Horizon and locality.* Kokomo waterlime. Kokomo, Ind.

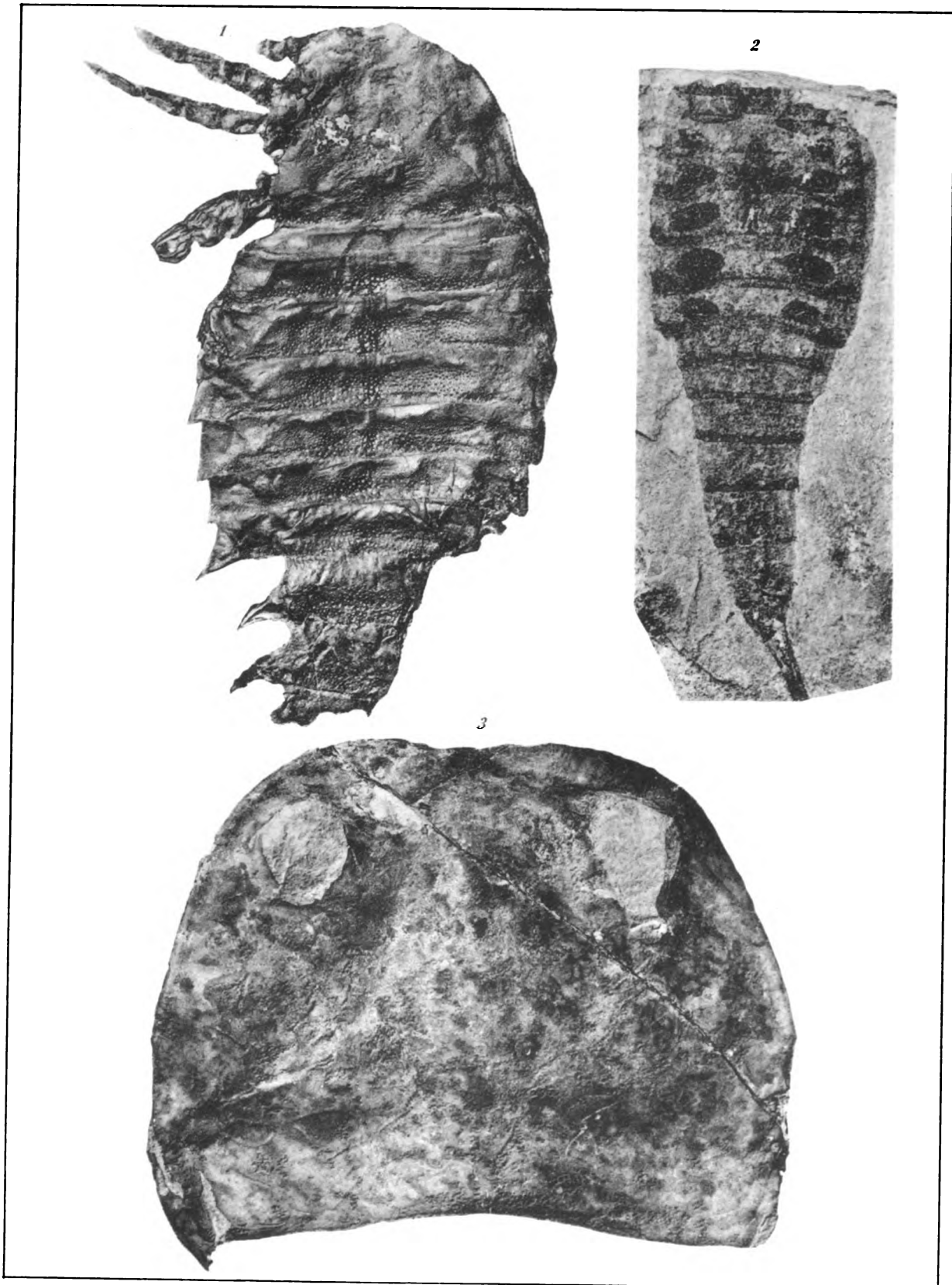
**Dolichopterus siluriceps nov.**

Page 273

- 3 Holotype. Natural size  
*Horizon and locality.* Bertie waterlime. Buffalo, Erie co., N. Y.  
All figures are from photographs. The original of figure 1 is in the American Museum of Natural History (no. 2528); that of figure 2 in the museum of Chicago University (no. 12909) and that of figure 3 in Columbia University



# EURYPTERIDA



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PLATE 27

493

**Eusarcus scorpionis** Grote & Pitt

Page 233

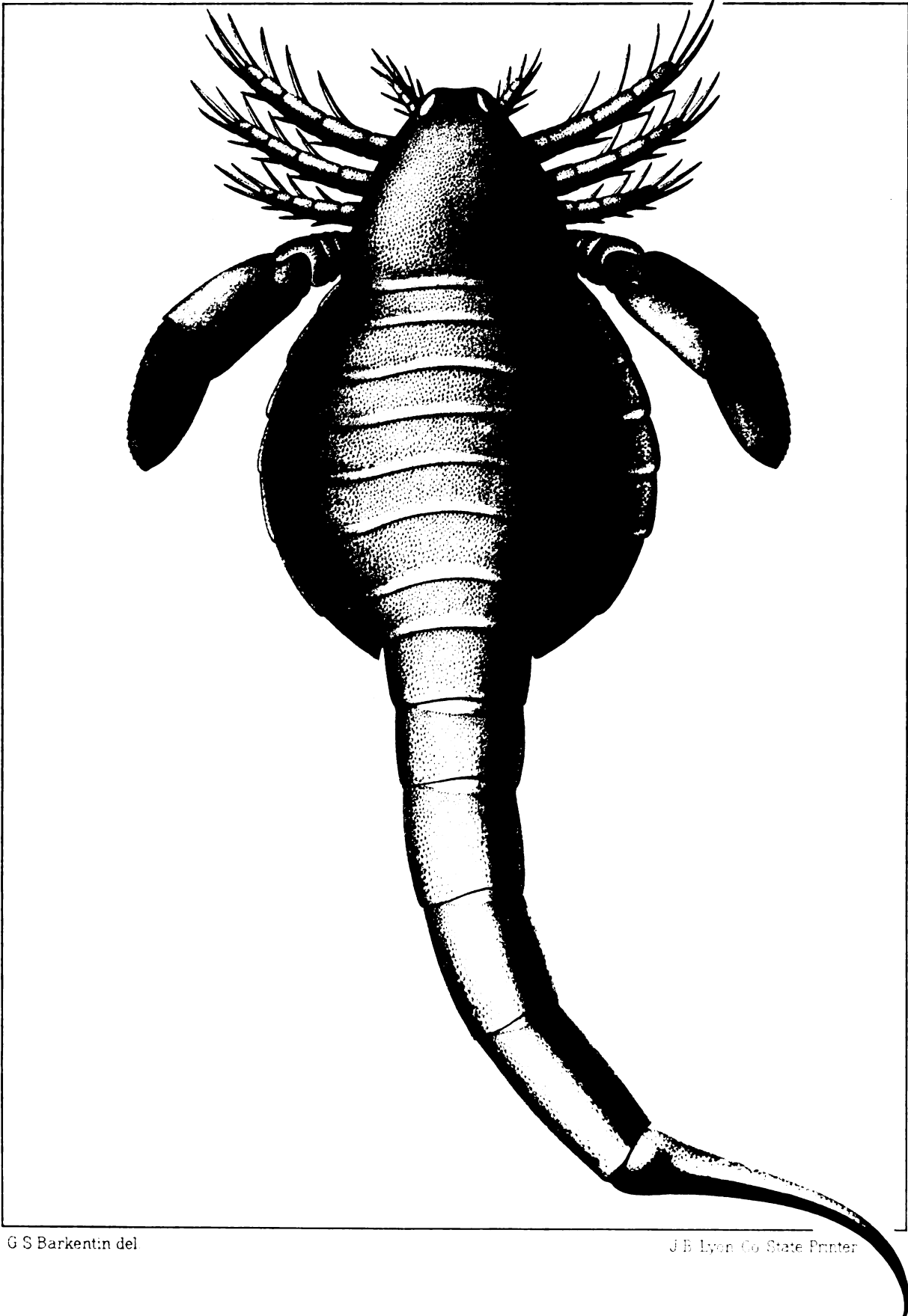
See plates 28-36

I Restoration of dorsal aspect

# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 27



G. S. Barkentin del.

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**PLATE 28**

495

**Eusarcus scorpionis** Grote & Pitt

Page 233

See plates 27, 29-36

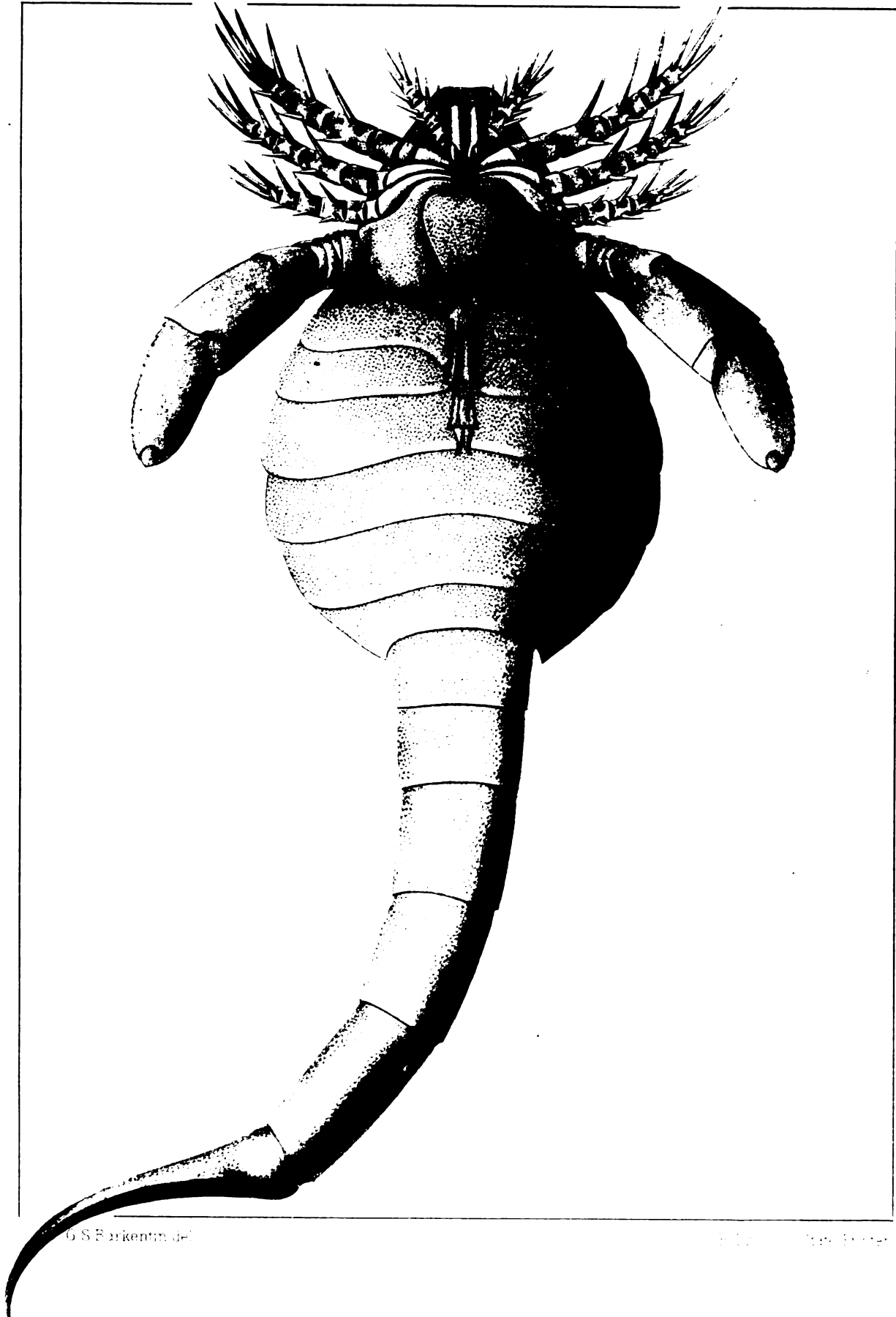
1 Restoration of ventral aspect



# EURYPTERIDA

Memoir 14. N.Y. State Museum.

Plate 28



G. S. Barkentin del.

U. S. Geological Survey



PLATE 29

497

**Eusarcus scorpionis** Grote & Pitt

Page 233

See plates 27-28, 30-36

- 1 A specimen that shows the position of the lateral or compound eyes and of the ocelli, the outline of the carapace, the walking and swimming legs, and the tergites with impressions of the gill plates from the ventral side. Natural size

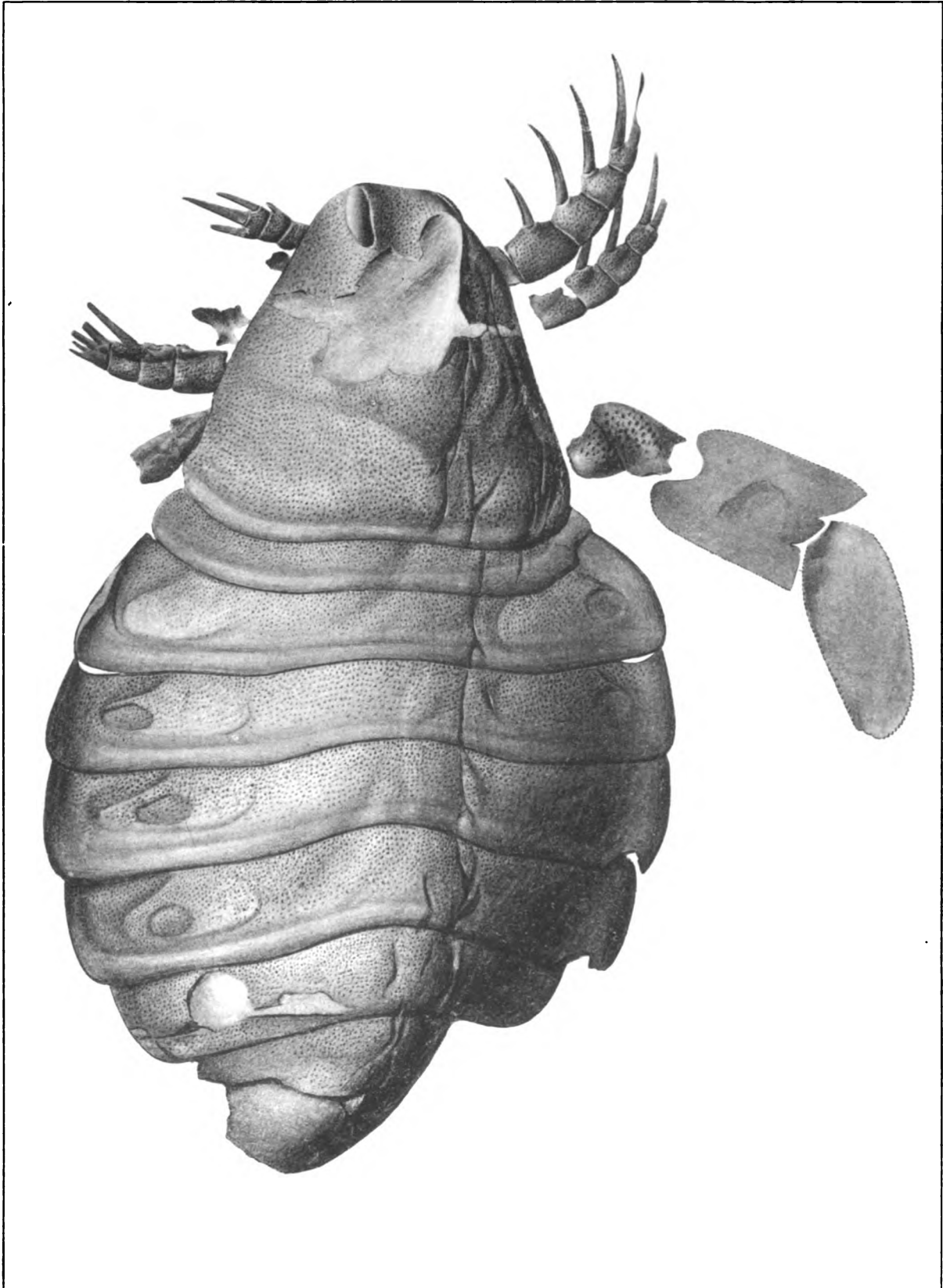
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

The original is in the possession of Dr Mark E. Reed, Buffalo, N. Y.

# EURYPTERIDA

Memoir 14 N.Y. State Museum.

Plate 29.



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J B Lyon Co State Printer



PLATE 30

499

**Eusarcus scorpionis** Grote & Pitt

Page 233

See plates 27-29, 31-36

- 1 Dorsal view of a well preserved specimen, showing the relative lengths of the walking legs, form of carapace, position of eyes and outline of abdominal segments. Five postabdominal segments are seen. Natural size

*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

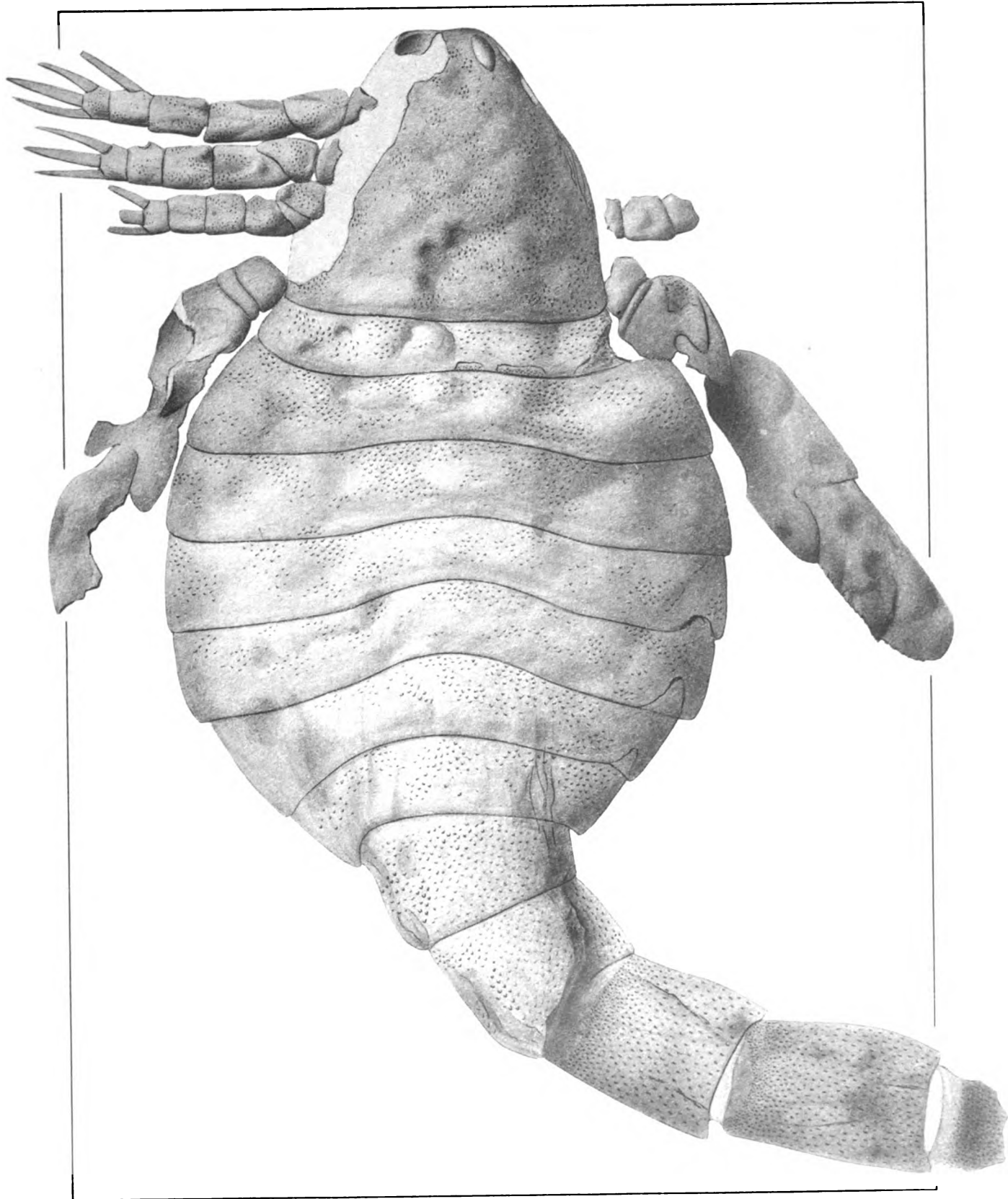
The original is in the museum of the Buffalo Society of Natural Sciences



# EURYPTERIDA

Memoir 14. N.Y. State Museum.

Plate 30



© S. R. J. Kenton del.

J. B. Lyon, N. Y. State Museum.



PLATE 31

501

**Eusarcus scorpionis** Grote & Pitt

Page 233

See plates 27-30, 32-36

- 1 The type specimen (holotype). Shows position of the preoral appendages and the five pairs of legs, the posterior portion of the carapace, the tergites with their characteristic sculpture and the posterior doublures, and four segments of the slender postabdomen. Natural size

*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

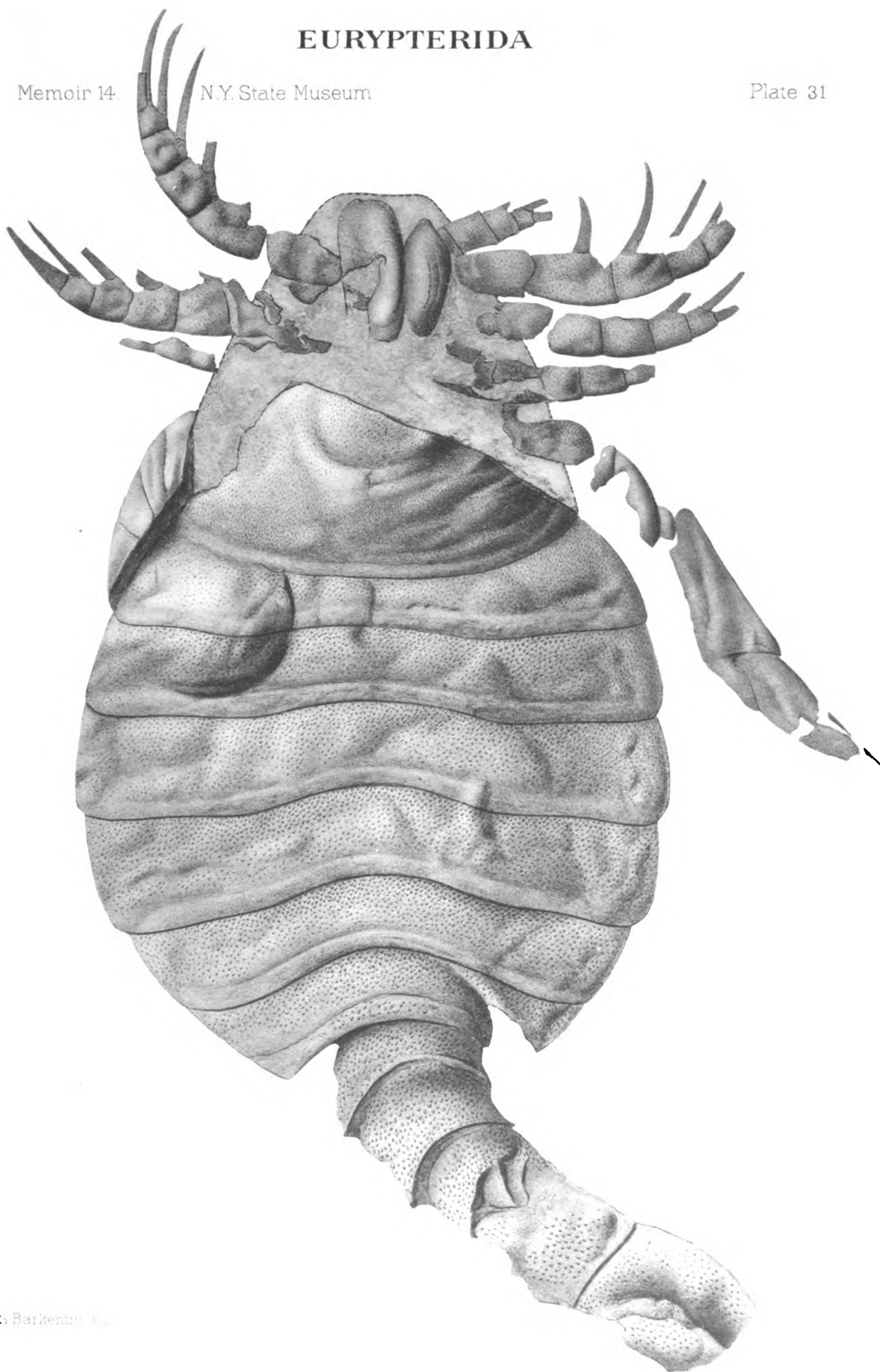
The original is in the museum of the Buffalo Society of Natural Sciences

# EURYPTERIDA

Memoir 14

N.Y. State Museum

Plate 31



G. S. Barkentin



PLATE 32

503

**Eusarcus scorpionis** Grote & Pitt

Page 233

See plates 27-31, 33-36

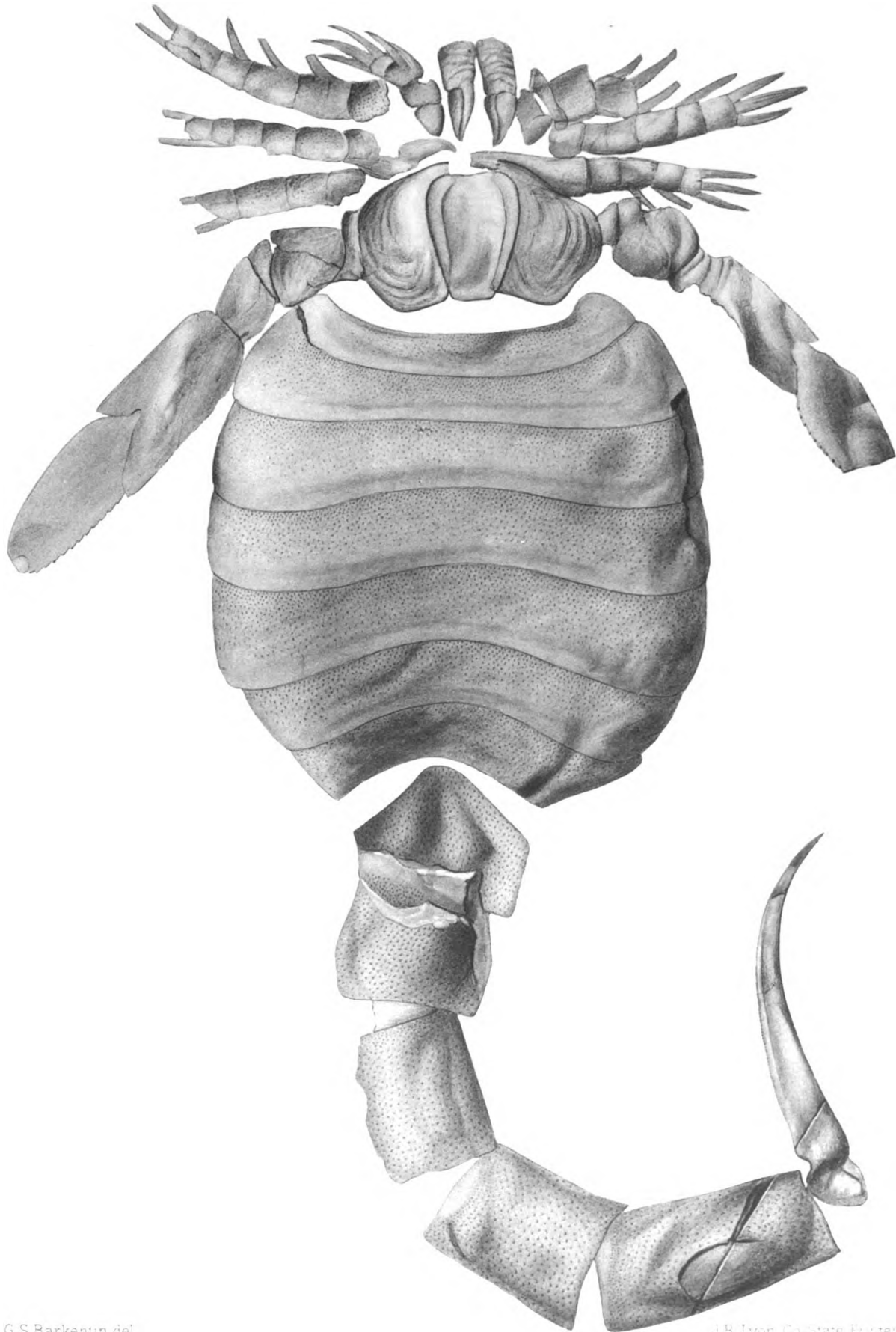
- 1 Dorsal view of a specimen, the carapace of which is broken away, exposing the appendages of the cephalothorax. The chelicerae are seen in position; also the first short pair of walking legs, the metastoma and the coxae of the swimming legs. The drawing is a composite one, showing the features of the two counterparts, one of which is in the museum of the Buffalo Society of Natural Sciences, the other in the New York State Museum  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 32



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J. B. Lyon, Col. State Printer



**PLATE 33**

**505**

**Eusarcus scorpionis** Grote & Pitt

Page 233

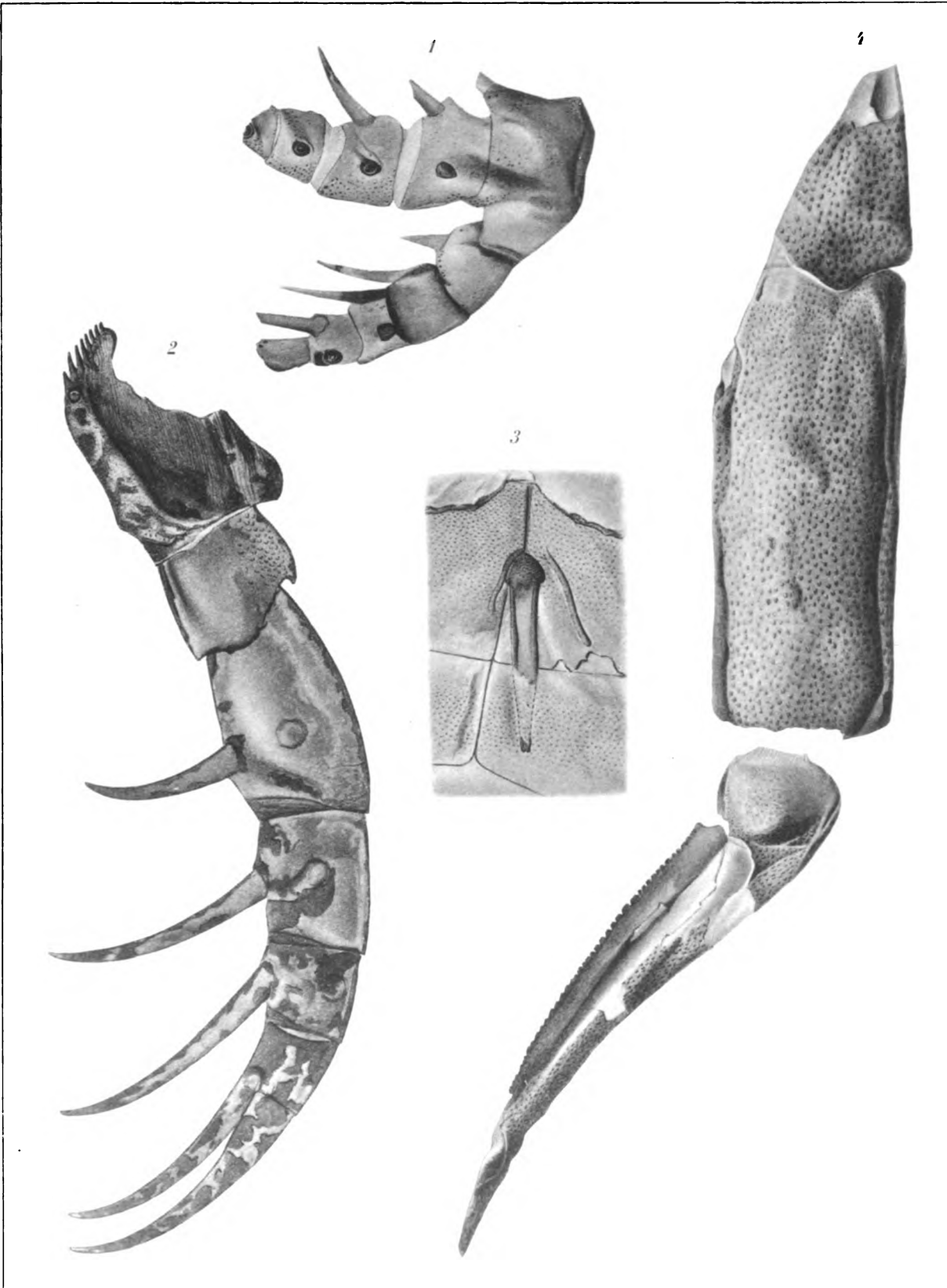
See plates 27-32, 34-36

- 1 Fragments of two walking legs showing the basal articulations of the spines and the membranes of the articulations of the joints. Natural size
- 2 A complete first walking leg showing the coxal joint with the gnathobase. Half of the paired spines are broken away. Natural size
- 3 A female opercular appendage showing also traces of the tubular appendages. Natural size
- 4 Last postabdominal segment and telson, the latter in a lateral view. The slender tubular form of the last segment, the curved shape of the telson, the articulating bulbous proximal end of the telson and its lateral flanges are seen. The apparent serrations are due to later cracking of the thickened margins. Natural size

*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

The originals of figures 1 and 2 are in the New York State Museum; those of figures 3 and 4 are in the museum of the Buffalo Society of Natural Sciences

# EURYPTERIDA



FWOL et GSB del

J.B. Iwan. Co. Lith. Dinter



**PLATE 34**

507

**Eusarcus scorpionis** Grote & Pitt

Page 233

See plates 27-33, 35-36

- 1 Ventral view of swimming leg of a large individual. Shows the massive form of the middle joints of the leg, the subquadrangular outline and deep articulating notches of the large seventh joint, the elongate elliptic outline of the palette or eighth joint and in faint outline the subcircular terminal claw or ninth joint. Natural size.

*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

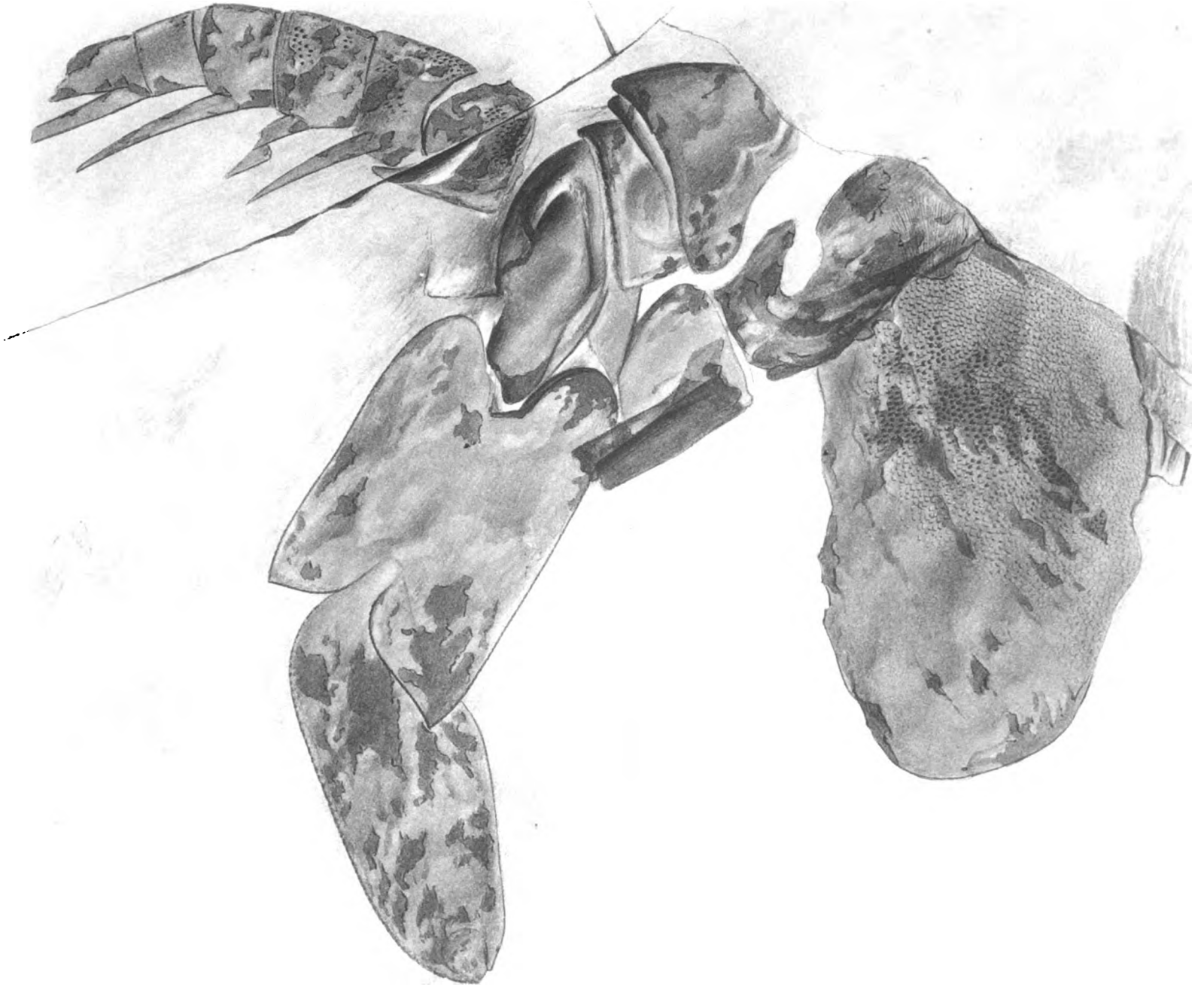
Original in New York State Museum



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 34



J. S. D. Arkenhoff et al.

J. S. D. Arkenhoff et al.



PLATE 35

509

**Dolichopterus macrochirus Hall**

Page 262

See plates 40-45

- 1 Eighth joint of a swimming foot. Natural size  
*Horizon and locality.* Bertie waterlime. Litchfield, Herkimer co., N. Y.

**Eusarcus scorpionis Grote & Pitt**

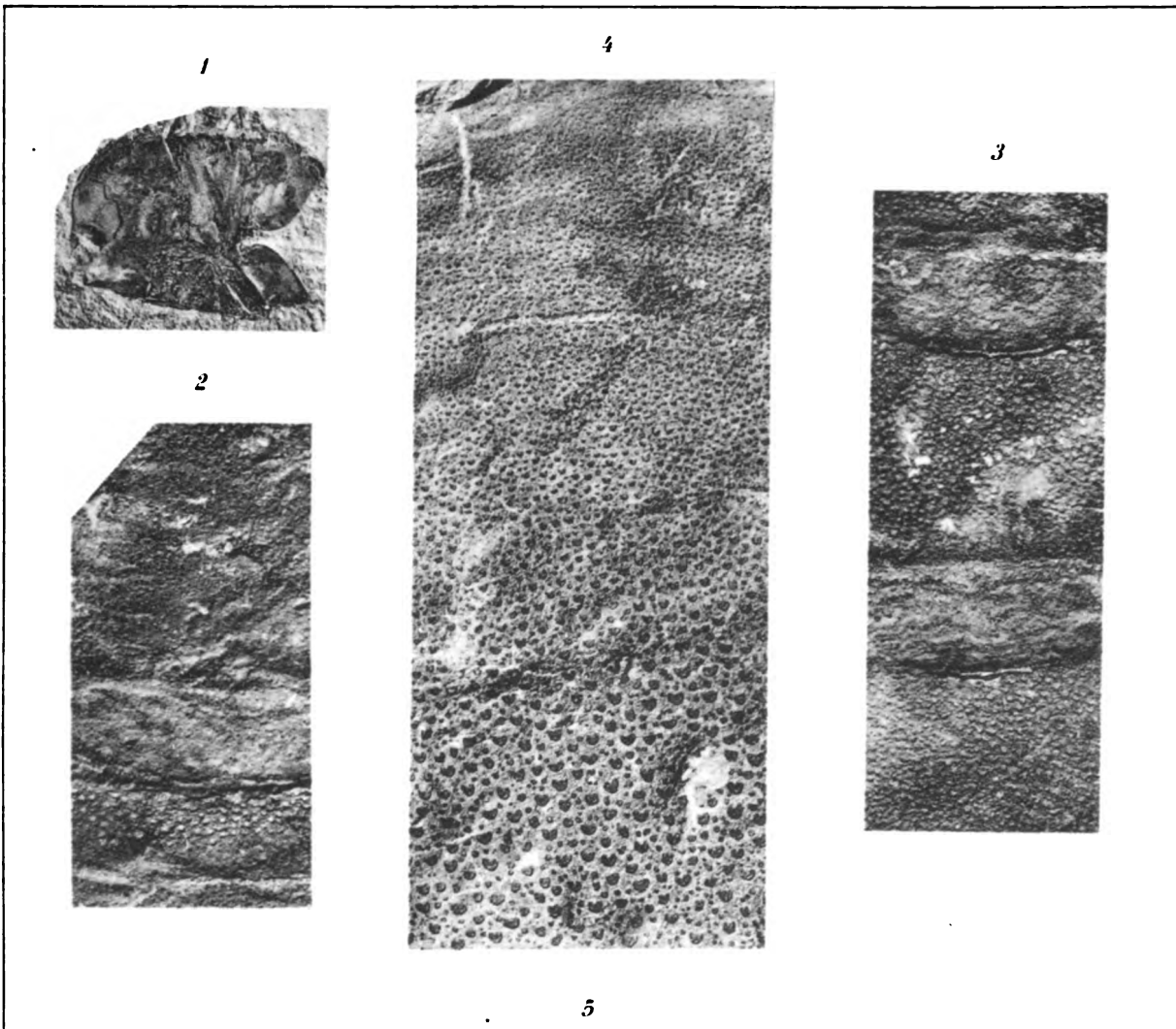
Page 233

See plates 29-34, 36

- 2 Enlargement (x 3) of portion of carapace and first tergite to show tubercles and scales  
3 Enlargement (x 3) of median portion of tergites to show character and distribution of scales  
4 Enlargement (x 3) of portion of sternite to show character and distribution of scales  
5 Last sternite, showing the relatively great length of the plate. The antelateral angles or ears are incomplete  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

All figures are from photographs. The original of figures 4 and 5 is in the American Museum of Natural History [no. 2249, *see* pl. 40], that of figures 2 and 3 is in the collection of Dr Mark E. Reed, Buffalo [*see* pl. 29], and that of figure 1 is in the New York State Museum

# EURYPTERIDA



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PLATE 36

511

**Eusarcus scorpionis** Grote & Pitt

Page 233

See plates 27-35

- 1 A young specimen. Shows position of eyes and relative proportions of carapace, preabdomen and postabdomen. Natural size  
*Horizon and locality.* Bertie waterlime. Williamsville, Erie co., N. Y.

**Eusarcus? cicerops** Clarke

Page 253

- 2 Carapace showing outline and compound eyes. x 3  
3 Small carapace showing visual area of the compound eyes and the ocelli.  
x 5  
4 Type specimen (holotype). x 5  
5 Specimen retaining the preabdomen. x 5  
6 Carapace doubtfully referred to this species. x 5  
7 Last postabdominal segment and telson possibly belonging to this species.  
Natural size  
8 Very small carapace referred to this species with doubt. x 5  
9 Nepionic carapace (1.5 mm long) apparently belonging to this species.  
It has in common with the nepionic stages of the other genera the broad, short form, the immense eye nodes, the broad doublures or margin. The eye nodes seem to rest in deep sockets, probably the result of compression. A median carina extends forward into a blunt spine  
10 Leg joint, possibly belonging to this species. x 3  
*Horizon and locality.* Shawangunk grit. Otisville, Orange co., N. Y.

**Eusarcus newlini** Claypole

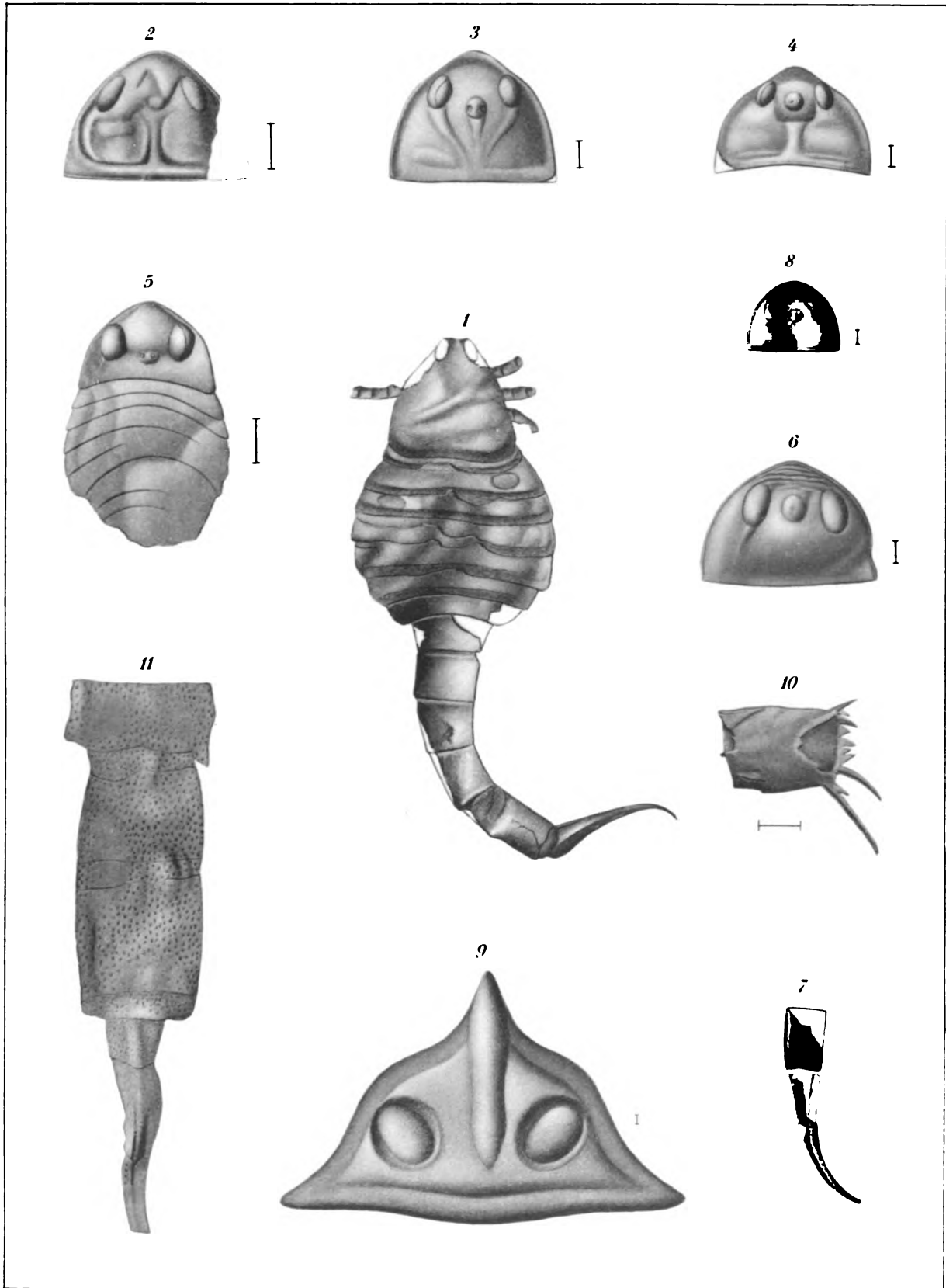
Page 245

See plates 37-39

- 11 Last postabdominal segments and telson. Natural size  
*Horizon and locality.* Kokomo waterlime. Kokomo, Ind.  
The original of figure 1 is in Columbia University; those of figures 2-10 are in the State Museum and that of figure 11 is in the National Museum



# EURYPTERIDA



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**PLATE 37**

513

**Eusarcus newlini** Claypole

Page 245

See plates 36, 38-39

- 1 A small specimen showing the four pairs of walking legs, the first of which is the shortest, and the swimming legs; the carapace and the ventral side of the abdomen with distinct attachment areas of the gill plates on the sternites. The eyes are not recognizable. Two pairs of gnathobases indicate the position of the mouth. The abrupt contraction of the preabdomen to the postabdomen and the form of the postabdominal segments are seen. The posterior doublures of these segments appear as dark bands

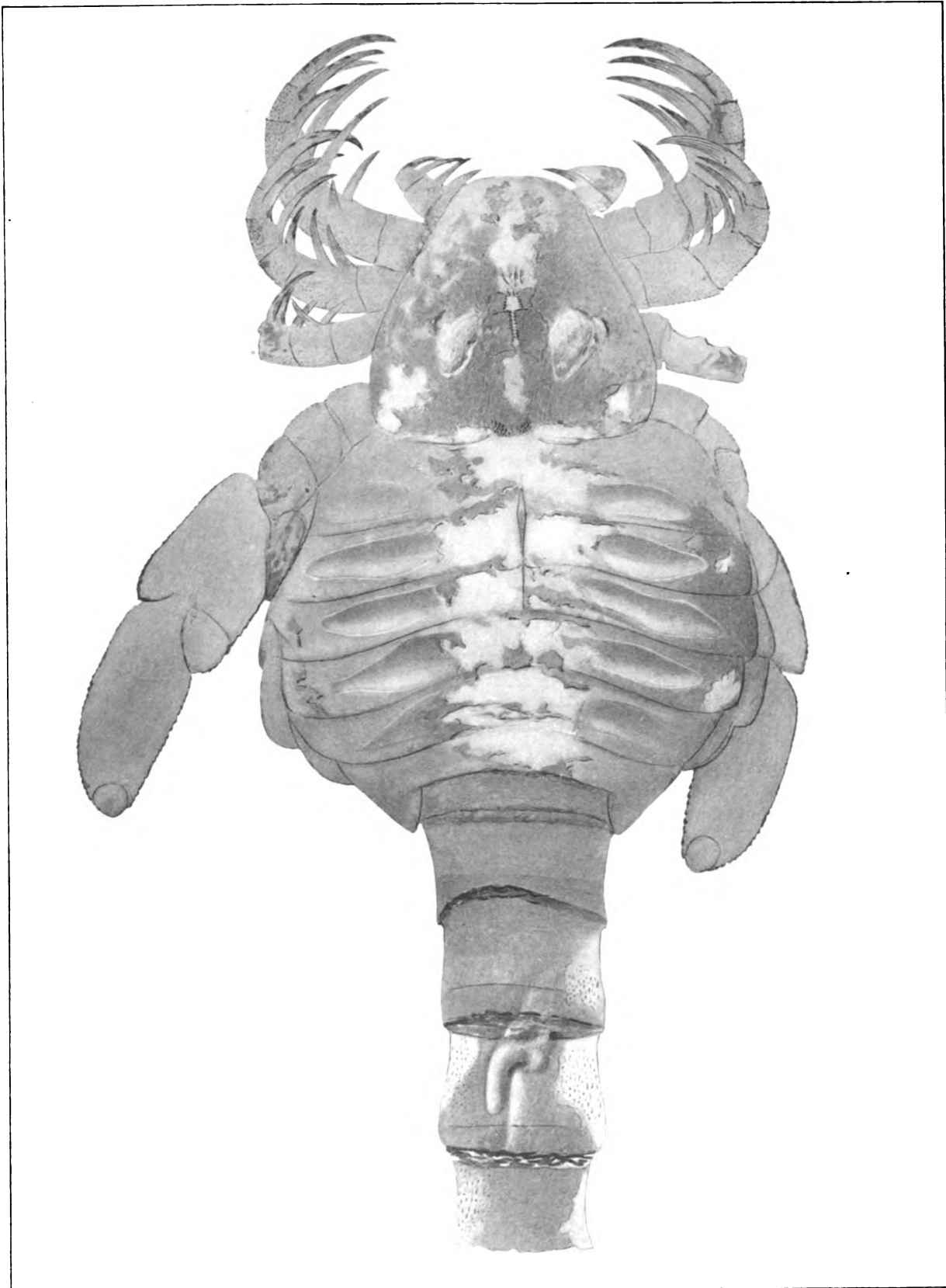
*Horizon and locality.* Kokomo waterlime. Kokomo, Ind.

The original is in the museum of Chicago University (no. 12900)

# EURYPTERIDA

Memoir 14 N.Y. State Museum

Plate 37



G S Barkeentun del

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**PLATE 38**

515

**Eusarcus newlini** Claypole

Page 245

See plate 36, 37-39

- 1 Extended specimen showing nearly all the parts: the legs, outline of the carapace and the position of the eyes, the outlines of both the tergites (transverse) and sternites (deeply concave), the postabdomen and telson. Natural size

*Horizon and locality.* Kokomo waterlime. Kokomo, Ind.  
Original is in the museum of Chicago University



# EURYPTERIDA

Memoir 14.

N.Y. State Museum

Plate 38

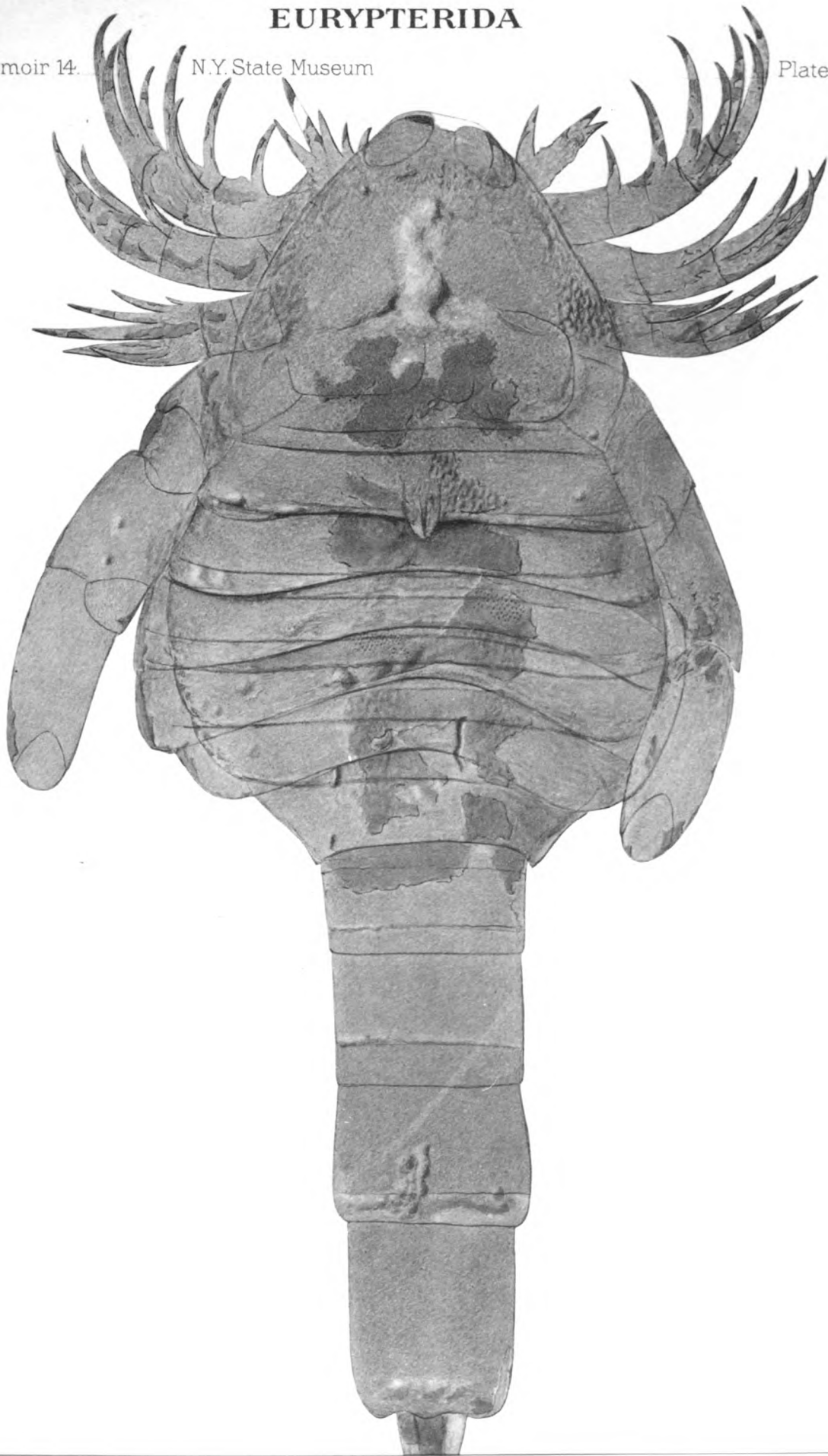




PLATE 39

517

**Eusarcus newlini** Claypole

Page 245

See plates 36-38

- 1 Dorsal aspect of the largest specimen observed; the distal portions of the legs and of the postabdomen are restored. The outline of the eyes is faintly seen at the anterior margin of the carapace. The massive form of the legs is especially striking in this specimen. The preabdomen shows the outline of both the tergites (straight transverse) and sternites (concave). It is apparently somewhat contracted. Natural size

*Horizon and locality.* Kokomo waterlime. Kokomo, Ind.  
The original is in the State Museum

**THE SCRIPPS INSTITUTION  
OF OCEANOGRAPHY  
OF THE  
UNIVERSITY OF CALIFORNIA  
LAJOLLA, CALIF.**



PLATE 40

519

**Dolichopterus macrochirus** Hall

Page 262

See plates 35, 41-45

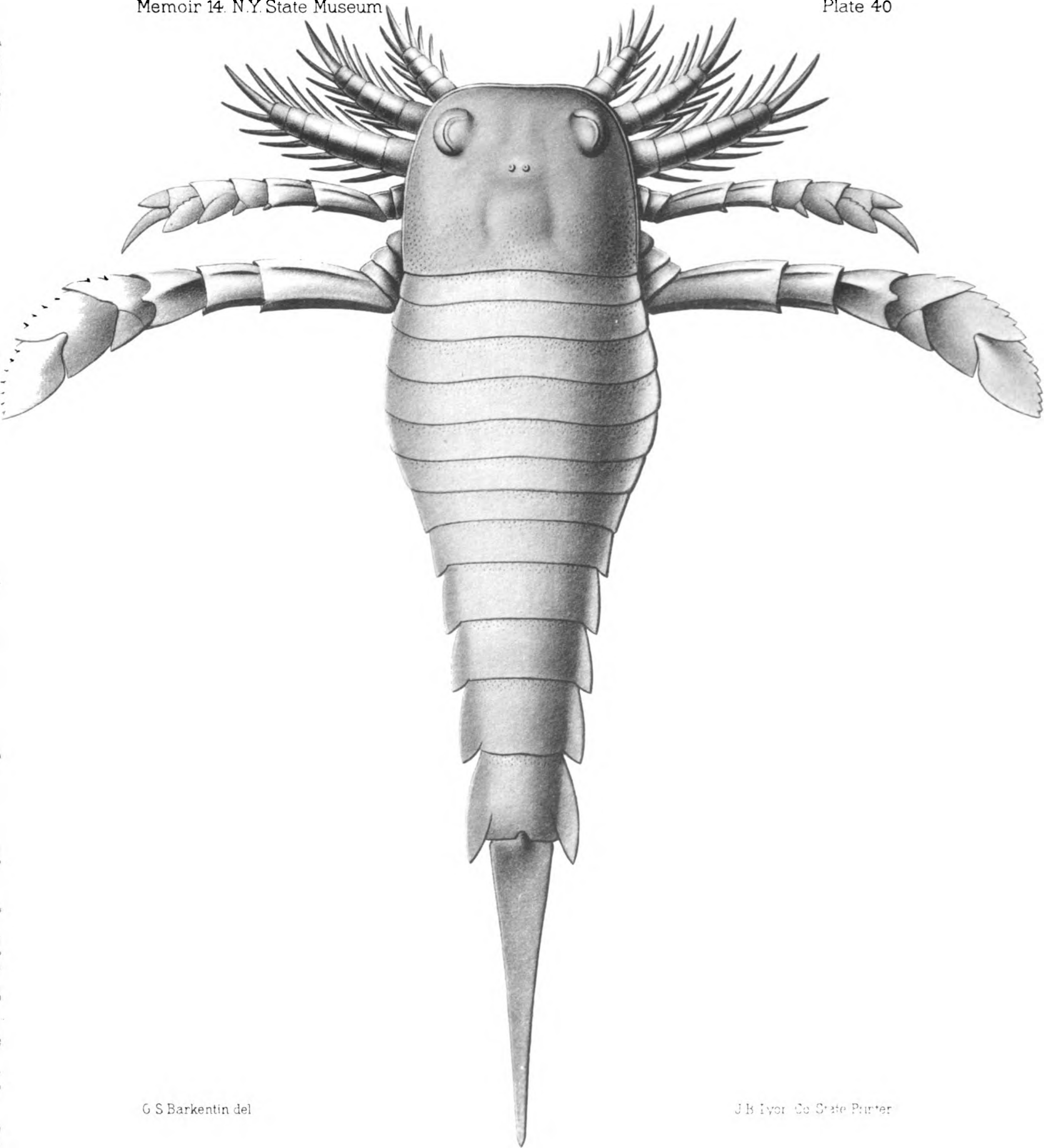
- 1 Restoration of dorsal aspect. The swimming legs show the ventral aspect, the dorsal aspect not being known. Natural size



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 40



G S Barkentin del

J B Ivor Co State Printer



PLATE 41

521

**Dolichopterus macrochirus** Hall

Page 262

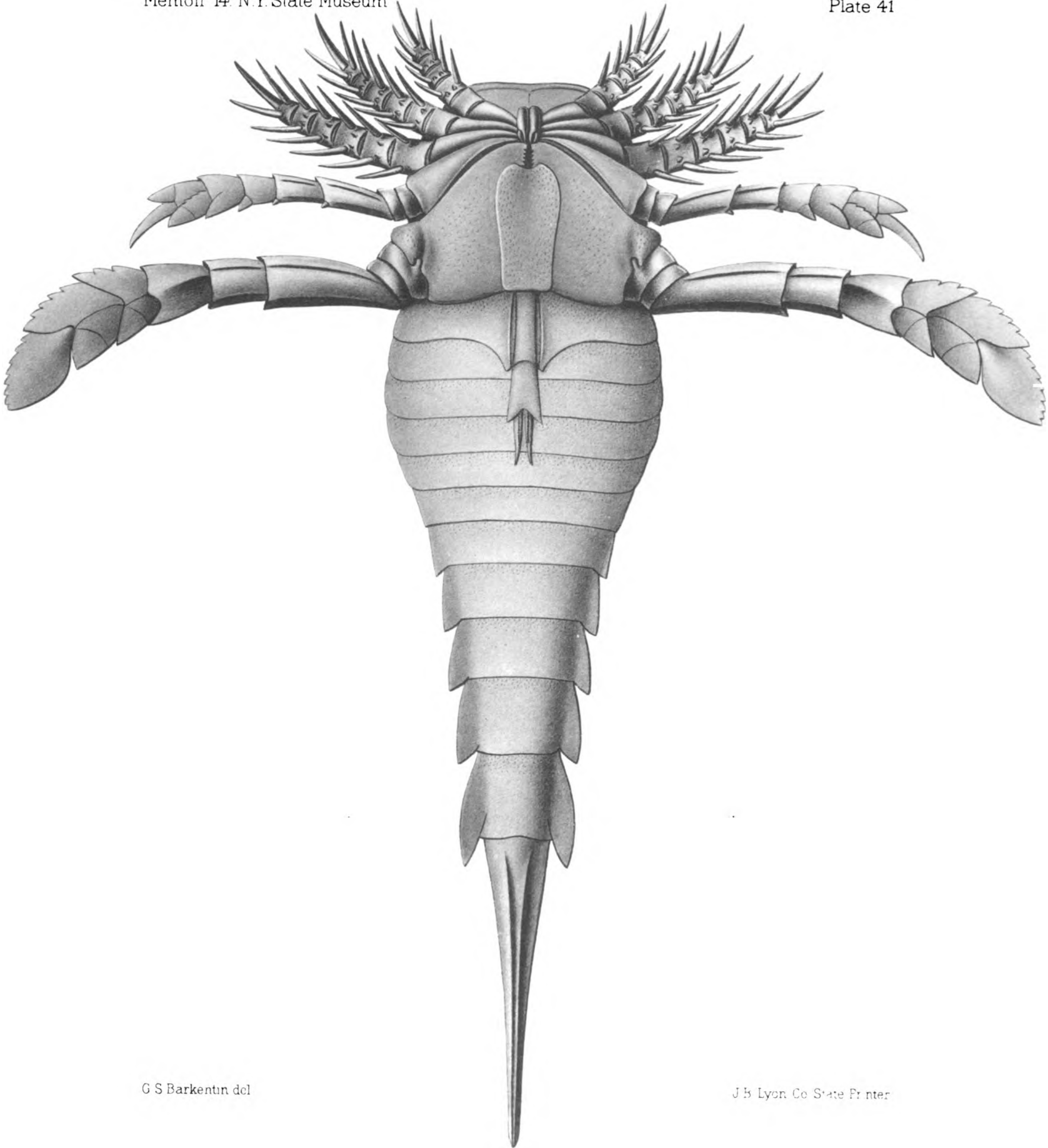
See plates 35, 40, 42-45

- 1 Restoration of ventral aspect. The median lines on the 7th and 8th segments of the swimming legs are fortuitous. Natural size

# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 41



G S Barkentin del

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**PLATE 42**

**523**

**Dolichopterus macrochirus** Hall

Page 262

See plates 35, 40-41; 43-45

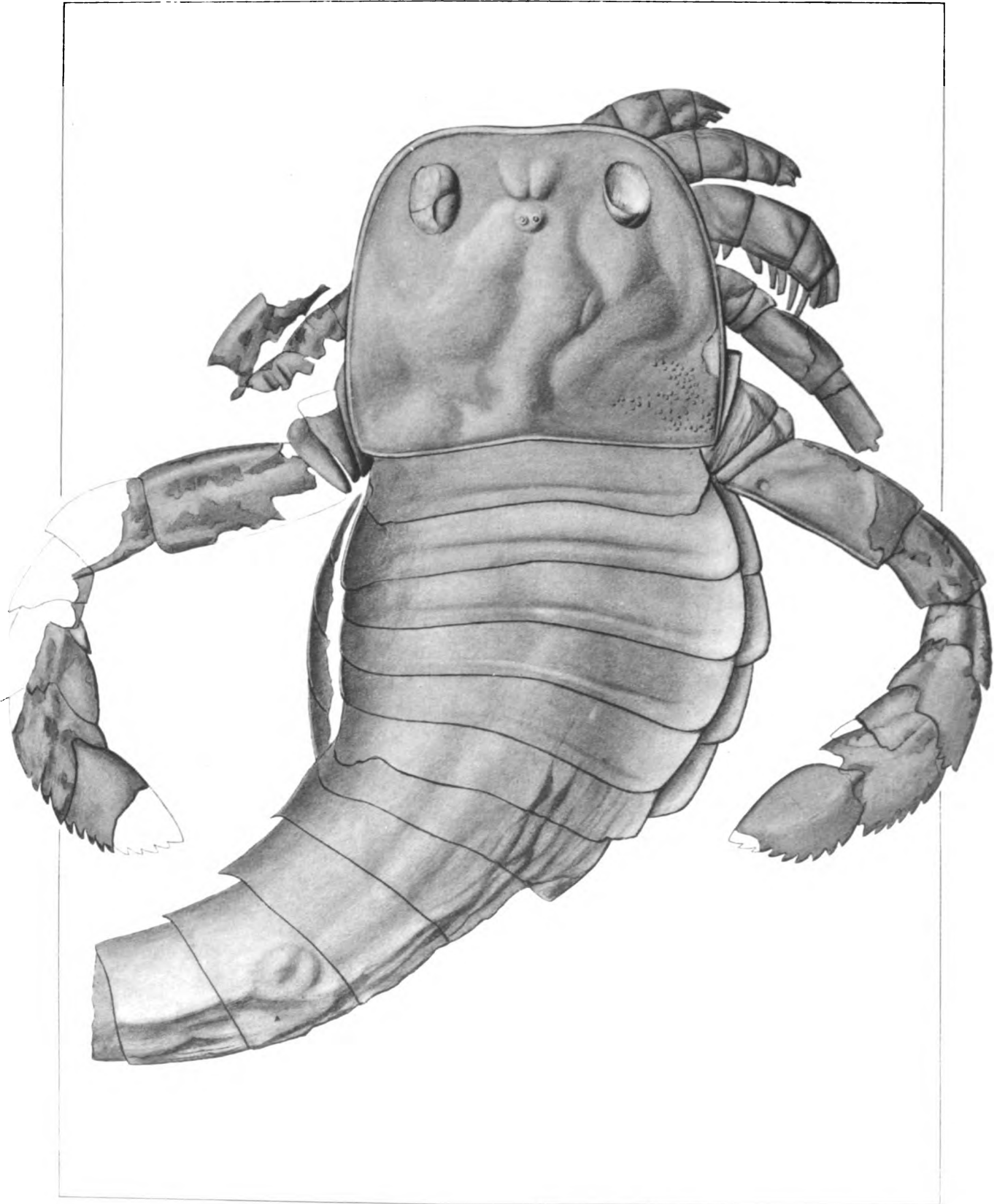
- 1 Dorsal view of the type specimen [Palaeontology of N. Y., v. 3, pl. 83].  
The swimming legs are taken from the counterpart, as in the original figure, and show the ventral side. The specimen shows the shape of the carapace, the position of the eyes, the walking and swimming legs and the dorsal side of the abdomen, except the last segment. The broad sternites appear on both sides of the tergites. The swimming leg exhibits all joints except the coxal joint and the broad lobelike extensions of the inner margin of the seventh joint. Natural size  
*Horizon and locality.* Bertie waterlime. Williamsville, N. Y.  
The original is in the American Museum of Natural History



# EURYPTERIDA

Memoir 14 N.Y. State Museum

Plate 42



G. S. Rarkentin del.

J. B. Lyon, Co. State Printer



**PLATE 43**

525

**Dolichopterus macrochirus Hall**

Page 262

See plates 35, 40-42, 44-45

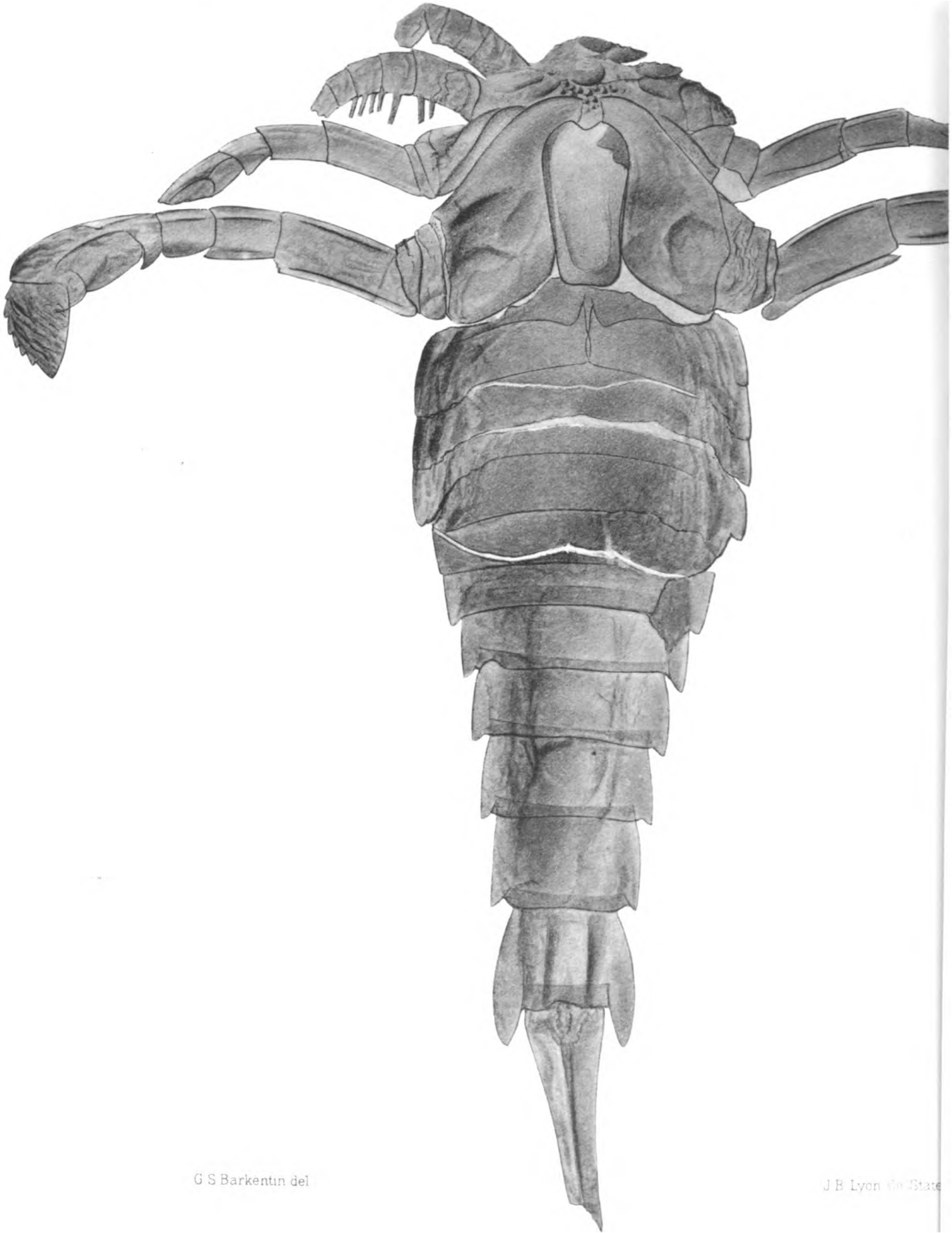
- 1 Ventral view of a specimen showing the metastoma, parts of the anterior legs, the swimming legs entire, the large epimera of the postabdomen and the telson. The specimen is somewhat compressed laterally and thus abnormally narrow. Natural size

*Horizon and locality.* Bertie waterlime. Litchfield, Herkimer co., N. Y.  
The original is in the State Museum

# EURYPTERIDA

Memoir 14 N.Y. State Museum

Plat



G S Barkentin del

J B Lyon © State



**PLATE 44**

**527**

**Dolichopterus macrochirus** Hall

Page 262

See plates 35, 40-43, 45

- I Interior view of the ventral side of a specimen, showing besides the coxal and proximal joints of the legs and the metastoma, the operculum and the female opercular appendages. The inner edges of the coxae of the swimming legs are broken away as overlapped by the metastoma. Natural size

*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

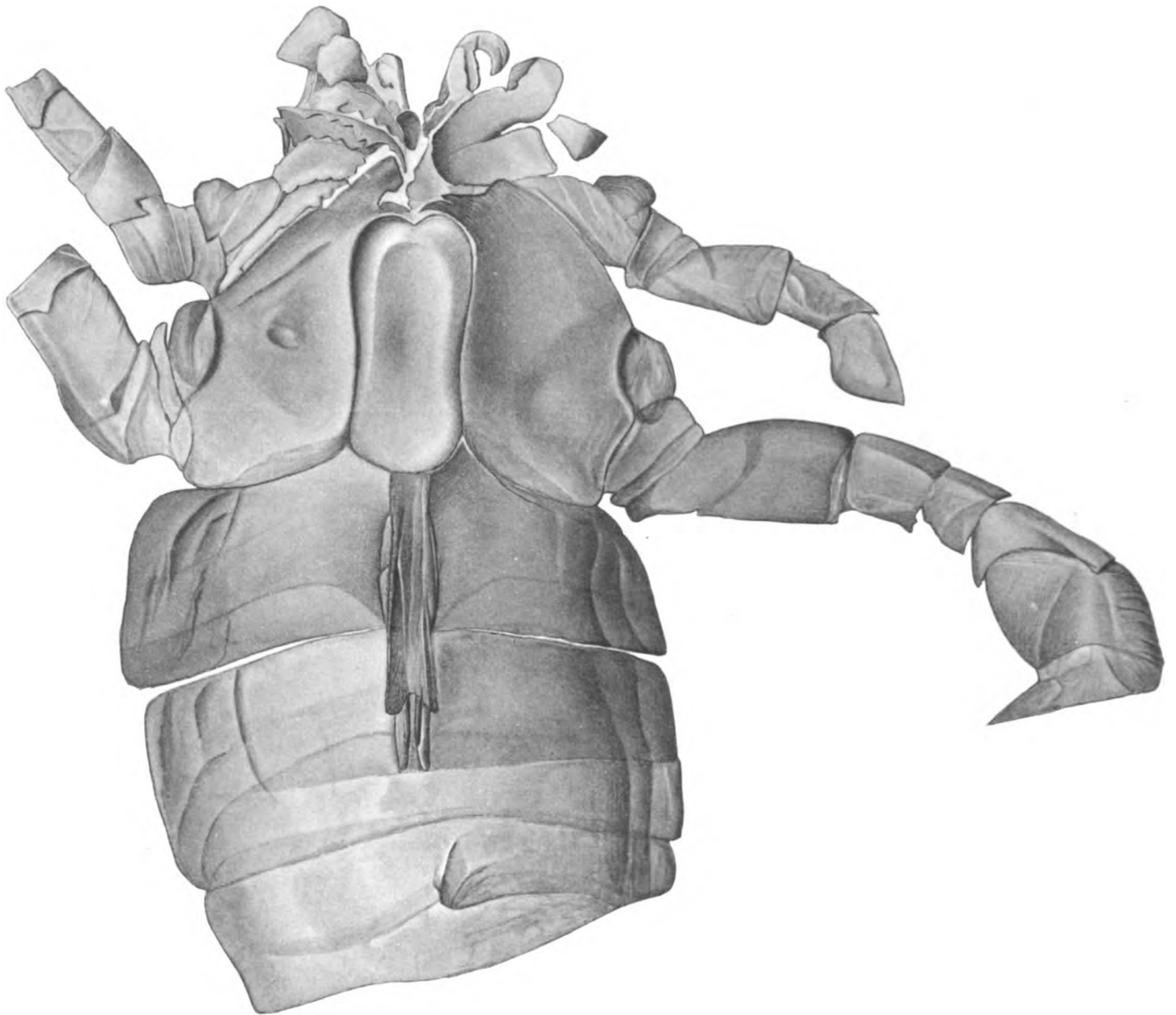
The original is in the museum of the Buffalo Society of Natural Sciences



# EURYPTERIDA

Memoir 14 N.Y. State Museum

Plate 44



E. W. C. Little del.

J. B. Lyon Co. State Printer



**PLATE 45**

529

**Dolichopterus macrochirus Hall**

Page 262

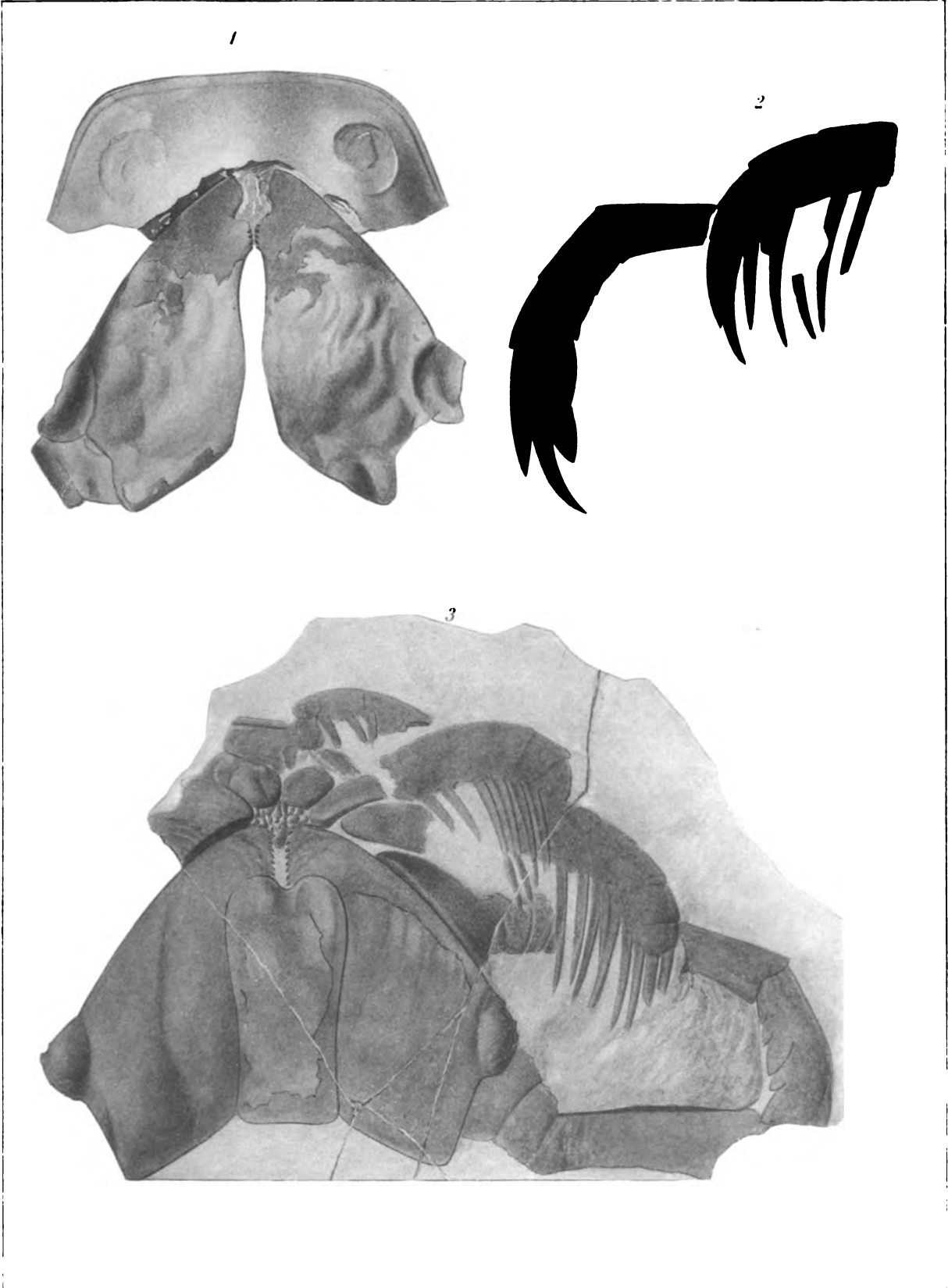
See plates 35, 40-44

- 1 Fragment of cephalothorax with the eyes and showing the coxae of the swimming legs. Composite drawing from both counterparts. Natural size
- 2 Fragments of a walking leg and a balancing leg showing the lobelike spines of the latter. Natural size
- 3 Ventral view of a cephalothorax showing the coxae of the legs in position and a well preserved metastoma; also the long spines of the walking legs. Natural size

*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

The original of figure 1 is in the National Museum; those of figures 2 and 3 are in the American Museum of Natural History

**EURYPTERIDA**



G S Barkentin del

J P Lyon lith State Printer



PLATE 46

531

### **Dolichopterus otisius** Clarke

Page 270

- 1 Carapace showing a broad furrowed rim, the large compound eyes and the ocelli. x 3
- 2 Carapace showing the visual area of the compound eyes and the ocellar mound. x 3
- 3 Slightly smaller carapace and two tergites. The compound eyes are depressed showing the thickened rim of the ocular node. x 3
- 4 Carapace of young individual showing the greater prominence of the ocellar mound. x 3
- 5 A presumably mature, well preserved carapace, showing the normal outline, a flat border and thickened rim, the crescent-shaped visual area of the compound eyes and a depression in the ocular node. x 3
- 6 Interior view of a small carapace with two attached tergites. x 3
- 7 A fragmentary carapace of a younger individual, referred in the preliminary paper with doubt to *Eurypterus myops* [see pl. 6, fig. 6]. x 3
- 8 The type (holotype). x 1½  
*Horizon and locality.* Shawangunk grit. Otisville, Orange co., N. Y.  
The originals are in the State Museum

### **Dolichopterus stylonuroides** nov.

Page 276

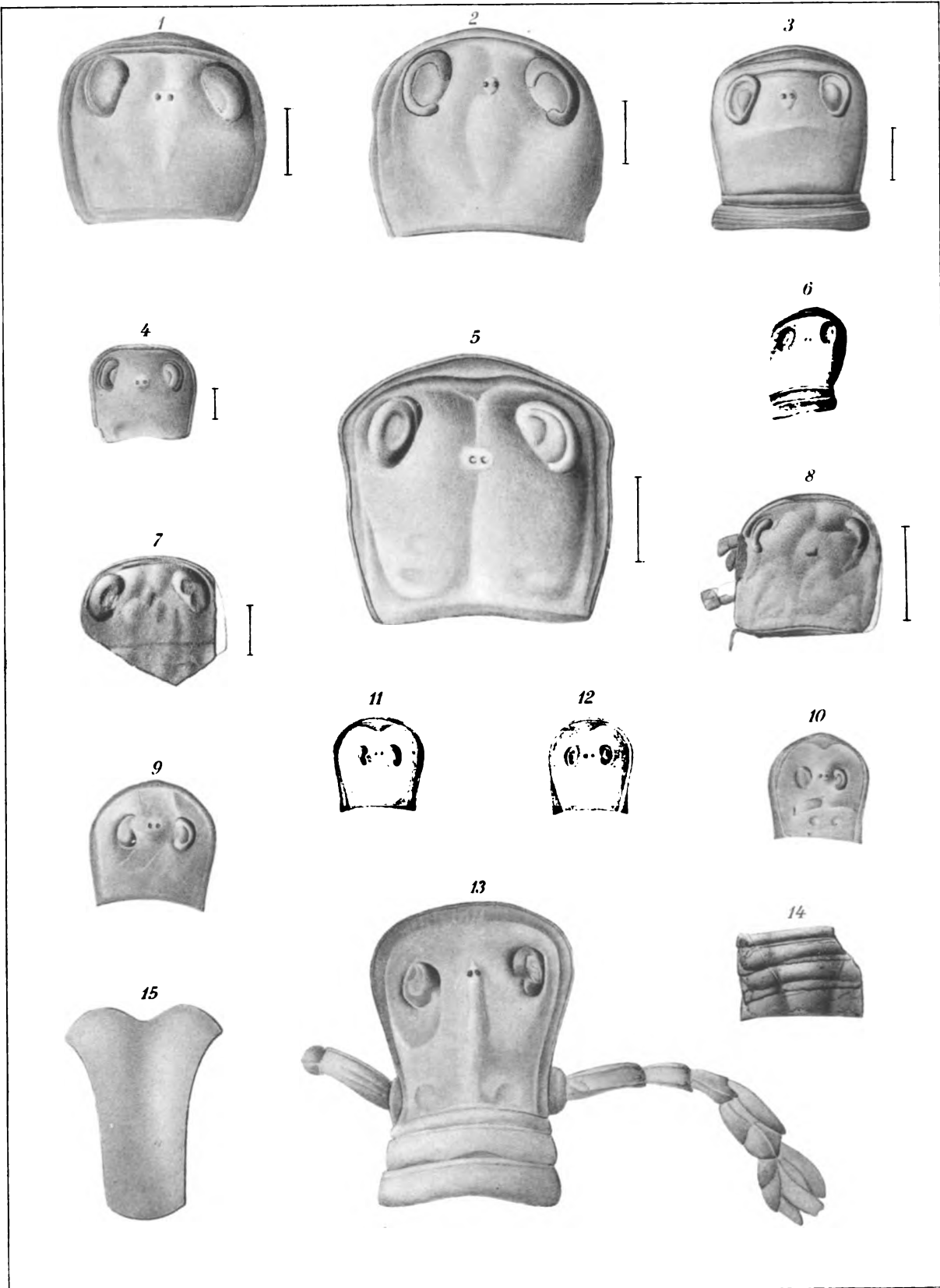
- 9 Small carapace showing the rim of the dorsal side. x 3
- 10 Larger carapace showing both the rim of the dorsal side and the doublure of the ventral side. Natural size
- 11, 12 The two counterparts of a carapace; the first showing more distinctly the rim of the upper side, the other the doublure of the under side. Natural size
- 13 Single specimen with tergites and swimming leg. The holotype of the species. Shows the characteristic outline and broad doublure of the carapace, the anterior position of the eyes and the lobelike appendages of the distal joints of the swimming leg, and in the narrow tergites indications of the slender form of the abdomen. x 3
- 14 Fragment of tergite, possibly belonging to this species. Natural size  
*Horizon and locality.* Shawangunk grit. Otisville, Orange co., N. Y.

### **Hughmilleria socialis** Sarle

- 15 Epistoma, figured by Sarle as metastoma of *Stylonurus*? x 3½. See page 428  
*Horizon and locality.* Pittsford shale. Pittsford, Monroe co., N. Y.  
All originals are in the New York State Museum



# EURYPTERIDA



E.W. C. Little del

J.B. Lyon & Sons Printers



**PLATE 47**

**533**

### **Stylonurus excelsior Hall**

Page 292

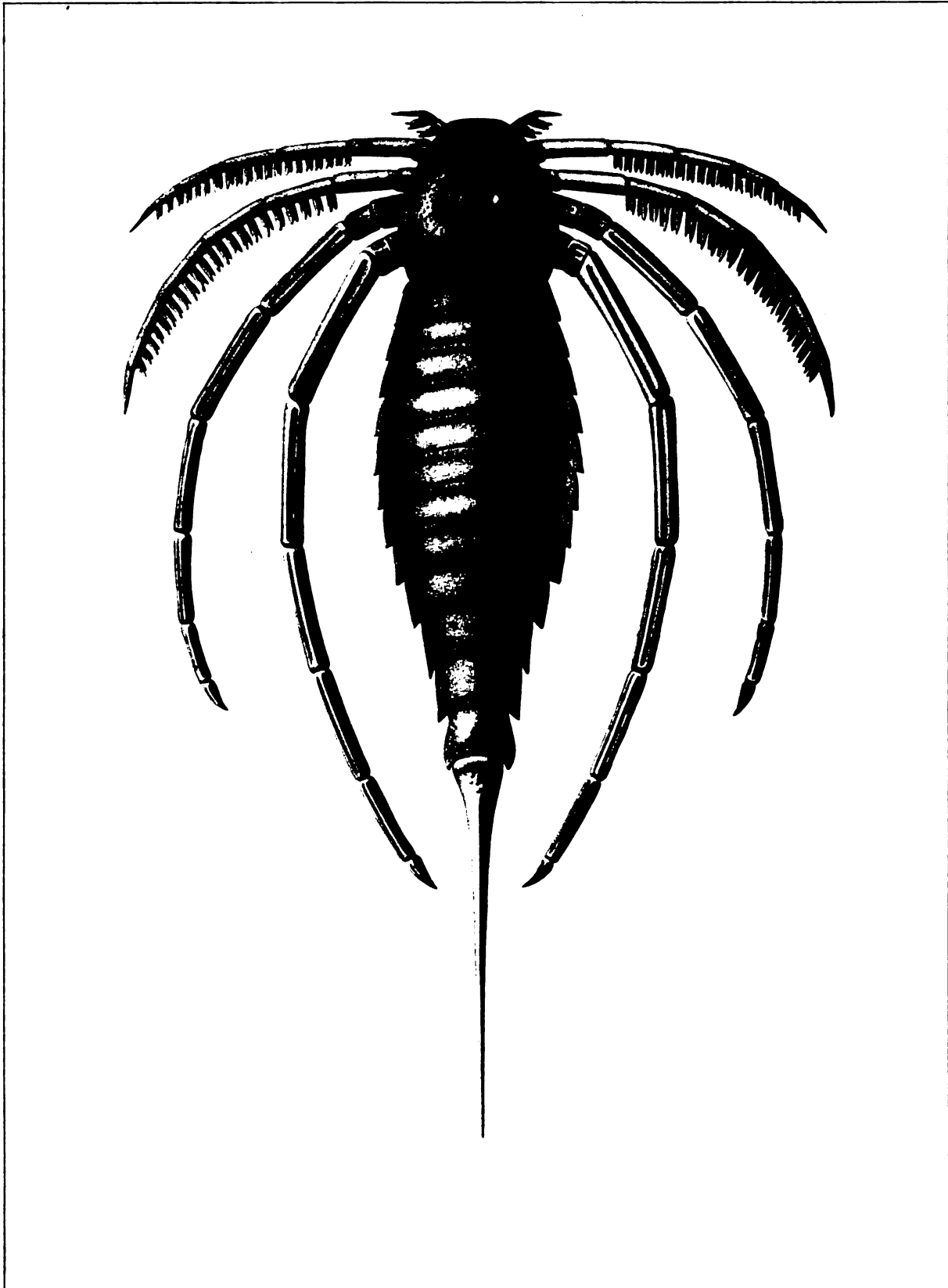
See plate 48

- 1 Restoration of the dorsal aspect. The carapace and the first pair of legs are taken from the two known specimens of the species. The ocular nodes and the visual areas are restored from the evidence of these specimens and from that of the congeners. The second to fifth pairs of legs are restored after *S. cestrotus* and the abdomen is left as in Beecher's restoration. About one-eighth natural size

# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 47



G S Barkentin del.

J B Lyon Co State Printer



**PLATE 48**

535

**Stylonurus excelsior Hall**

Page 292

See plate 47

- 1 Photograph of a cast from the original intaglio. The small pores are imperfections of the cast. The inner circular depressions represent the ocular nodes with the smooth crescentic visual areas on the outer edge. These are buttressed by strong orbital ridges which have been made conspicuous by the compression of the adjoining test.  
Natural size

*Horizon and locality.* Catskill beds. Andes, Delaware co., N. Y.  
The original is in the geological museum of Rutgers College, New Brunswick, N. J.



**EURYPTE**

Memoir 14. N.Y. State Museum



J A. Glenn phot.



**PLATE 49**

537

**Stylonurus cestrotus** Clarke

Page 286

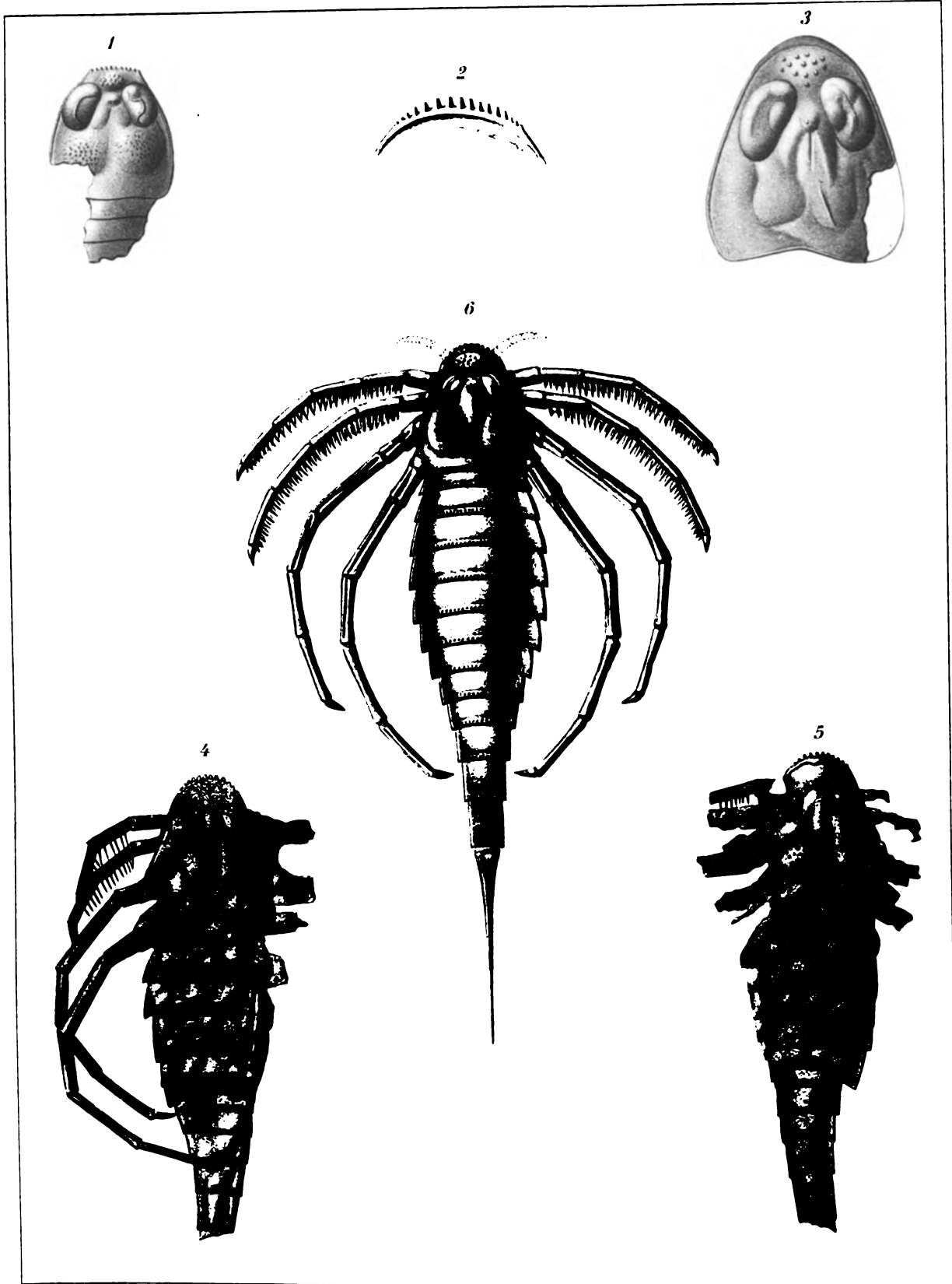
See plate 50

- 1 Carapace with fragments of tergites. Holotype [N. Y. State Mus. Bul. 107, pl. 3, fig. 10]. Shows denticulated frontal margin, visual area of compound eyes and ocelli. x 3
- 2 Denticulate margin and doublure of ventral side. x 3
- 3 Carapace showing normal outline but with the frontal denticulations not retained. x 3
- 4 Dorsal view of specimen with four legs and part of the abdomen. Paratype. Natural size
- 5 Counterpart of preceding showing the denticulate frontal margin and eyes. Paratype. Natural size
- 6 Restoration of this species. Natural size  
*Horizon and locality.* Shawangunk grit. Otisville, Orange co., N. Y.  
The originals are in the State Museum

# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 49



G S Barzentin del

J B Lyon Co State Printer



PLATE 50

539

**Stylonurus cestrotus** Clarke

Page 288

See plate 49

- 1 Carapace showing distinctly the extent of the visual areas which are broken out, and the ocellar mound. x 3
- 2 Carapace showing the frontal tumescence and large ocellar mound. x 3
- 3 Carapace showing surface ornamentation. The doublure has become separated on the left side. x 3
- 4, 5, 6 Carapaces illustrating the great variation in outline due to different directions of compression. x 3
- 7 Portion of a grooved leg, probably belonging to this species. Natural size  
*Horizon and locality.* Shawangunk grit. Otisville, Orange co., N. Y.

**Stylonurus** sp.

- 8 Fragment of leg, probably referable to *Stylonurus*, subgenus *Ctenopterus*.  
x 3  
*Horizon and locality.* Shawangunk grit. Otisville, Orange, co., N. Y.

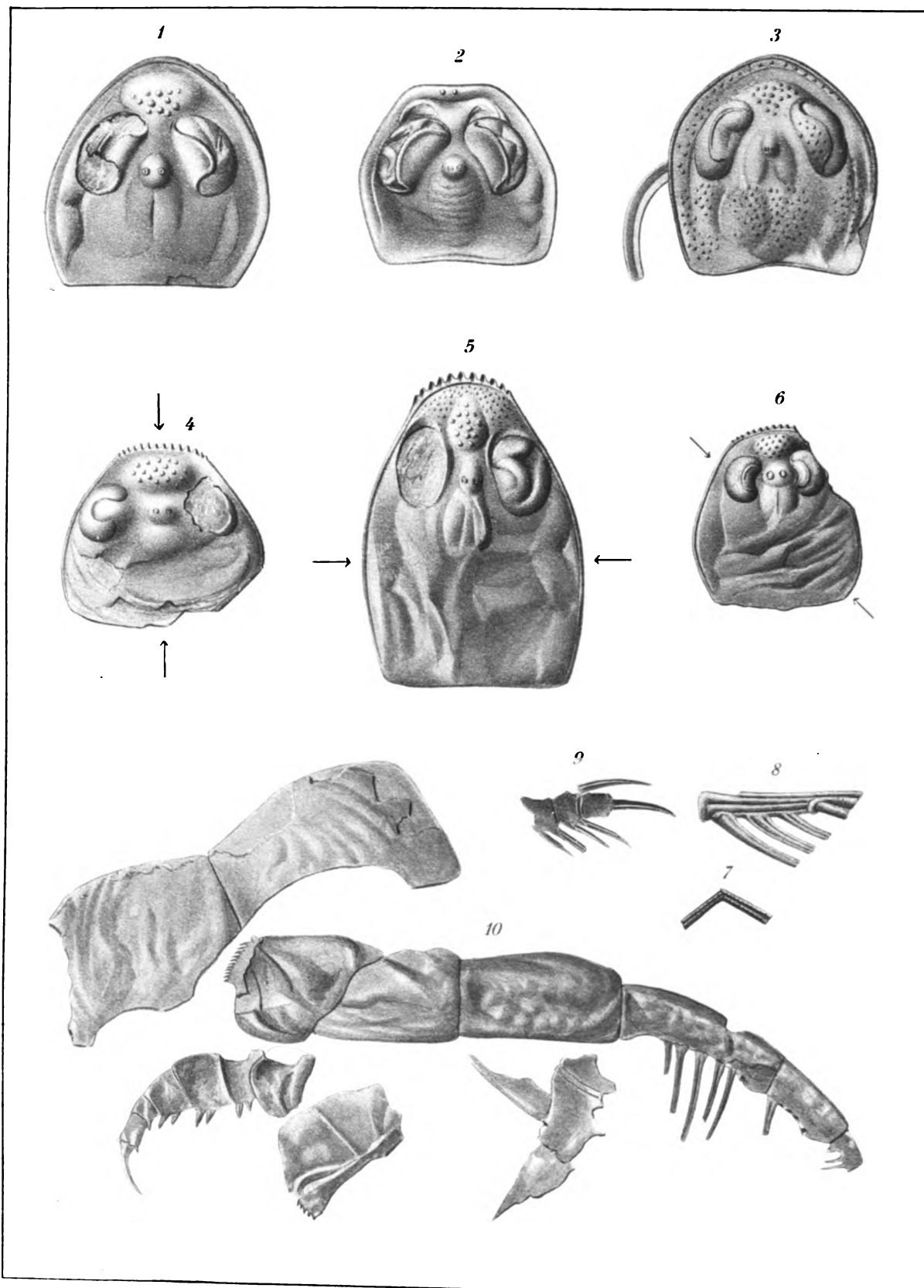
**Stylonurus multispinosus** nov.

Page 297

- 9 Distal portion of leg. Natural size
- 10 Group of first and third endognathites, and a sternite  
*Horizon and locality.* Pittsford shale. Pittsford, Monroe co., N. Y.  
The originals of all figures are in the State Museum



# EURYPTERIDA



G S Barkentin del

J B Lyon Co State Printer



PLATE 51

541

**Stylonurus myops** Clarke

Page 300

See plates 52-53

- 1-5 Very young (nepionic) stages showing broad rimmed carapace with enormous ocular nodes with suboval visual areas, and but few segments. x 30
- 6 A nepionic individual showing a very large median plate corresponding in form to the metastoma. . . x 15
- 7-13 Later (neanic) stages showing the gradual change into the mature form of carapace, the gradual decrease of the size of the eyes and the appearance of the ornamentation [compare next plate]. Figures 7 and 11, x 5; figures 8, 9, 10, 12, 13, x 3
- 14 A carapace with mature characters. Natural size  
*Horizon and locality.* Shawangunk grit. Otisville, Orange co., N. Y.  
The originals are in the State Museum

# EURYPTERIDA

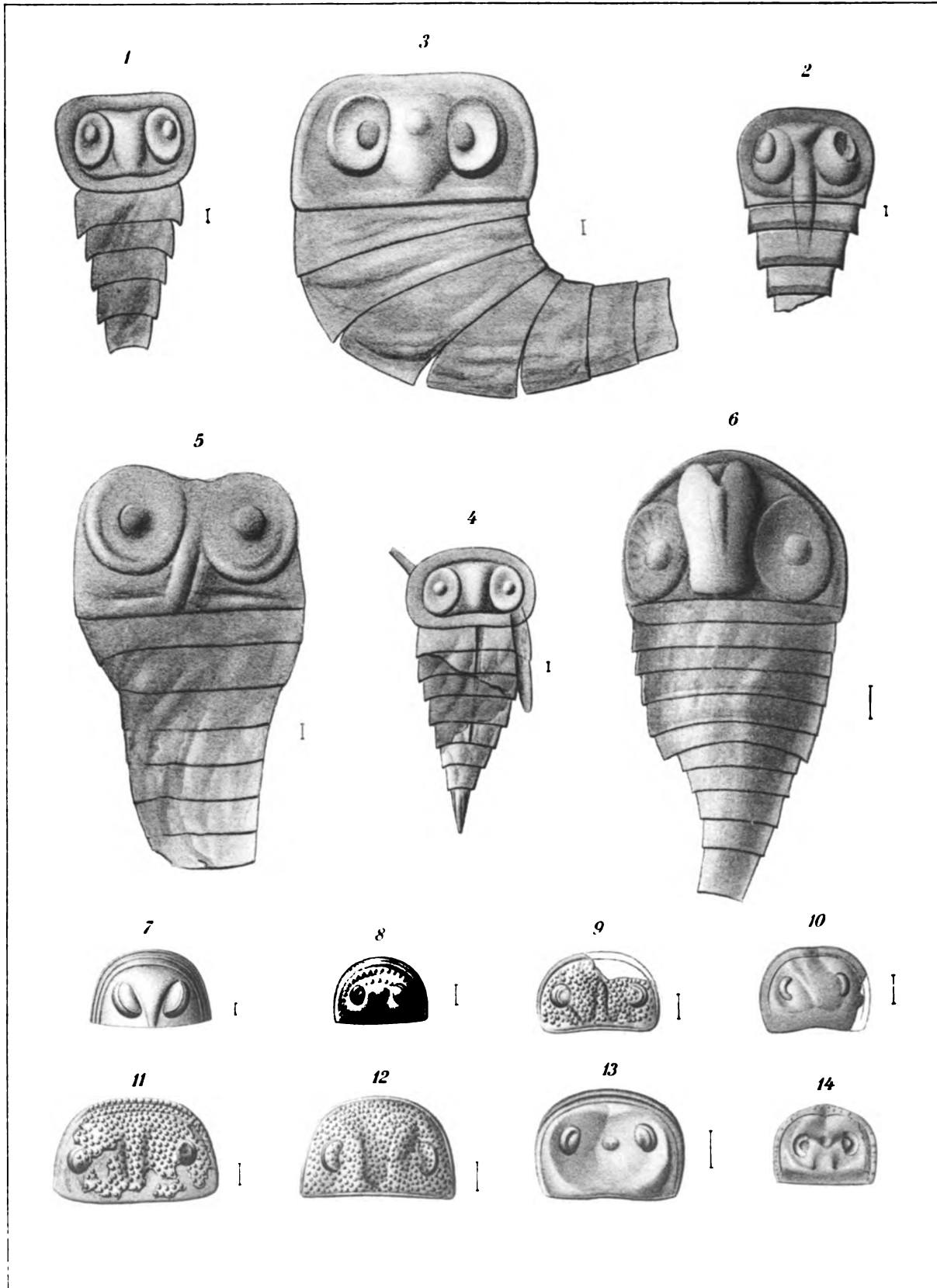




PLATE 52

543

**Stylonurus myops** Clarke

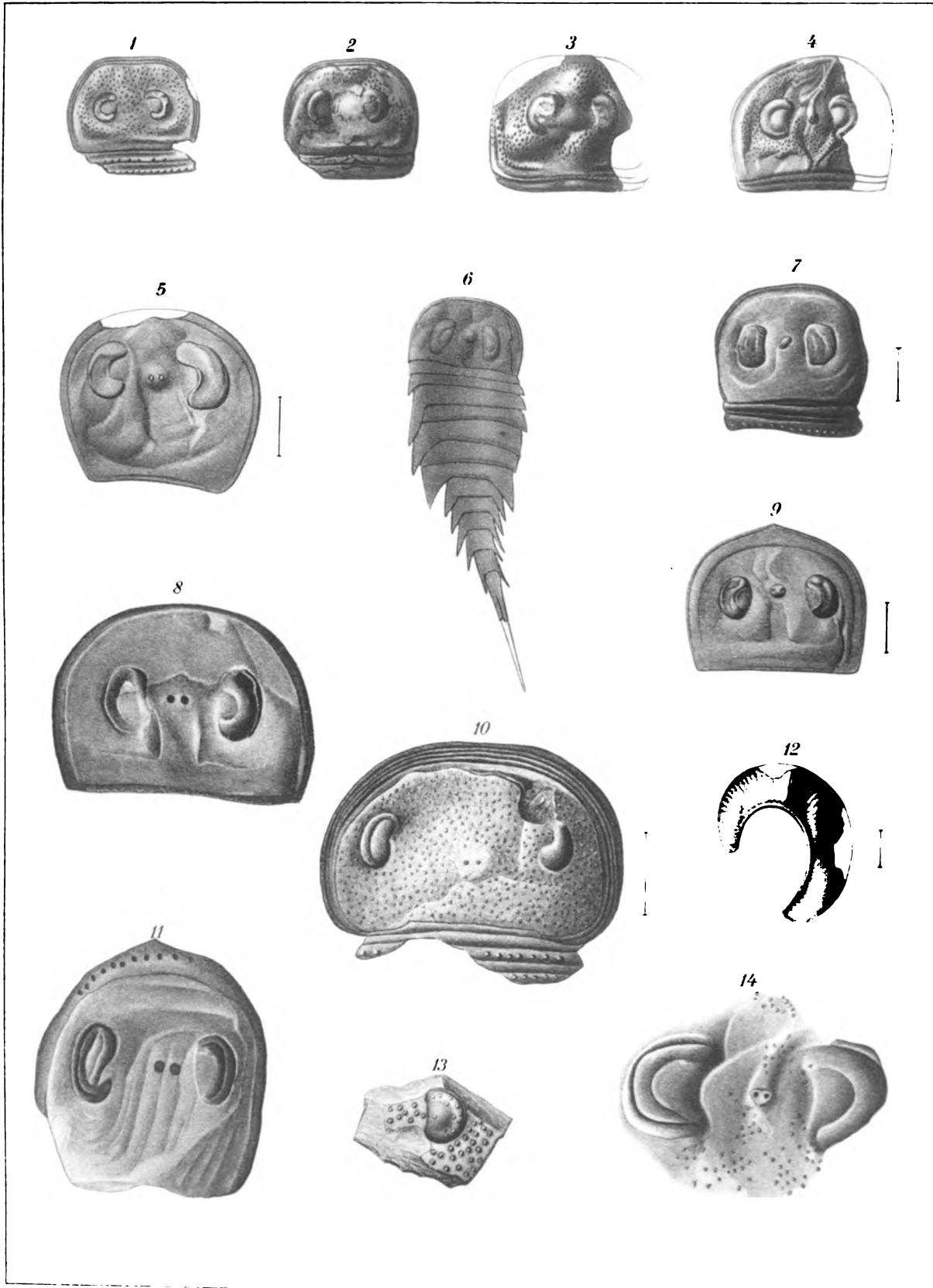
Page 300

See plates 51, 53

- 1-4 Paratypes showing normal expressions of the carapace. Natural size
  - 5 Young carapace with abnormally round outline and anterior eyes. x 3
  - 6 The only entire specimen observed, dorsal view. Much compressed and poorly preserved. Natural size
  - 7 Type. Carapace and two tergites. Carapace exfoliated; tergites showing the ornamentation. x 3
  - 8 Interior view of carapace showing the broad doublure. x 3
  - 9 Specimen showing a median prolongation in front. x 3
  - 10 The holotype. x 3
  - 11 Interior view of laterally compressed carapace showing frontal marginal row of tubercles. x 3
  - 12 Detached visual area. x 5. The radial lines are wrinkles
  - 13 Compound eye showing semioval form of ocular node and its ornamented surface. Paratype. Natural size
  - 14 Central portion of figure 4 enlarged (x 3) to show form of ocellar mound and extent of visual areas
- Horizon and locality.* Shawangunk grit. Otisville, Orange co., N. Y.  
The originals are in the State Museum



# EURYPYTERIDA



FWC: et. DSB: dal



PLATE 53

545

**Stylonurus myops** Clarke

Page 300

See plates 51, 52

- 1 Metastoma found in association with remains of this species. x 5
- 2 Fragment of a metastoma. x 3
- 3-5 Tergites showing slight differences in the characteristic ornamentation. Figure 3, natural size; figures 4 and 5, x 3
- 7 Fragment of leg joint exhibiting an ornamentation that suggests its reference to *S. myops*. x 3

**Stylonurus** sp.  $\alpha$

Page 313

- 10 Fragment of postabdominal segment showing the ornamentation consisting of spines of which only the bases are retained. x 3.
- 11 Leg joint with bases of large marginal spines. x 3
- 8, 12 Fragments of abdominal segments. x 3

**Stylonurus** sp.  $\beta$

Page 313

- 14, 15 Leg joints of uncertain specific relations. x 3

**Stylonurus** sp.  $\gamma$

Page 313

- 19 Terminal joints of leg. Natural size

**Stylonurus** sp.  $\delta$

Page 313

- 6, 9 Fragments of integuments showing peculiar character of ornamentation. Natural size
- 13 Segment with serrated posterior margin. x 3

**Stylonurus** sp.

Page 314

- 20 Distal joints of a leg indicating an individual of considerable size. Natural size
- 18 Articulation of two leg joints. Natural size

**Genus** undet.

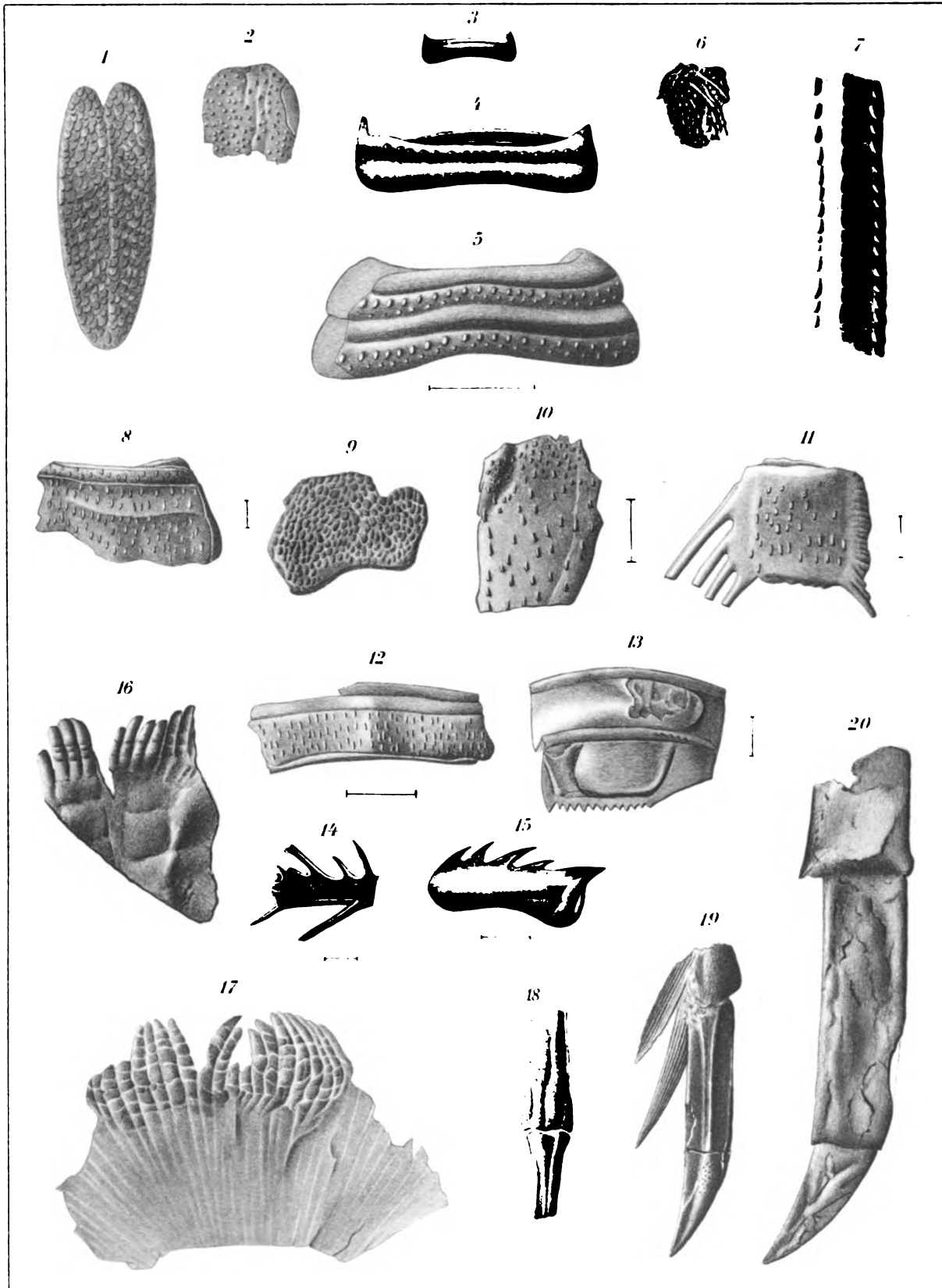
Page 314

- 16, 17 Fragments of uncertain character, possibly the manducatory edges of coxal joints of a large form  
The originals of this plate are from the Shawangunk grit, Otisville, N. Y., and are in the State Museum

# EURYPTERIDA

Memoir 14 N.Y. State Museum

Plate 53



EWOL. et G S B del.

J. F. Lyell, Jr. State Printer



**PLATE 54**

547

**Stylonurus (Drepanopterus) longicaudatus nov.**

Page 316

See plates 25, 55, 56

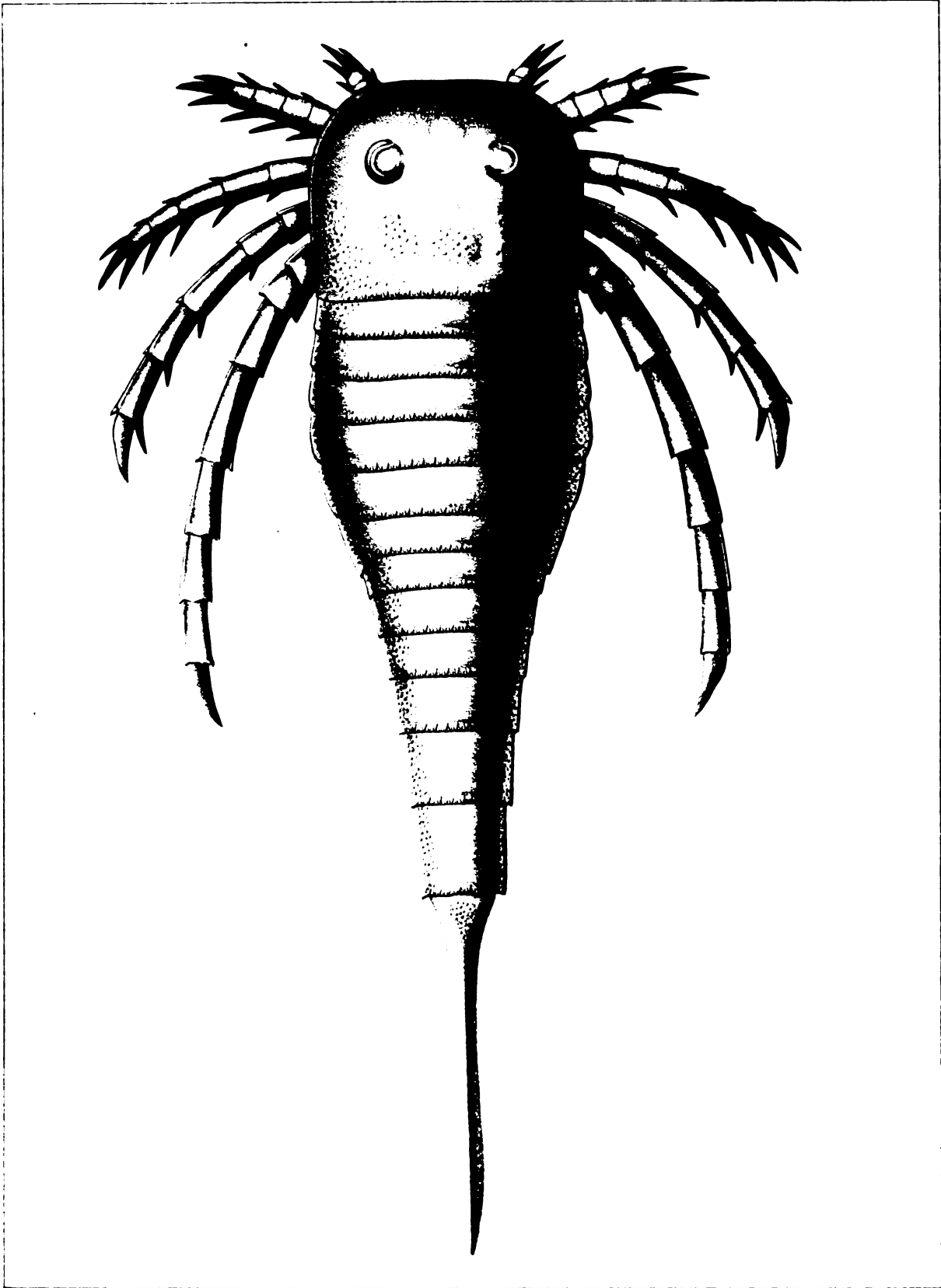
1 Restoration of dorsal aspect



# EURYPTERIDA

Memoir 14 N.Y. State Museum

Plate 54



C. S. Bakewell, del.

J. B. Lyell, sculp.



**PLATE 55**

549

**Stylonurus (Drepanopterus) longicaudatus nov.**

Page 316

See plates 25, 54, 56

- 1 Specimen (paratype) restored in part showing four pairs of legs (second pair apparently missing), portion of carapace with compound eye, outline of body, traces of ornamentation of segments, and form of telson. Natural size

*Horizon and locality.* Kokomo waterlime. Kokomo, Ind.  
The original is in the museum of Chicago University

# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 55

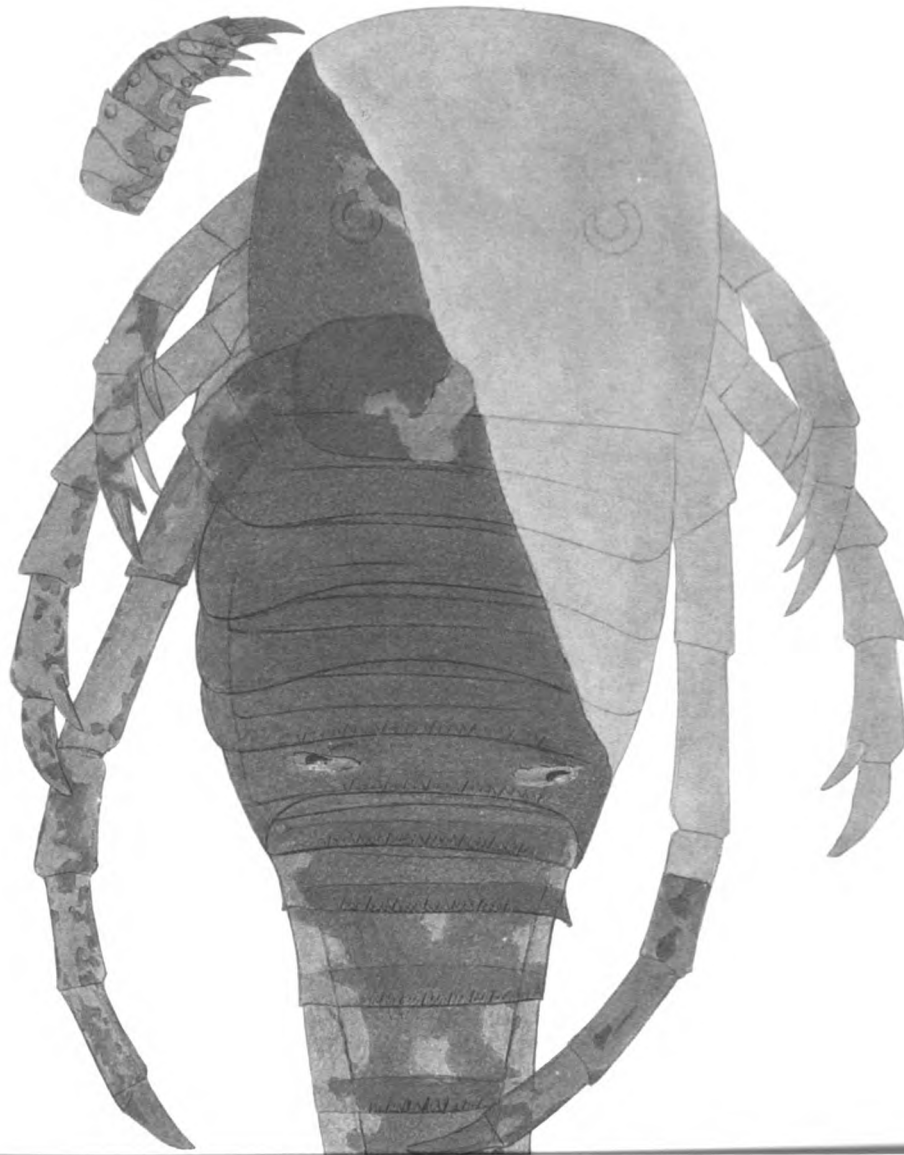




PLATE 56

551

**Stylonurus (Drepanopterus) longicaudatus** nov.

Page 316

See plates 25, 54, 55

- 1 Ventral view of large specimen (holotype) showing the form and proportions of the body, the position of the eyes and mouth, three pairs of legs and the coxae of the last pair

*Horizon and locality.* Kokomo waterlime. Kokomo, Ind.  
The original is in the museum of Chicago University



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 56





PLATE 57

553

**Dolichopterus (?) testudineus** nov.

Page 274

- 1 Swimming leg referred with some doubt to this species. Natural size
- 2 Carapace. Holotype of the species. Natural size  
*Horizon and locality.* Bertie waterlime. Cranes Corners, Herkimer co., N. Y.

**Pterygotus cf. buffaloensis** Pohlman

Page 358

See plates 67, 68, 72-80

- 3 Two walking legs with their coxal joints, the latter retaining the epicoxite (epx.). Natural size  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

**Echinognathus clevelandi** Walcott

Page 322

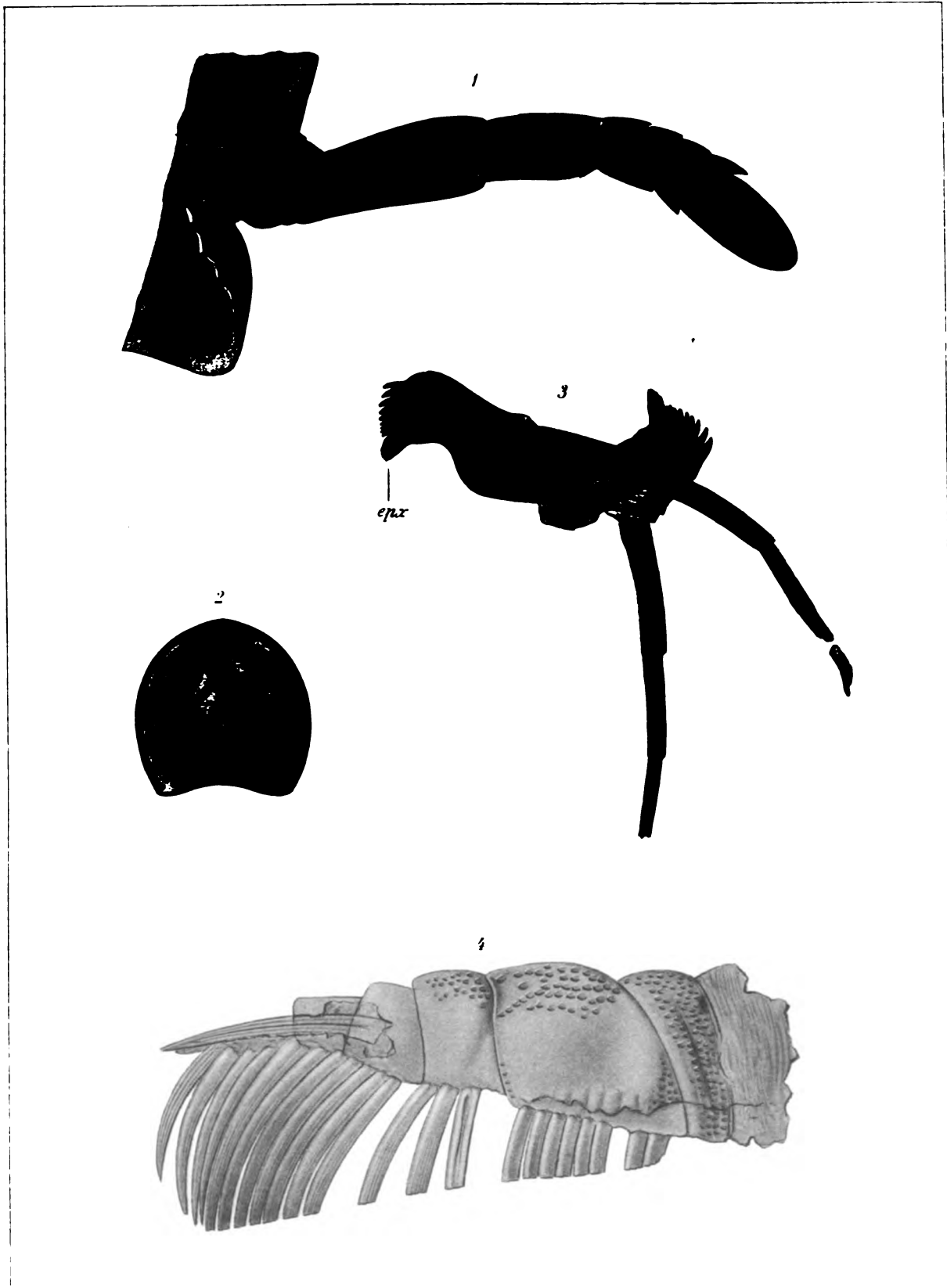
See plate 58

- 4 Figure of the type. Shows the greater part of a short robust walking leg, the sculpturing of its joints and the closely arranged series of long, curved spines. Natural size  
*Horizon and locality.* Utica shale. Holland Patent, Oneida co., N. Y.  
The originals of figures 1 and 2 are in the State Museum, that of figure 3 is in the museum of the Buffalo Society of Natural Sciences, and of figure 4 in the National Museum

# EURYPTERIDA

Memoir 14 N Y State Museum

Plate 57



G. S. Parker, del.

J. B. Van C. Smith, sculp.



PLATE 58

555

**Echinognathus clevelandi** Walcott

Page 322

See plate 57

- 1 Fragment of segment. Paratype of the species. Natural size
- 2 Small fragment of segment (x 3) to show character of scales  
*Horizon and locality.* Utica shale. Holland Patent, Oneida co., N. Y.

**Megalograptus welchi** Miller

Page 325

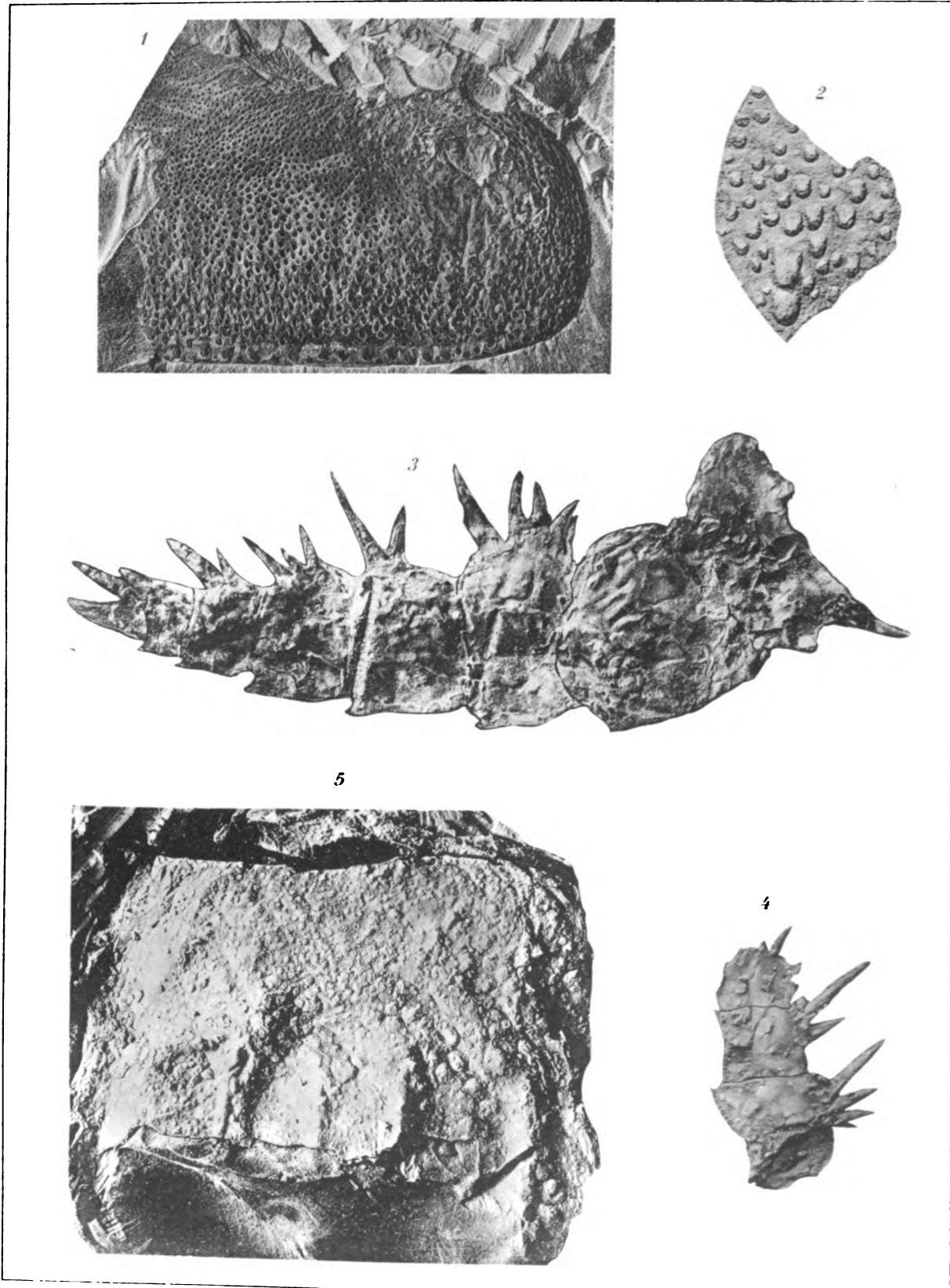
- 3 Walking leg. Cotype. Natural size
- 4 Fragment of walking leg. Cotype. Natural size
- 5 Postabdominal segment. Cotype. Natural size  
*Horizon and locality.* Richmond group (Liberty beds) Near Clarks-  
ville, Warren co., Ohio

All figures are from photographs

The originals of figures 1 and 2 are in the National Museum, those of figures 3-5 in the museum of Chicago University. Figures 3-5 were furnished by Dr A. F. Foerste



# EURYPTERIDA



A F F et J A G phot.

J B Lyon Co. State Printer



**PLATE 59**

557

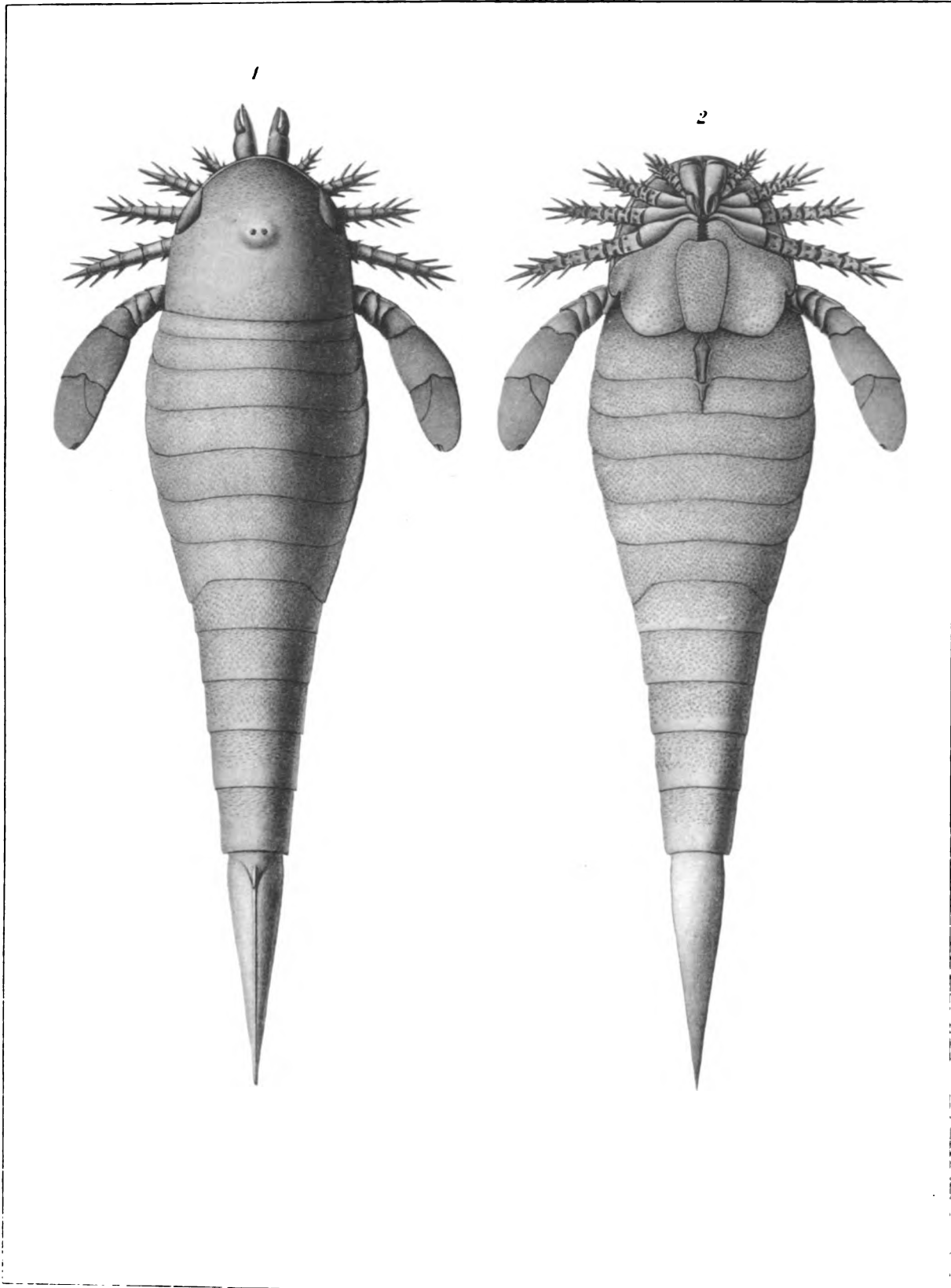
**Hughmilleria socialis** Sarle

Page 335

See plates 60-63

† Restorations of dorsal and ventral aspects. Natural size

# EURYPTERIDA



G. S. Barkentin del.

J. B. Lyon Co. State Printer



THE SCRIPPS INSTITUTION  
OF OCEANOGRAPHY  
OF THE  
UNIVERSITY OF CALIFORNIA  
LAJOLLA, CALIF.

PLATE 60

559

**Hughmilleria socialis** Sarle

Page 335

See plates 46, fig. 15; 59, 61-63

- 1-6 Series of carapaces of individuals of various ages showing slight variations in outline and in the size and position of the compound eyes. Natural size
- 7 A laterally compressed carapace showing the form of the compound eye. Natural size
- 8 Dorsal view of average individual showing the ocellar mound, one walking leg and the surface sculpture. Natural size
- 9 Dorsal view of well preserved specimen showing the normal outline of the body, the swimming legs and form of segments
- 10 Ventral view of specimen. This retains the extended right preoral appendage, three walking legs with their coxal joints in position, the mouth, the metastoma, the coxal joints of the swimming legs with their gnathobases, the left swimming leg, male opercular appendage and the imbricating surface scales. The postlateral lobes of the first postabdominal segment are also well shown. Natural size

*Horizon and locality.* Pittsford shale. Pittsford, Monroe co., N. Y.

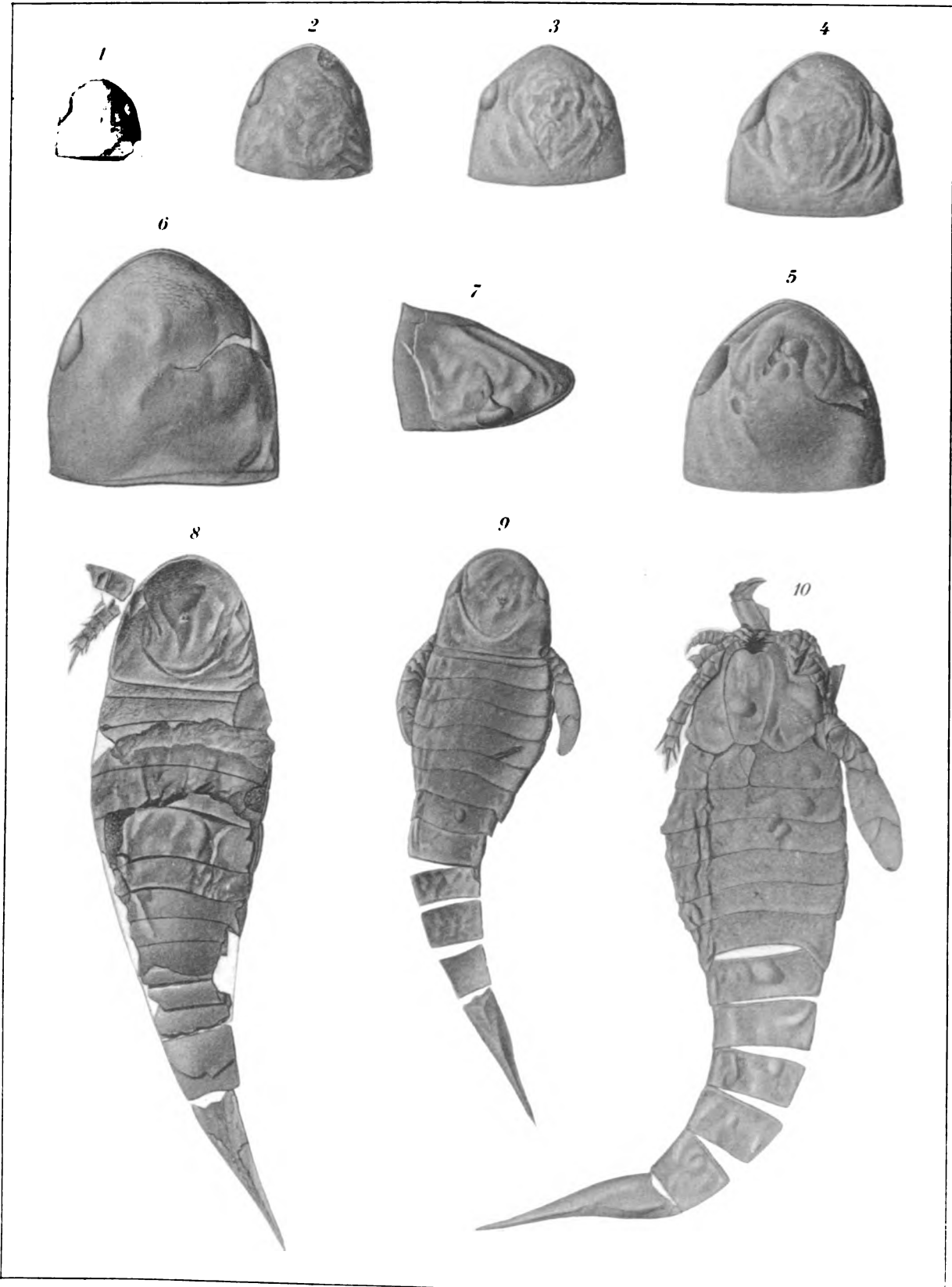
The originals of figures 1-5, 8-10 are cotypes. The originals of all figures are in the State Museum



# EURYPTERIDA

Memoir 14 N.Y. State Museum

Plate 60



C. S. Barkentin del.

J. B. Lyon Co. State Printer



**PLATE 6r**

56r

**Hughmilleria socialis Sarle**

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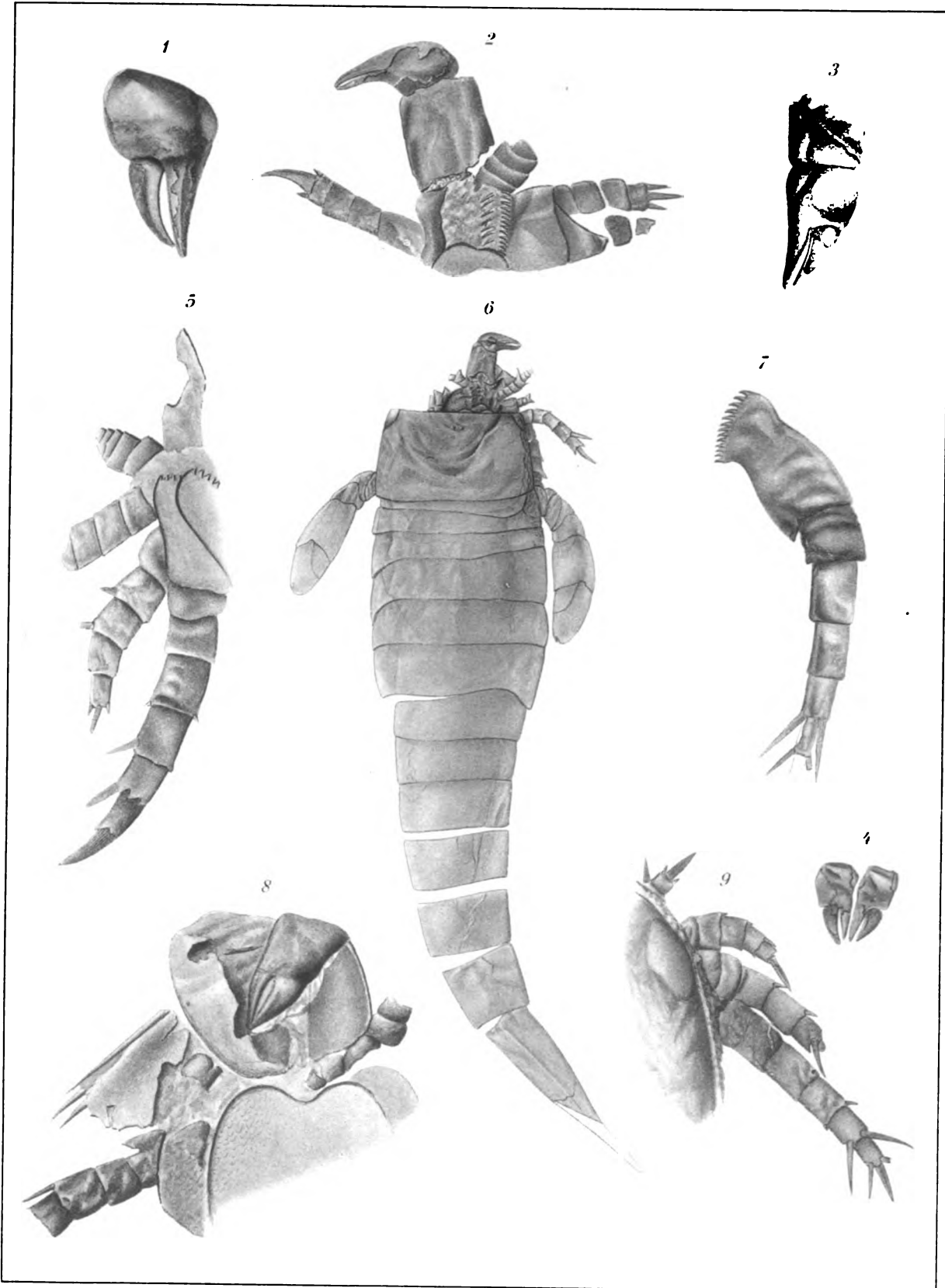
See plates 59-61, 62-64

- 1 Pincers of a chelicera. x  $3\frac{1}{2}$
  - 2 Extended chelicera and first two pairs of walking legs. x 3
  - 3 Fragment of first joint and the pincers of a chelicera. x 4
  - 4 Pair of chelicerae, presumably in normal position. x 3
  - 5 The two posterior walking legs in complete preservation. x 3
  - 6 Dorsal view of a large specimen. The anterior portion of the carapace is broken away thereby exposing one extended chelicera and the walking legs of the right side. Both swimming legs are also shown.  
Natural size
  - 7 Complete walking leg, showing coxal joint and articulation of second joint. x  $3\frac{1}{2}$
  - 8 Complete chelicera in natural position. x  $3\frac{1}{2}$
  - 9 Dorsal view of right side of cephalothorax with the four walking legs in position. x 3
- Horizon and locality.* Pittsford shale. Pittsford, Monroe co., N. Y.  
The originals of all figures are in the State Museum. All specimens are cotypes

# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 61



G.S. Barkentin del.

J.B. Lyon, Co. State Printer



PLATE 62

563

## Hughmilleria socialis Sarle

Page 335

See plates 59-61, 63

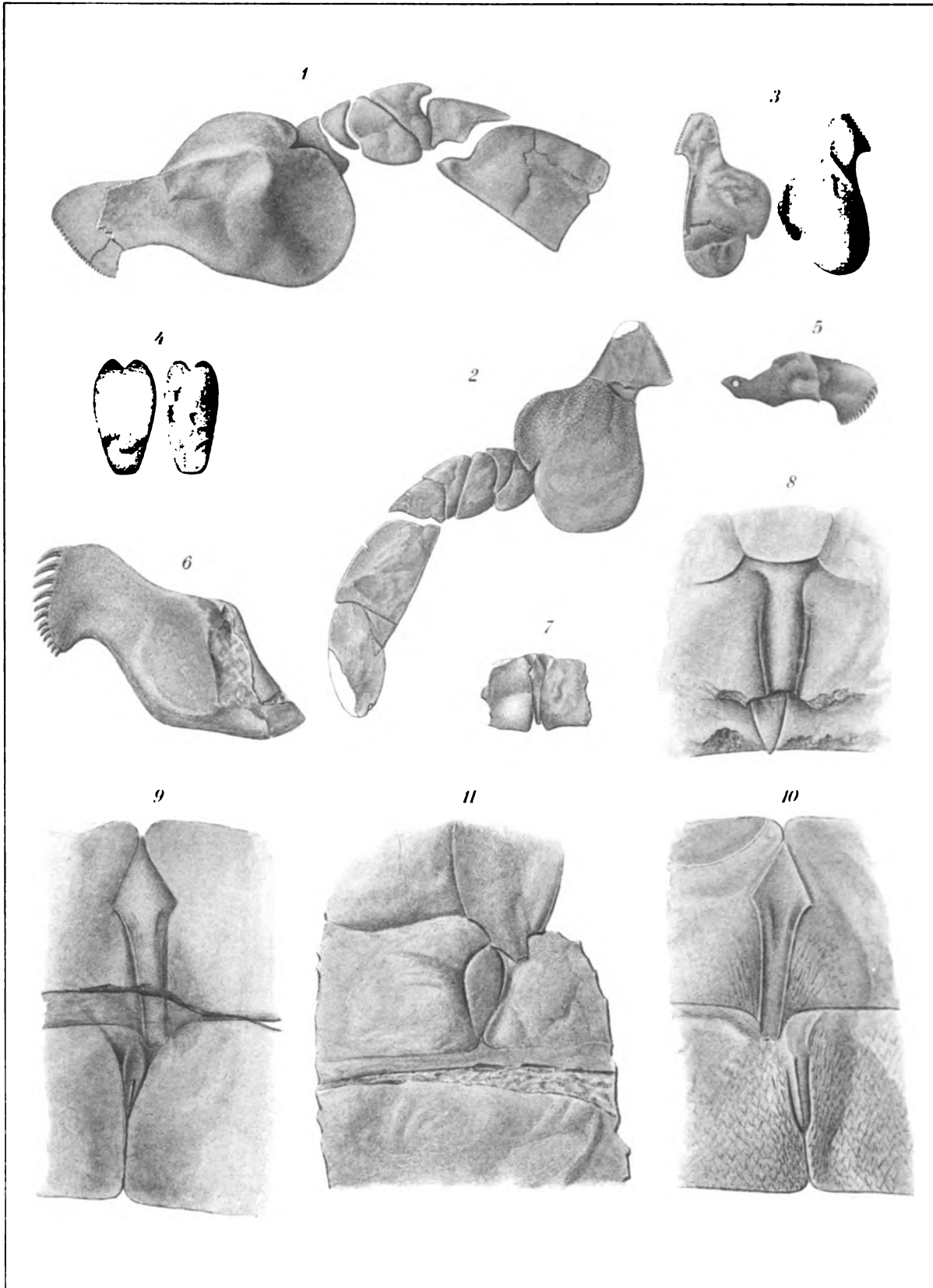
- 1 Swimming leg, disjointed, showing the form of the joints. x  $2\frac{1}{2}$
- 2 Complete swimming leg. x 3
- 3 Two coxal joints of swimming legs. Natural size
- 4 Two metastomas showing slight variation in form. Natural size
- 5 Coxal joint of fourth walking leg showing large perforation of unknown function
- 6 Coxal joint of walking leg. x 3
- 7 Female genital appendage of second sternite. Natural size
- 8 Female genital appendage of second sternite, showing its partial covering by opercular appendage. x  $2\frac{1}{2}$
- 9 Middle portion of operculum and second sternite, from within showing female genital appendages and partial covering of appendage of second sternite by opercular appendage. This second appendage should have been drawn into a more elongate tubular form. x  $3\frac{1}{2}$
- 10 Same as preceding from the outside, showing appendage of second sternite fully exposed. The longitudinal groove shown on this appendage is the result of pressure against the overlapped edges of the right and left halves of the sternite. x  $3\frac{1}{2}$
- 11 View of male operculum and second sternite showing fused parts of opercular appendage and lanceolate shape of appendage of second sternite seen from inside. x 2

*Horizon and locality.* Pittsford shale. Pittsford, N. Y.

The originals are all cotypes and are in the State Museum



# EURYPTERIDA



G S Barkman, 1911

U.S. Geol. Surv. Prof. Paper 100



**PLATE 63**

565

### **Hughmilleria socialis Sarle**

Page 335

See plates 59-62

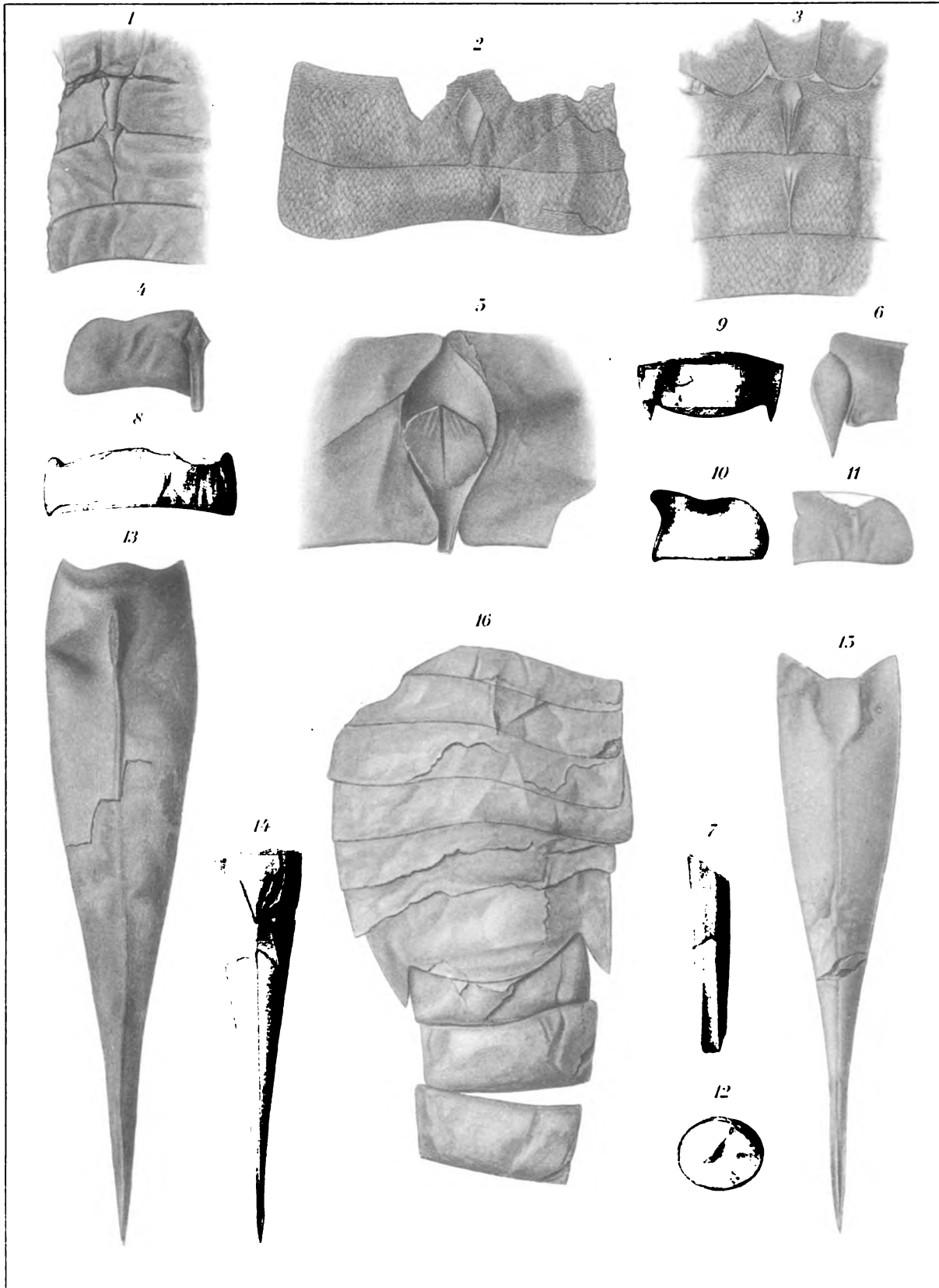
- 1 Middle portion of first two sternites to show female genital appendages, the overlap of the metastoma upon the opercular appendage and that of the latter on the next appendage. x 2
- 2 First two sternites showing male appendage, from the inside of body. x 2
- 3 Middle portion of operculum and second sternite showing fused parts of female opercular appendage and lanceolate shape of appendage of second sternite seen from inside of body. x 2
- 4 Half operculum with attached female opercular appendage. Natural size
- 5 Male genital appendage, a portion of which is scaled away furnishing a cast of the interior. x  $3\frac{1}{2}$
- 6 Male genital appendage. Natural size
- 7 The free portion of the opercular appendage of a female showing the point of overlap and fusion of the two parts. x 2
- 8 Second tergite showing the antero-lateral lobes. Natural size
- 9 First postabdominal ring segment. Natural size
- 10 Half of male operculum showing the face of the median cleft. Natural size
- 11 Half of female operculum showing the face of the median cleft. Natural size
- 12 Section showing the cylindrical form of the postabdomen. Natural size
- 13, 15 Two views of telsons showing the dorsal carination. Figure 13, x  $3\frac{1}{2}$ ; figure 15, x 2
- 14 Uncompressed telson. x 2

### **Hughmilleria socialis Sarle var. robusta Sarle**

Page 340

- 16 Fragment of abdomen showing relatively great width and abrupt post-abdominal contraction. Natural size  
*Horizon and locality.* Pittsford shale. Pittsford, Monroe co., N. Y.  
The originals are all cotypes of the species and deposited in the State Museum

# EURYPTERIDA



G.S. Barkentin del.

J.B. Lyon Co. Stone Engraver



PLATE 64

567

## Hughmilleria shawangunk Clarke

Page 342

See plates 65, 66; plate 69, fig. 1

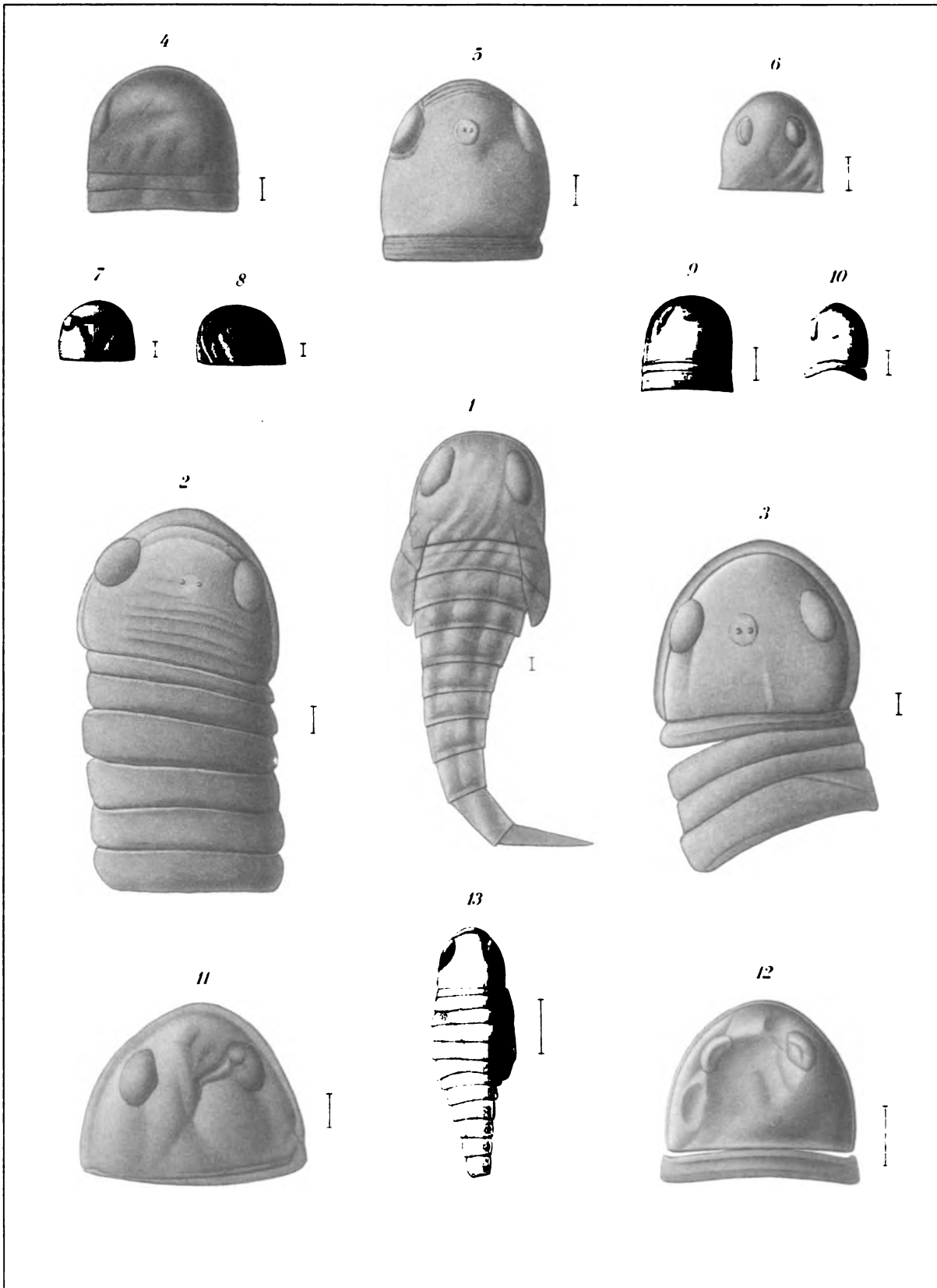
- 1 Youngest (nepionic) individual observed. Shows the large carapace, the immense compound eyes, the swimming legs and the incomplete number of segments. x 30
  - 2 Very young (nepionic) individual showing the broad doublure, the prominence of the large compound eyes, the ocelli and the narrow tergites. The carapace is slightly shortened by compression. x 16
  - 3 A like growth stage showing the ocellar mound. x 16
  - 4-10 A series of carapaces of early growth stages showing the variation in outline and in the position of the eyes, largely due to different directions of compression. Figures 6, 8-10 show the intramarginal position of the eyes. Figure 4, x 6; figures 5 and 8, x 5; figures 6, 7, 9, 10, x 3
  - 11, 12 Two carapaces showing the outline of the compound eye; figure 12 also shows that of the first tergite. Figure 11, x 5; figure 12, x 3
  - 13 A young neanic individual (9 mm long) showing large eyes and complete number of segments in abdomen
- Horizon and locality.* Shawangunk grit. Otisville, Orange co., N. Y.  
Figures 1, 4, 7, 8 represent types [N. Y. State Mus. Bul. 107, pl. 4, fig. 2; pl. 5, fig. 5, 8, 9]. All originals are in the State Museum



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 64



E.W. C. L. et G. S. B. del.

J.B. Lyon Co. State Printer



PLATE 65

569

### **Hughmilleria shawangunk** Clarke

Page 342

See plates 64, 66; plate 71, fig. 1

- 1, 2 Types of the species. x 2
  - 3, 4 Carapaces, so compressed that the distance of the eyes from the margin of the carapace is seen, figure 3 showing the normal outline of the carapace and the thickened margin. x 3
  - 5 A different aspect of the carapace resulting from compression in an antero-posterior direction. x 3
  - 6 A type specimen exhibiting dorsal view and showing carapace with compound eyes, ocelli and swimming leg. x 2
  - 7 A type specimen showing a walking leg and the general outline of the body. x 2
  - 8 A young individual (type) showing outline of metastoma and one swimming foot. x 4
  - 9 Carapace showing distinctly the ocelli. Natural size
  - 10 Carapace showing the relation of visual area and ocular node, and the marginal doublure which has become separated from the carapace. x 3
  - 11 A well preserved carapace and tergites showing the normal outline of carapace, the ocellar mound and the ornamentation of the tergites. Natural size
  - 12 A carapace so compressed that the whole distance of the compound eyes from the margin is shown. x 3½
- Horizon and locality.* Shawangunk grit. Otisville, Orange co., N. Y.  
The originals are in the State Museum

# EURYPTERIDA

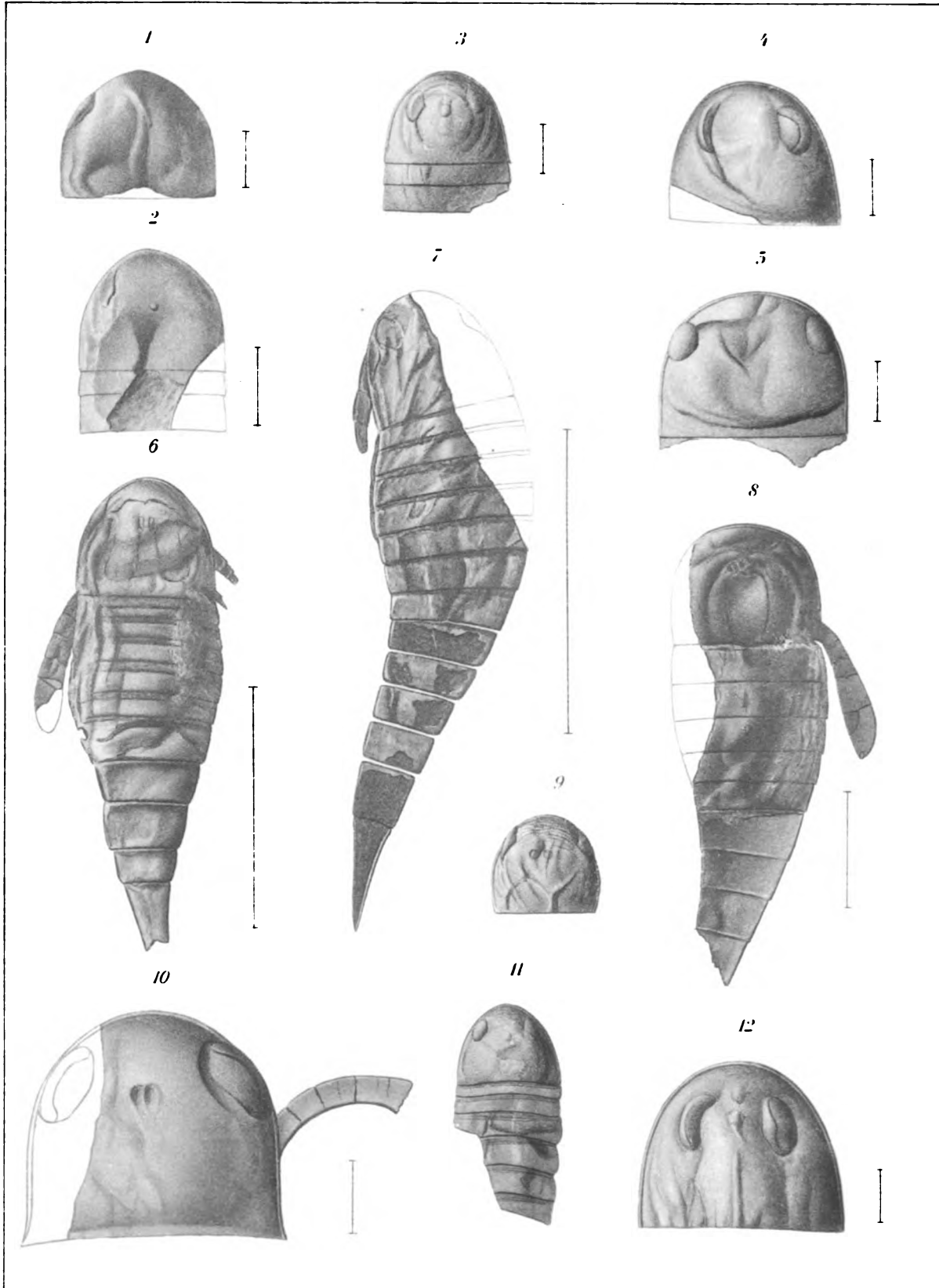




PLATE 66

571

**Hughmilleria shawangunk** Clarke

Page 342

See plates 64, 65; plate 71, fig. 1; plates 66, 67; plate 73, fig. 1

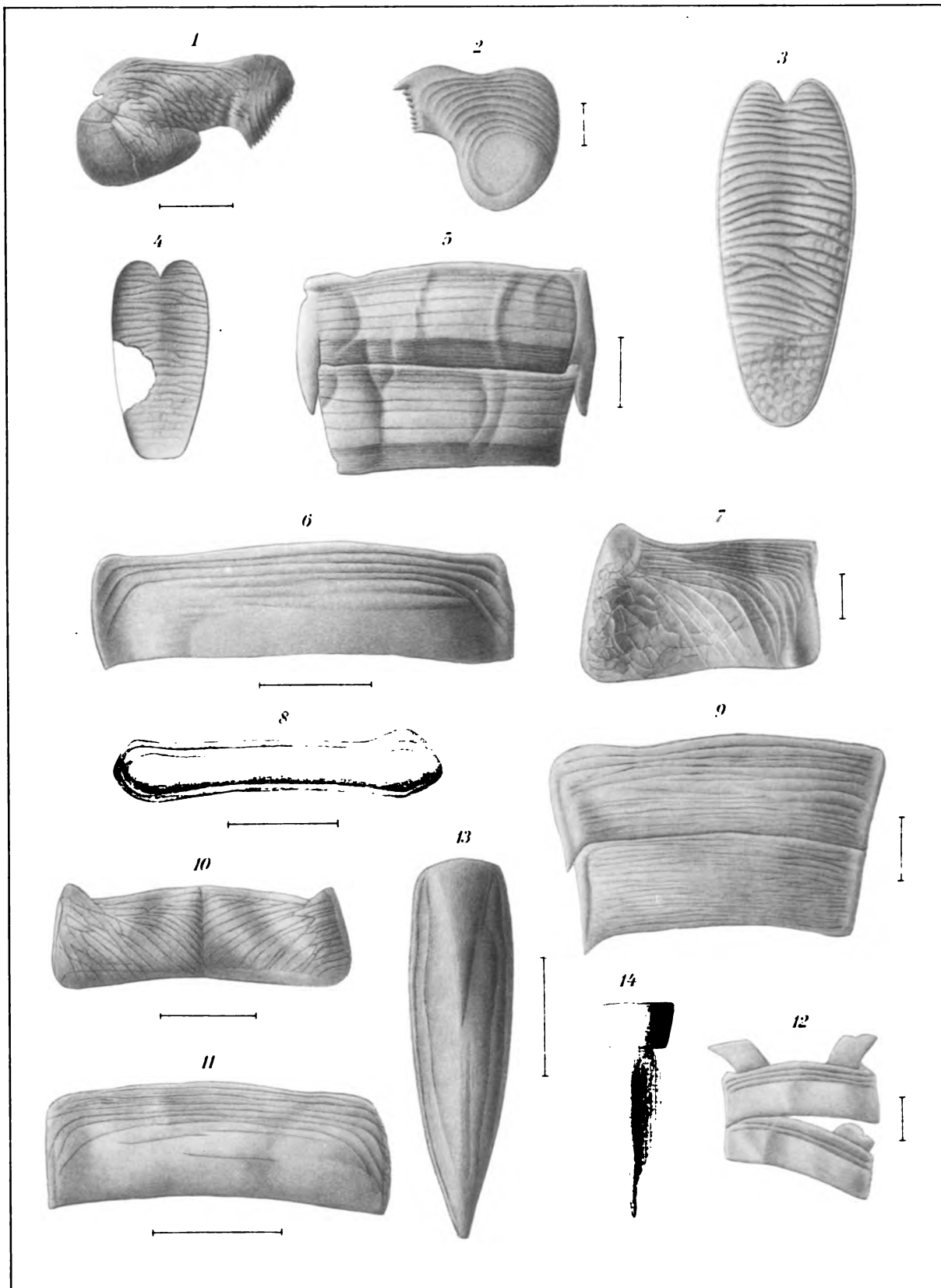
- 1, 2 Coxal joints of swimming feet. x 3
  - 3, 4 Metastoma, figure 3, x 5; figure 4, x 3
  - 5 First two postabdominal segments. x 3
  - 6 Tergite. x 3
  - 7 Half of sternite. x 3
  - 8 First tergite. x 3
  - 9 Two tergites showing the postero-lateral lobes. x 3
  - 10 Sternite showing the antero-lateral lobes and median suture and the ornamentation. x 3
  - 11 Tergite showing the ornamentation x 3
  - 12 Tergite, showing the connecting membranes or ligaments. x 3
  - 13 Telson, dorsal view. x 3
  - 14 Telson, referred with doubt to this species. Natural size
- The originals are in the State Museum



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 66



E. W. C. Little del.

J. B. Lyon Co. State Printer



**PLATE 67**

573

**Pterygotus buffaloensis** Pohlman

Page 358

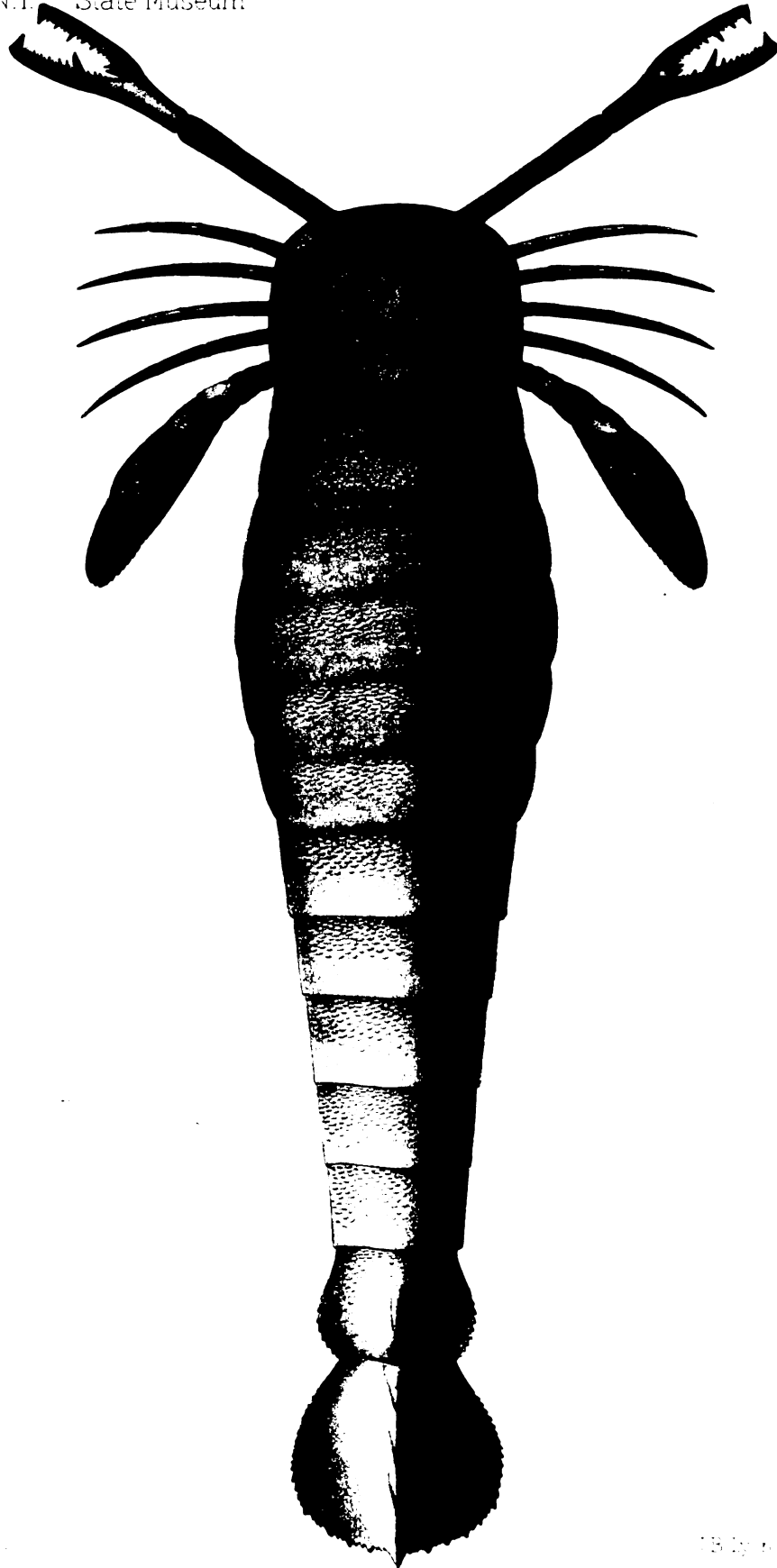
See plate 57, fig. 3; plates 68, 72-80

I Restoration of dorsal aspect. About 1-10 natural size

# EURYPTERIDA

Memoir 14 N.Y. State Museum

Plate 67



G. S. Stewart, del.

1897, *Journal of the Geological Society*



**PLATE 68**

**575**

**Pterygotus buffaloensis** Pohlman

Page 358

See plate 57, fig. 3; plates 67, 69-80

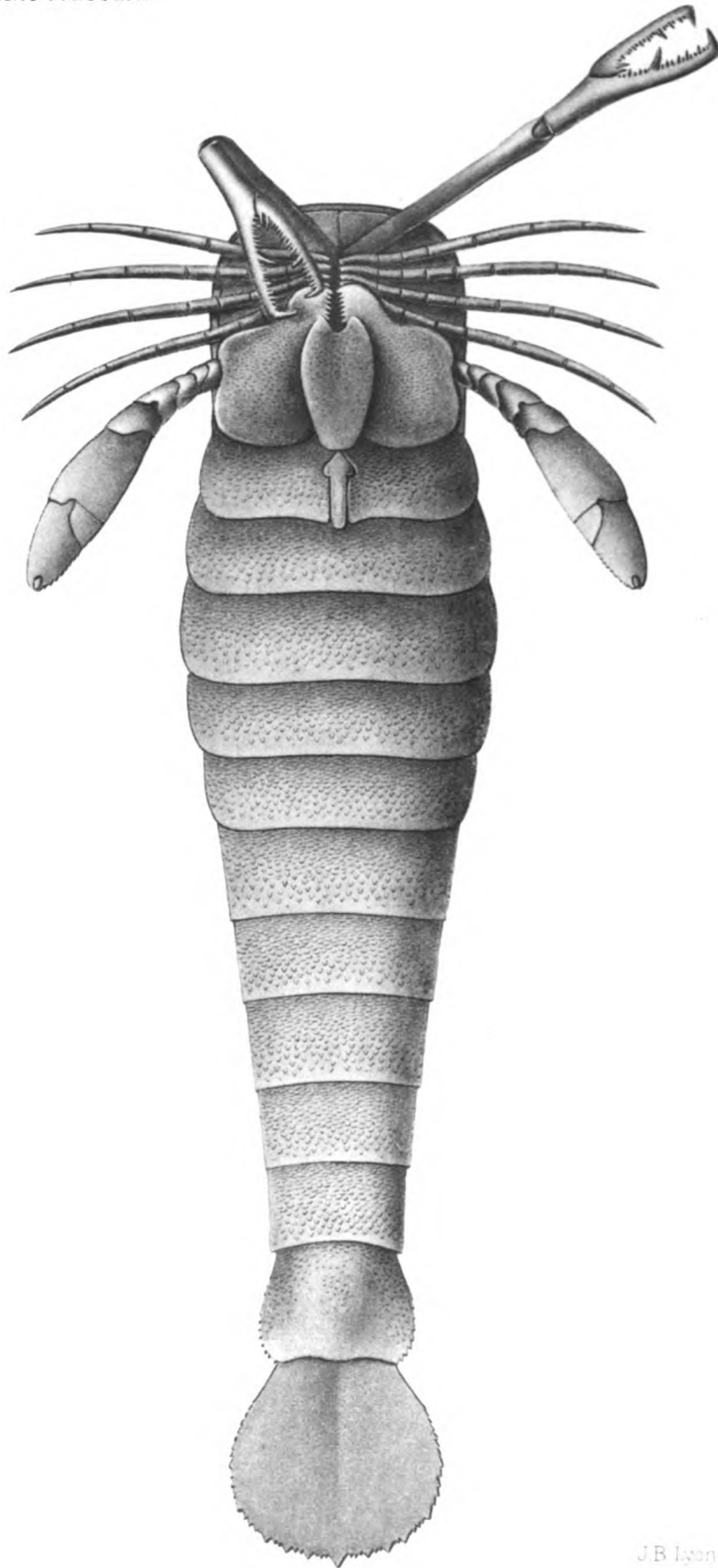
1 Restoration of ventral aspect. About 1-10 natural size



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 68



G. S. E. ...

J. B. ...



**PLATE 69**

577

**Hughmilleria shawangunk** Clarke

Page 342

See plates 64-66

- 1 Carapace showing normal outline and eyes. x 3  
*Horizon and locality.* Shawangunk grit. Otisville, Orange co., N. Y.

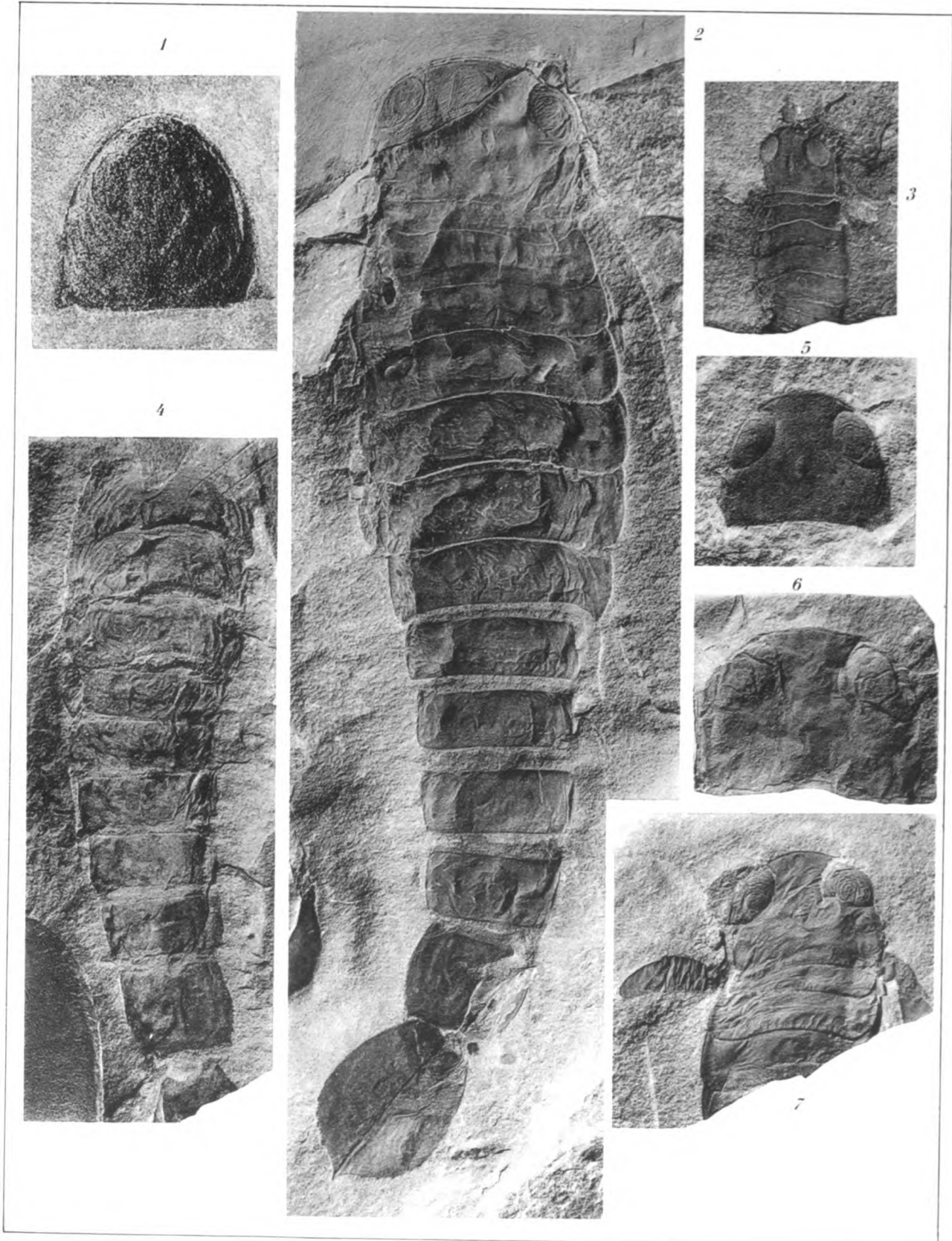
**Pterygotus macrophthalmus** Hall

Page 350

See plates 72-73

- 2 A nearly complete specimen showing the dorsal view of the preabdomen and postabdomen, the latter distended and exhibiting the membrane connecting the joints; and the telson. Natural size  
*Horizon and locality.* Bertie waterlime. Cranes Corners, Herkimer co., N. Y.
- 3 A young specimen showing the relatively greater size of the compound eyes and ocellar mound. Natural size  
*Horizon and locality.* Bertie waterlime. Marshall, Oneida co., N. Y.
- 4 Dorsal view of three tergites and postabdomen showing the marginal serrations of the ultimate segment and the median carina. Natural size  
*Horizon and locality.* Bertie waterlime. Oneida co., N. Y.
- 5 Young carapace preserving well the outline of the carapace, the form and prominence of the compound eyes and the ocellar mound. x 2
- 6 Larger carapace. Natural size
- 7 Specimen showing the carapace, three tergites and swimming legs. Natural size  
*Horizon and locality.* Bertie waterlime. Cranes Corners, Herkimer co., N. Y.
- All figures are from photographs. The originals of figures 1, 2, 5, 6, 7 are in the State Museum, those of figures 3 and 4 are in the American Museum of Natural History

# EURYPTERIDA



J.A. Glenn phot.

J.B. Lyon Co. State Printer



PLATE 70

579

**Pterygotus macrophthalmus** Hall

Page 350

See plate 69, fig. 2-7; plate 71

- 1 Ventral view of a nearly entire specimen showing the operculum with female genital appendage and the other sternites, a swimming leg, a detached distal portion of a chelicera and the long, club-shaped basal joint of another
- 2 Well preserved telson of a larger individual showing the elongate form.  
Natural size  
*Horizon and locality.* Cranes Corners, Herkimer co., N. Y.

**Pterygotus monroensis** Sarle

Page 380

- 3 Fragment of free pincer or chela probably belonging to this species.  
Natural size
- 4 Metastoma, probably belonging to this species. Natural size
- 5 The type. Carapace. Natural size  
*Horizon and locality.* Pittsford, Monroe co., N. Y.

**Pterygotus?** sp.

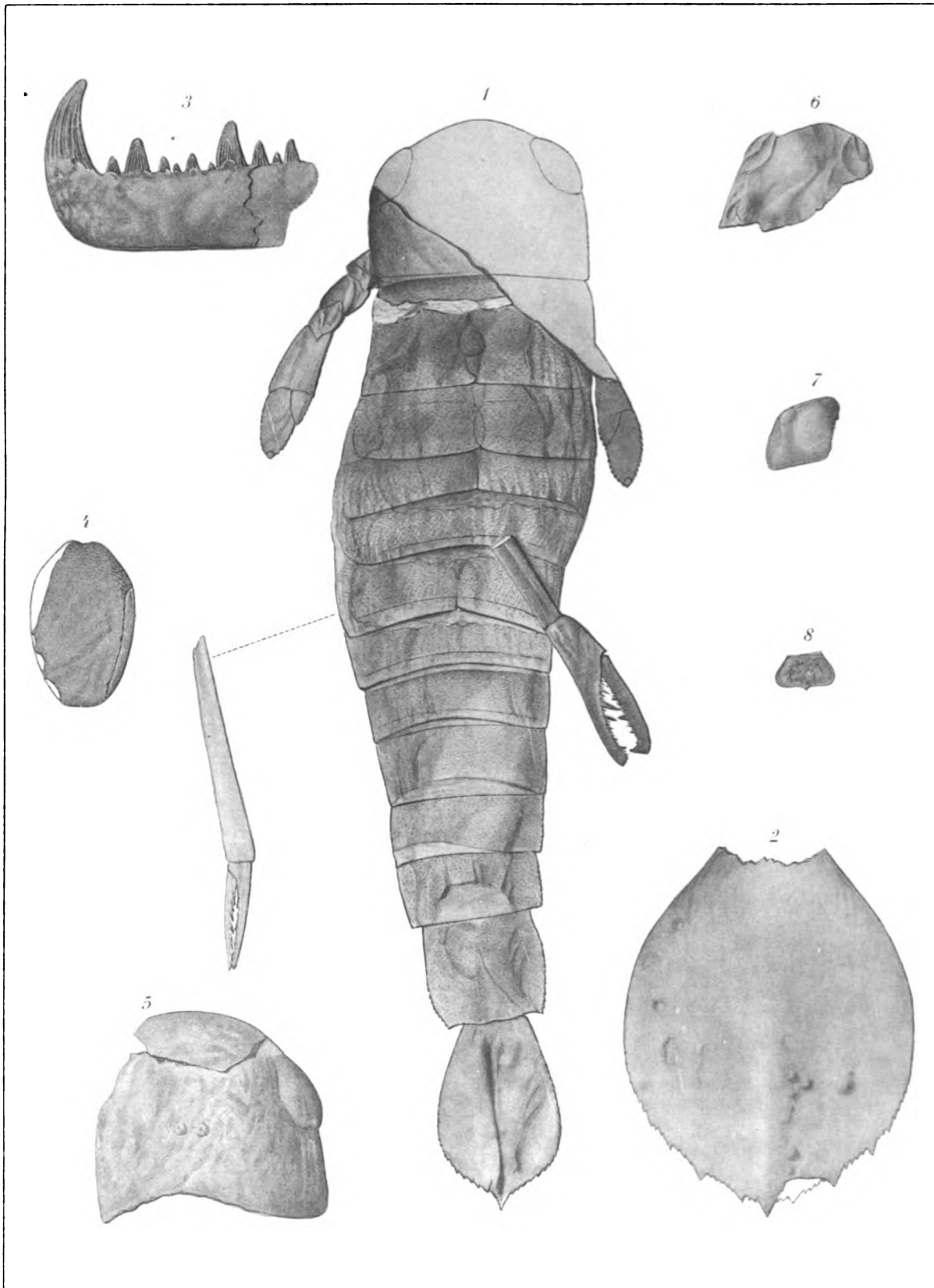
- 6 Fragment of carapace, probably belonging to Pterygotus. Natural size
- 7 Distorted carapace of a Dolichopterus or Pterygotus. Natural size
- 8 Telson of a Pterygotus. Natural size  
*Horizon and locality.* McKenzie formation (Basal Cayugan period of Upper Siluric). Near Hancock, Md.  
The originals of figures 1-5 are in the State Museum, those of figures 6-8 in the National Museum



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 70



G.S. Barkentin del

J.B. Lyon Co. State Printer



**PLATE 71**

**581**

**Pterygotus macrophthalmus Hall**

Page 350

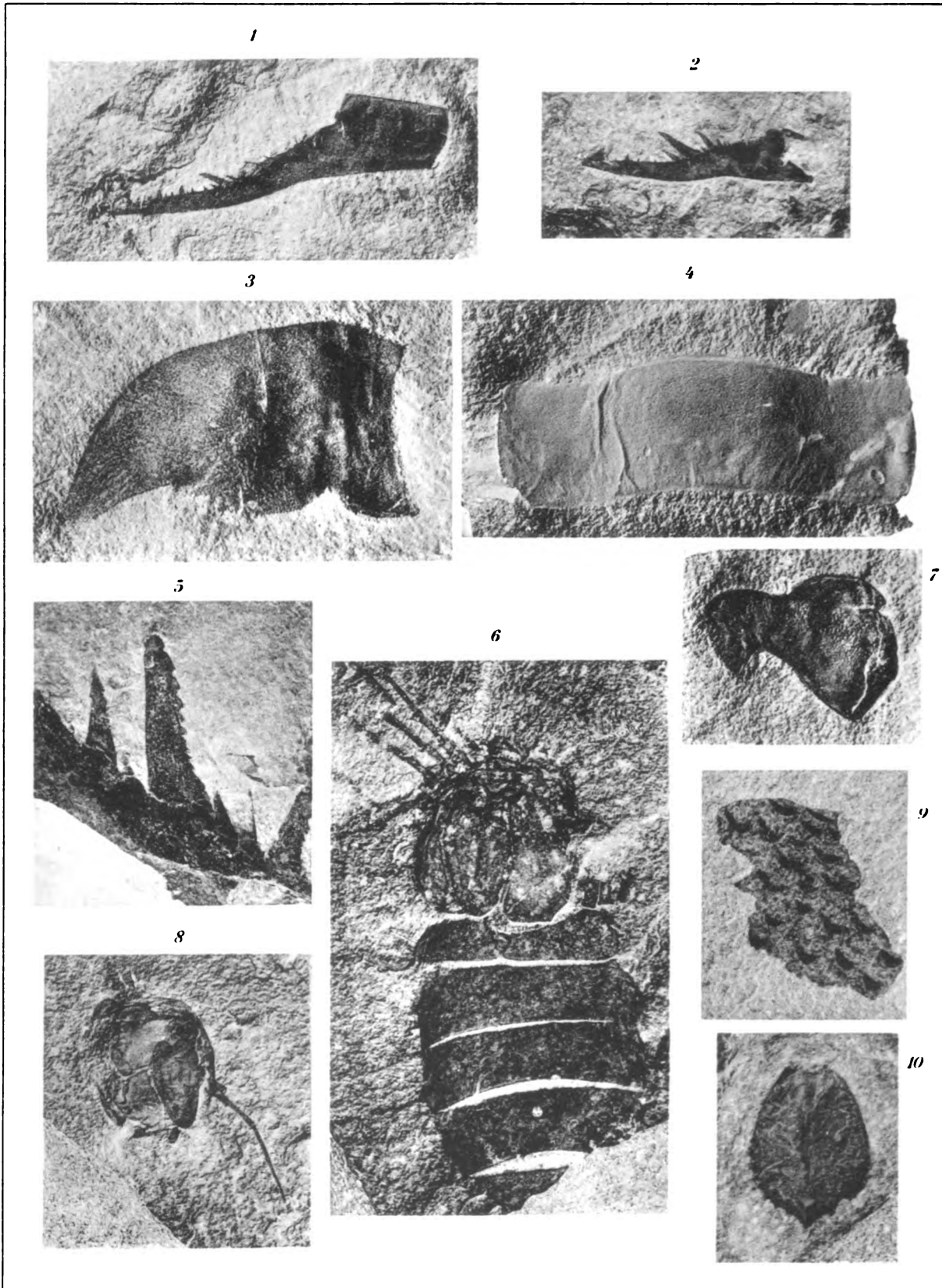
See plates 69, 70

- 1 Complete fixed pincer or chela of chelicera. Natural size
  - 2 Fragment of fixed pincer showing the teeth. Natural size
  - 3 Part of ventral marginal shield and epistoma. x 2
  - 4 Tergite. Natural size  
*Horizon and locality.* Bertie waterlime. Cranes Corners, Herkimer co., N. Y.
  - 5 Serrations of tooth of chela. x 3  
*Horizon and locality.* Bertie waterlime. Jerusalem hill, Herkimer co., N. Y.
  - 6 Ventral view. Hall's type of *P. osborni*. Shows the walking legs and metastoma. Natural size  
*Horizon and locality.* Bertie waterlime. Waterville, Oneida co., N. Y.
  - 7 Coxal joint of swimming leg. Natural size  
*Horizon and locality.* Bertie waterlime. Litchfield, Herkimer co., N. Y.
  - 8 Group of appendages showing a well preserved walking leg, a metastoma and coxal joint of swimming leg. Natural size  
*Horizon and locality.* Bertie waterlime. Cranes Corners, Herkimer co., N. Y.
  - 9 Fragment of integument showing the characteristic form of the scales. x 2  
*Horizon and locality.* Bertie waterlime. Jerusalem hill, Herkimer co., N. Y.
  - 10 Telson of a young individual. Natural size  
*Horizon and locality.* Bertie waterlime. Cranes Corners, N. Y.
- All figures are from photographs.  
The originals of figures 1-5, 8-10 are in the State Museum; those of figures 6 and 7 in the American Museum of Natural History

# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 71



J. A. Glenn phot.

J.B. Lyon Co. State Printer



PLATE 72

583

**Pterygotus buffaloensis** Pohlman

Page 358

See plates 57, 67, 68, 73-80

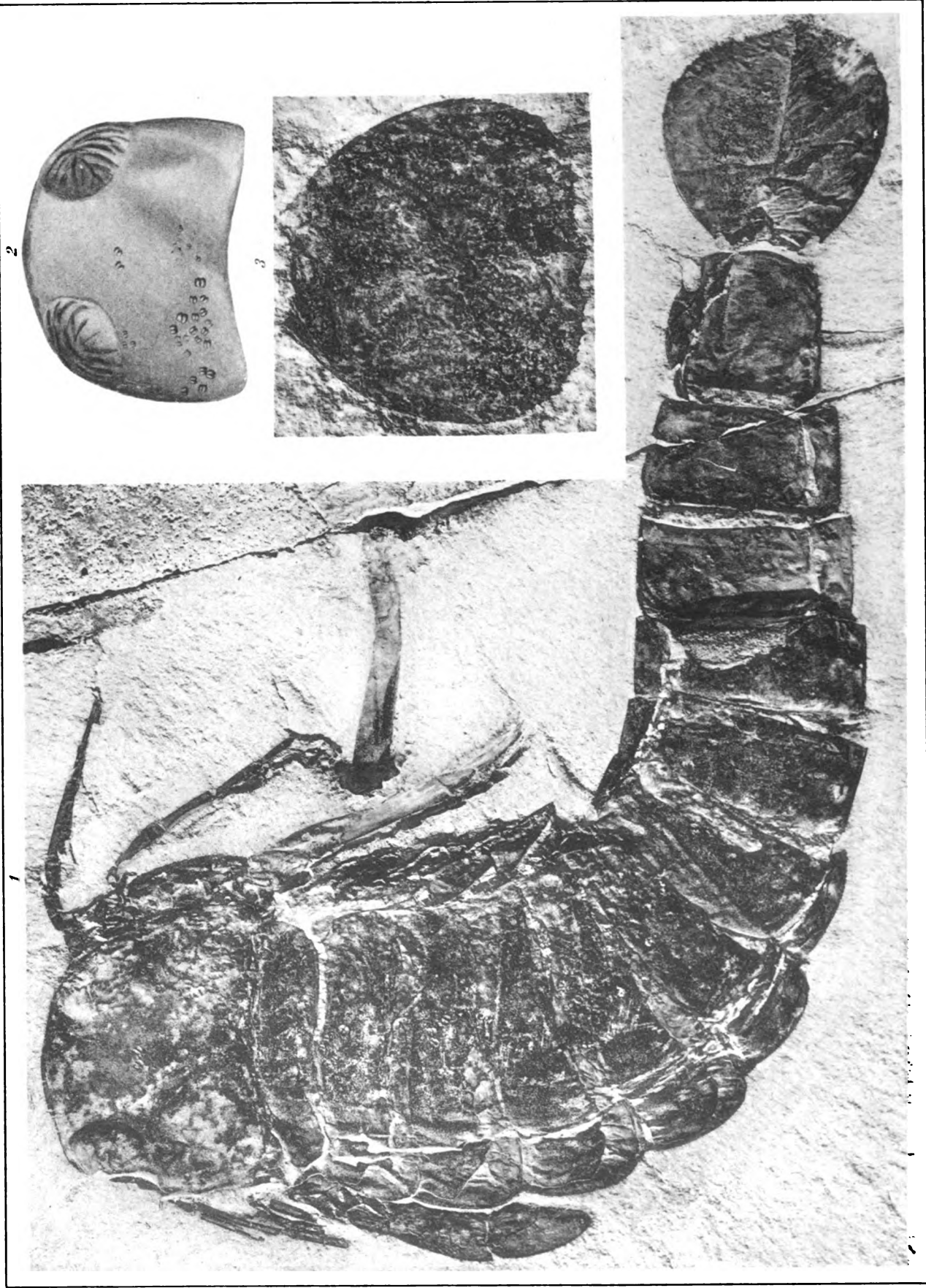
- 1 Dorsal view of a nearly complete specimen showing the general form of the body with walking and swimming legs; on the left side also the relative extension of the six tergites and five sternites. The numerous bilobed markings on the surface of the body are the impressions of ostracods which were in the habit of seeking shelter under and within the cast skins of the eurypterids. Natural size
  - 2 Portion of counterpart of the same specimen, showing the radiating wrinkles of the cornea of the compound eyes. Natural size
  - 3 Telson of a larger specimen showing the normal outline. Natural size  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.
- Figures 1 and 3 are from photographs.  
The original of figure 1 is in the National Museum; that of figure 2 in the museum of the Buffalo Society of Natural Sciences, and that of figure 3 in the State Museum



# EURYPTERIDA

Memor. 14 N.Y. State Museum

Plate 72



J.A. Rehn phot.

J.B. Lyon Co. State Printer



**PLATE 73**

**585**

**Pterygotus buffaloensis** Pohlman

Page 358

See plates 57, 67, 68, 70, 74-82

- 1 Carapace of large specimen showing normal outline, facettae of compound eyes and traces of ornamentation. Natural size
- 2 Telson of large specimen, showing median keel and spines and marginal serrations. Natural size

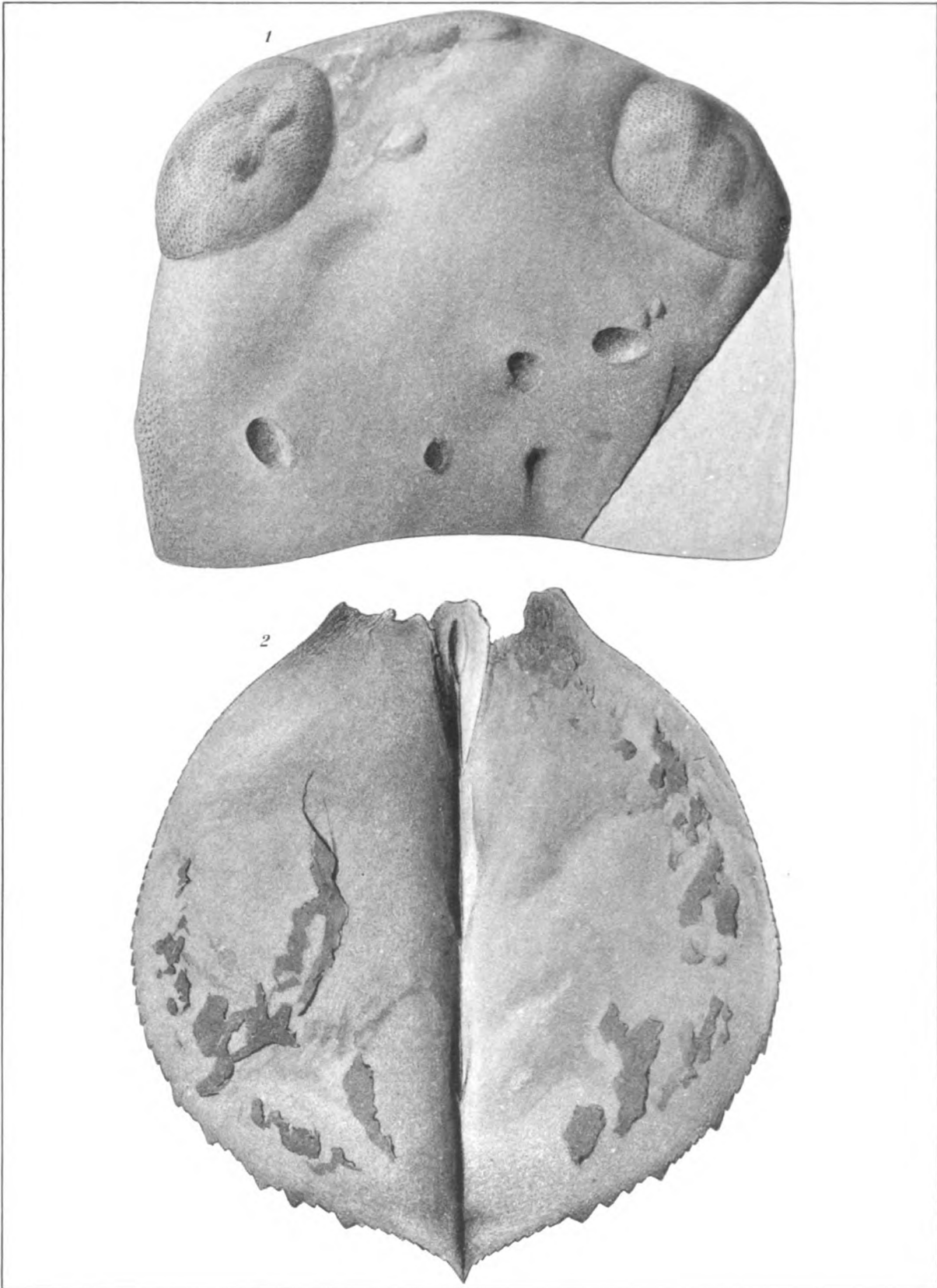
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

The originals are in the museum of the Buffalo Society of Natural Sciences

# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 73



G S Barkentin del

J B Lyon Co Stone Printer



**PLATE 74**

587

**Pterygotus buffaloensis** Pohlman

Page 358

See plates 57, 67, 68; 72-73; 75-80

- 1 Fragment of a large body showing coxal joint of swimming leg and large chelicerae with straight undivided basal joints. Natural size  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.  
Photograph of original in the museum of the Buffalo Society of Natural Sciences







**PLATE 75**

**589**

**Pterygotus buffaloensis** Pohlman

Page 358

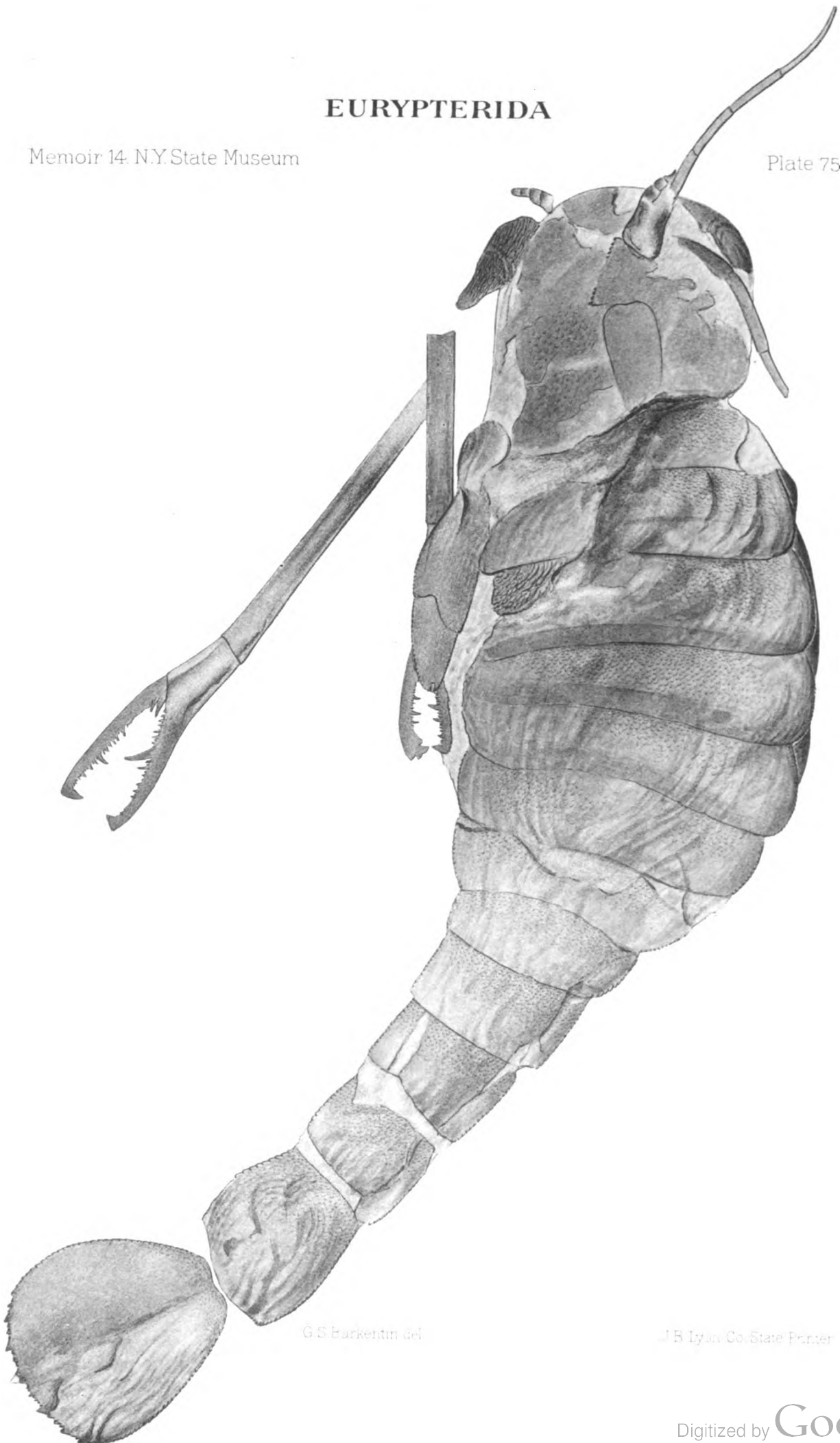
See plates 57, 67, 68, 72-74, 76-80

- 1 Ventral view of a young specimen showing the relative size of the walking leg and chelicera to that of the body, the articulations of the chelicera, and the form of the telson. Natural size  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.  
The original is in the museum of the Buffalo Society of Natural Sciences

# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 75



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PLATE 76

591

**Pterygotus buffaloensis Pohlman**

Page 358

See plates 57, 67, 68; 72-75; 77-80

- 1 Largest specimen observed showing the carapace, a swimming leg, the dorsal view of segments (some of the anterior ones of which are missing) and the telson. Reduced  $\frac{1}{3}$

*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

The original is in the museum of the Buffalo Society of Natural Sciences



**EURYPTERIDA**



G S Barkentin (det.)

J.B. Lyon Co State Printer

THE UNIVERSITY OF CALIFORNIA  
LA JOLLA, CALIF.



**PLATE 77**

593

**Pterygotus buffaloensis Pohlman**

Page 358

See plates 57, 67, 68; 72-76; 78-80

- 1 Interior view of carapace showing very distinctly the facettae of the lateral or compound eyes [*see* fig. 2]; also the ornamentation of the coxal joint. Natural size
- 2 Enlargement (x 3) of one of the eyes
- 3 Pincers of chelicera. Original of text figure 1425 in Zittel-Eastman's *Textbook of Paleontology*. Natural size
- 4 Another pair of pincers or chelae showing a complete fixed chela. Natural size
- 5 Telson; of type of "P. acuticaudatus" Pohlman. Natural size

**Pterygotus cobbi Hall**

Page 371

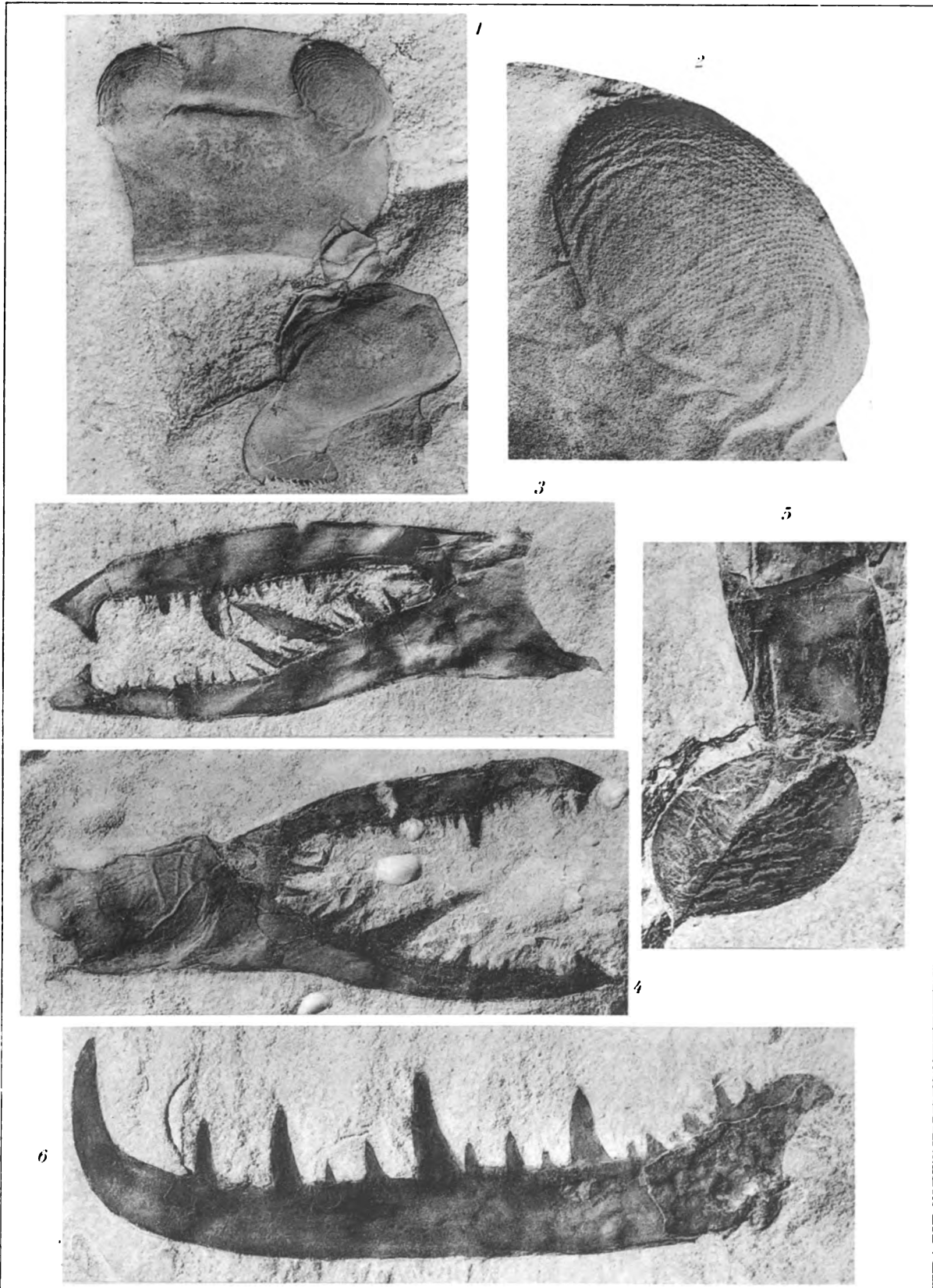
- 6 Free pincer or chela of chelicera. Cotype of *P. cummingsi* Grote & Pitt [fig. p. 301, *Am. Ass'n Adv. Sci. Proc.*, v. 26, 1878]. Natural size

*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

All figures are from photographs.

The originals of figures 1-3 and 5 are in the State Museum, those of figures 4 and 6 in the museum of the Buffalo Society of Natural Sciences

# EURYPTERIDA



J. A. Gleason phot.

Illustrated by C. C. Jones



**PLATE 78**

595

**Pterygotus buffaloensis** Pohlman

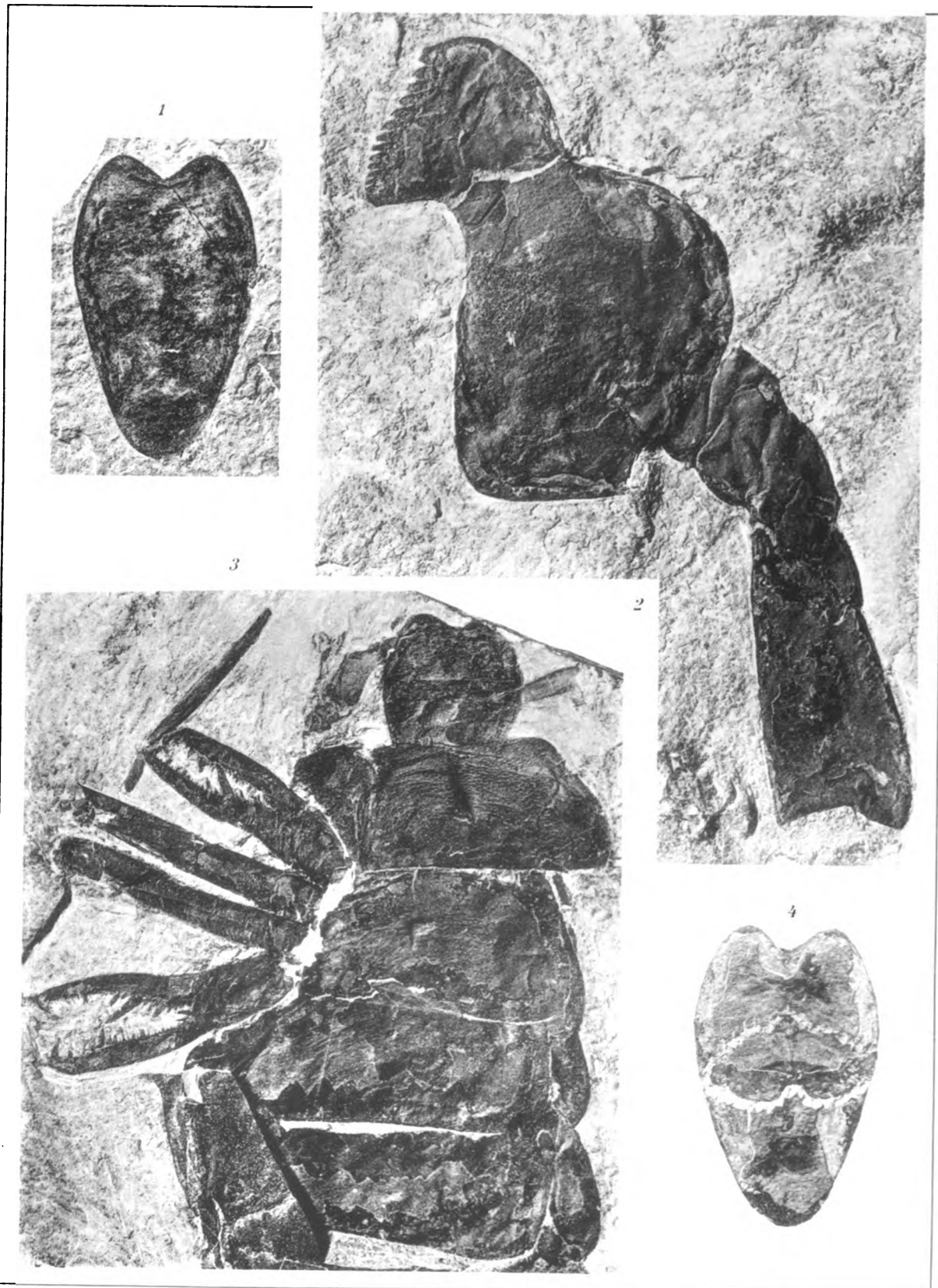
Page 358

See plates 57, 67, 68, 72-77, 79-80

- 1 Metastoma showing the ornamentation. Natural size
  - 2 Swimming leg. Pohlman's type of *P. buffaloensis*. Natural size
  - 3 Interior view of ventral side. Shows doublure of metastoma with edge of connecting membrane (as dark concentric ring), which held it in place, operculum with male genital appendage (sagittate plate between metastoma and chelicera) and the two chelicerae, each bent at the first articulation and indicating the possible amount of reflexion. Natural size
  - 4 Endostoma (plate chiseled out in middle of metastoma which was attached to a metastoma and has become reversed. Natural size  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.
- All figures are from photographs.  
Originals of figures 1 and 4 are in the State Museum; those of figures 2 and 3 are in the museum of the Buffalo Society of Natural Sciences



# EURYPTERIDA



J. A. Glenn phot.

J.B. Lyon Co. State Printer



**PLATE 79**

597

**Pterygotus buffaloensis** Pohlman

Page 358

See plates 57, 67, 68, 72-78; 80

- 1 The coxal joint of a swimming foot of a gigantic specimen, probably of this species. Type of *P. cummingsi* Grote & Pitt. Natural size
  - 2 Metastoma of a large individual showing the ornamentation. Natural size
- Horizon and locality.* Bertie waterlime. Buffalo, N. Y.

**Pterygotus atlanticus** nov.

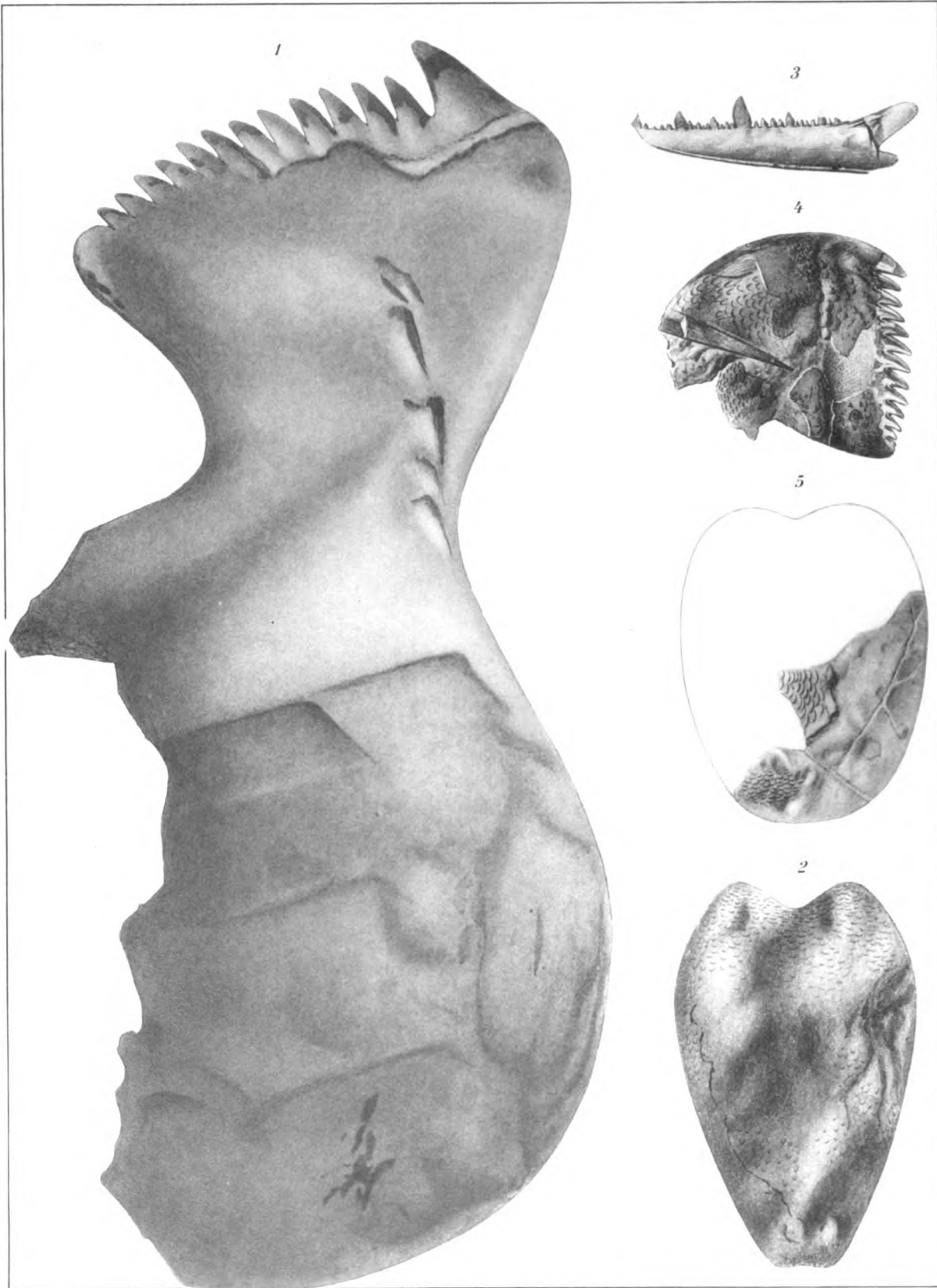
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- 3 Free chela, imperfect at both extremities. Natural size
- 4 Gnathobase of coxa of swimming leg. The acute body resting upon it, is a fish spine. Natural size
- 5 Fragment, apparently the posterior portion of a metastoma. Natural size

*Horizon and locality.* Dalhousie beds (Devonic). Campbellton, New Brunswick

The originals of figures 1 and 2 are in the museum of the Buffalo Society of Natural Sciences, those of figures 3-5 in the Canadian Survey Collection at Ottawa

# EURYPYTERIDA



G.S. Barkentin del.

J.B. Lyon. Co. Stone Printer



PLATE 8o

599

**Pterygotus buffaloensis** Pohlman

Page 358

See plates 57, 67, 68; 72-79

- 1 Enlargement (x 3) of segments to show the pore system of the integument [*see p. 29*], seen in front of the posterior margins. Natural size  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.  
Photograph, the original of which is in the museum of the Buffalo Society of Natural Sciences (no. 100)



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 80



J. A. Glenn phot.

J. B. Ivon Co. State Photo.



PLATE 81

601

**Pterygotus (Erettopterus) grandis (Pohlman)**

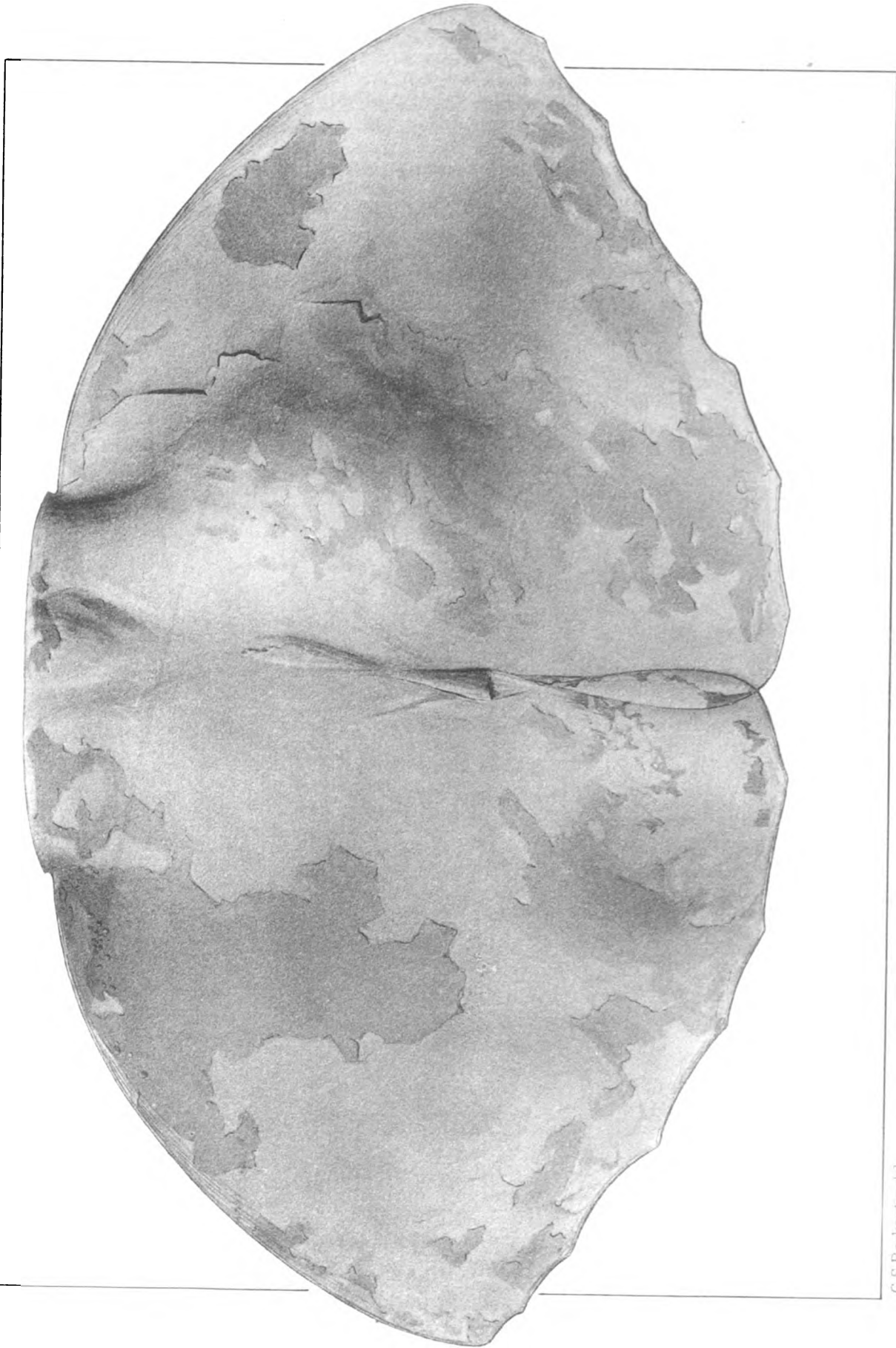
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- 1 Pygidium (holotype). Type of *Ceratiocaris grandis* Pohlman  
*Horizon and locality.* Bertie waterlime. Buffalo, N. Y.  
The original is in the museum of the Buffalo Society of Natural Sciences

# EURYPYTERIDA

Memoir 14. NY State Museum

Plate 81



G. S. Barkentin, del.

J.B. Lyon Co Slate Printer



PLATE 82

603

**Pterygotus (Erettopterus) globiceps nov.**

Page 374

- 1 Nepionic stage showing the enormous size of the lateral eyes, the position of the ocelli and the small number of segments. x 30
- 2 Another larval specimen showing slightly different form of carapace, thickened rim of eyes and small number of segments of tapering abdomen. x 30
- 3 An older (neanic) stage in which the abdomen has assumed the proportion and composition of the adult stage. A broad thickened rim surrounds the eyes. x 12
- 4 Carapace of a young individual showing somewhat different characters, apparently due to compression in longitudinal direction. x 15
- 5 Fragment of carapace of young individual, showing the smooth cornea of the eyes partly separated from the facettae. x 5
- 6 Well preserved carapace. Type of the species. x 3
- 7 Largest carapace observed. Shows the lateral eye, somewhat distorted by oblique compression (indicated by the wrinkles) and the ocelli. On the antelateral corner a fragment of the marginal shield of the ventral side with traces of ornamentation is seen. Natural size
- 8 Tergite showing antero-lateral lobes and ornamentation. x 3
- 9 Second sternite with genital appendage of young female. x 3
- 10 Swimming leg. Natural size

**Pterygotus (Erettopterus) sp.**

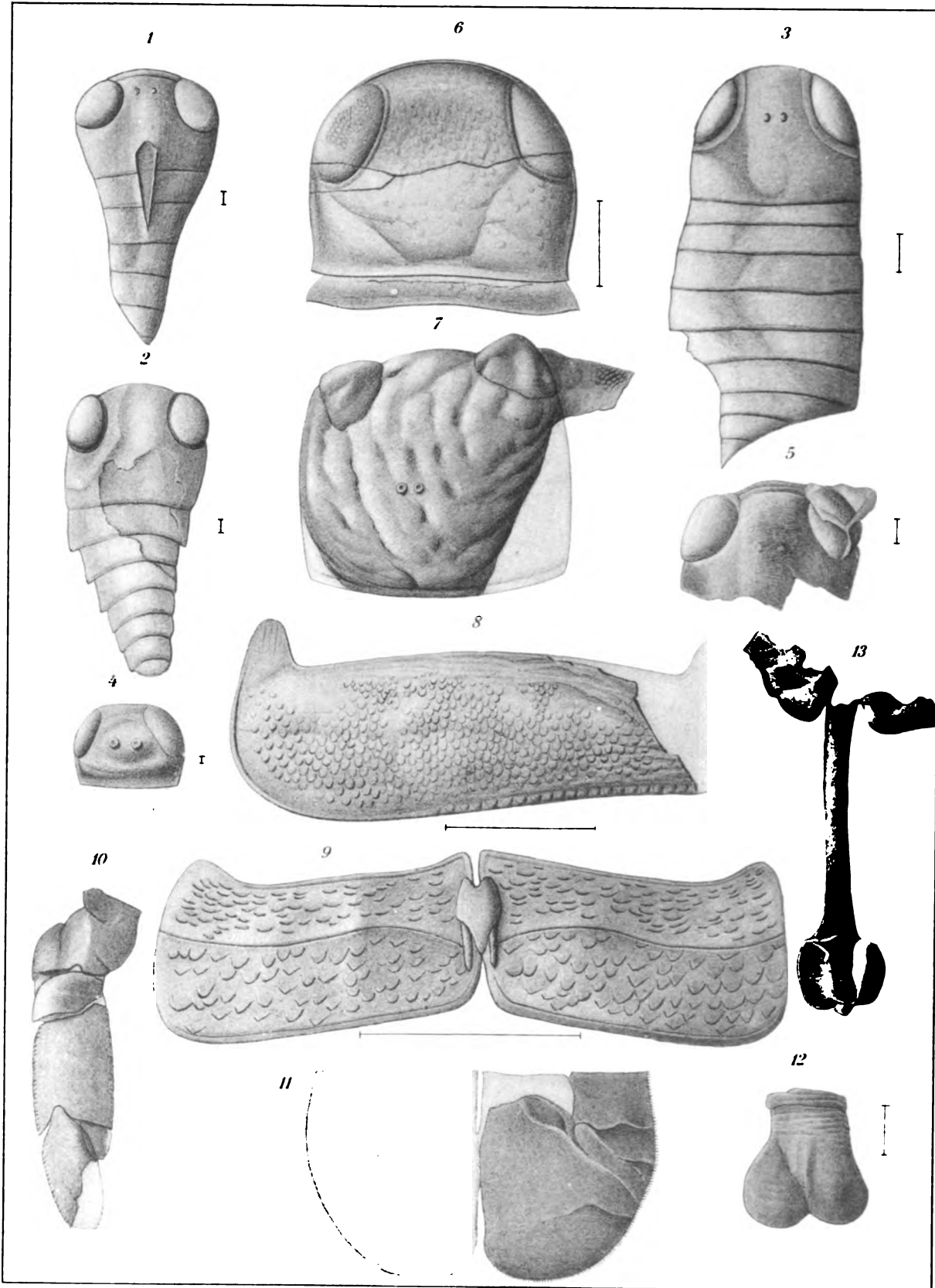
- 11 Portion of a telson showing fine bristles on the margin. Natural size
  - 12 Telson of young individual. x 3
- The figures 8, 10, 11 are referred with doubt to this species.

**Pterygotus? sp.**

- 13 Problematical fossil, possibly the female genital appendage of a Pterygotus [cf. similar appendage of *Pterygotus anglicus*, Huxley and Salter, pl. 3, fig. 4, 5, 7].  
*Horizon and locality.* Shawangunk grit. Otisville, N. Y.  
The originals are the State Museum



# EURYPTERIDA



G.S.B. et EWCL. del.

J.B. Lyon Co. State Printer



PLATE 83

605

**Eurypterus? (Dolichopterus?) stellatus nov.**

Page 211

Plates 83-87. Schenectady shale fauna

- 1 Carapace, retaining the ornamentation and an ocular node. x 2. Type of species
- 2, 3 Patches of integument with ornamentation, apparently referable to this species. x 3
- 4 Tergite with traces of ornamentation, probably belonging to this species. x 2

**Eurypterus pristinus nov.**

Page 207

- 5 Carapace. Type. x 2
- 6 Patch of integument with ornamentation resembling somewhat that of the type specimen. x 10

**Eurypterus megalops nov.**

Page 191

- 7 Carapace. Type. Natural size

**Eurypterus? sp.**

- 8 Leg segment, probably belonging to this genus. x 3

**Dolichopterus frankfortensis nov.**

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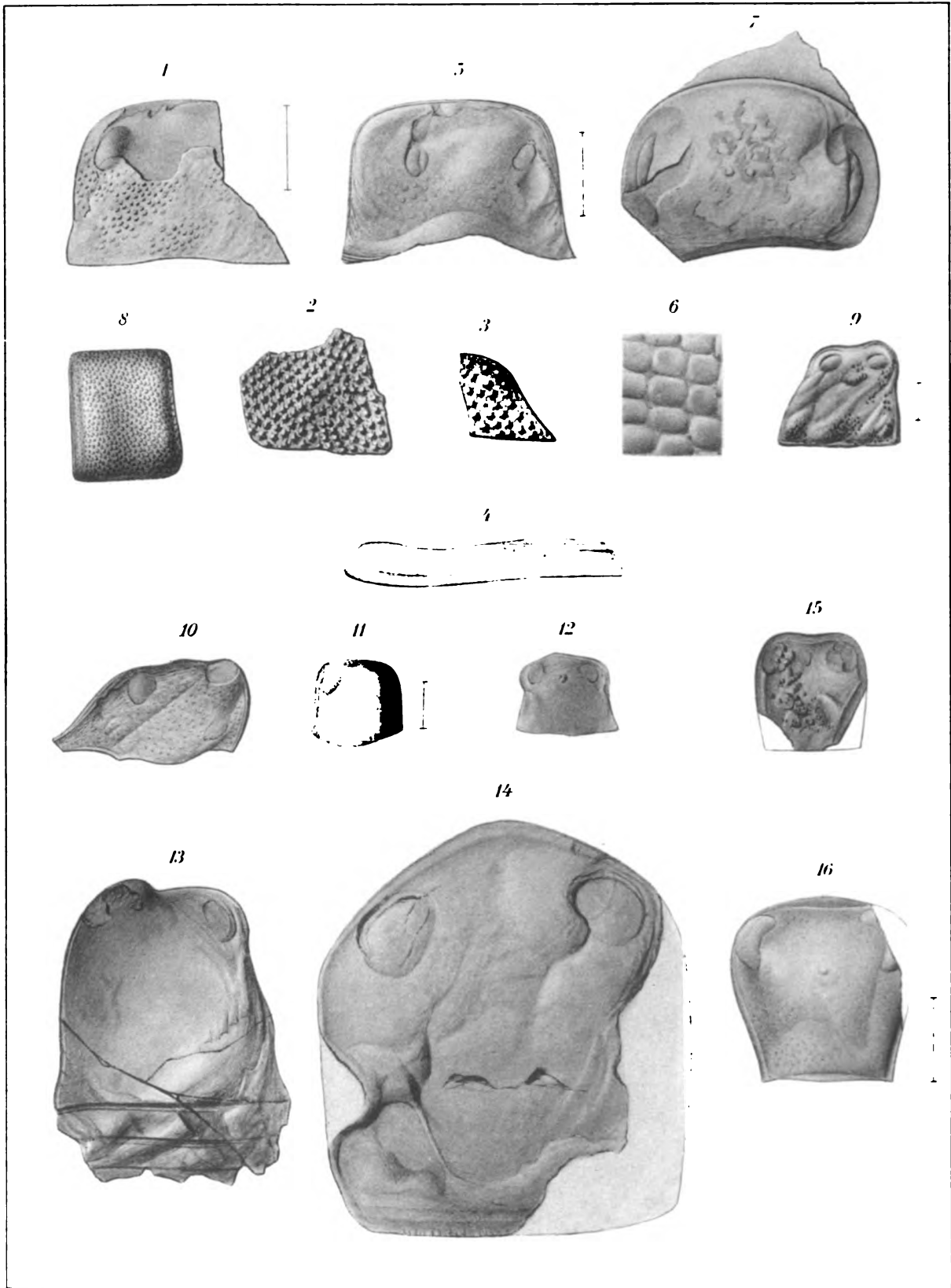
- 9 Small, fairly perfect carapace. Shows apparent traces of ornamentation. x 3
- 10 Carapace, obliquely shoved out of shape, but well preserving the ornamentation and the lateral eyes. Natural size
- 11 Small carapace, with original outline and well preserved, prominent lateral eyes and marginal border. Type. x 2
- 12 Carapace with slightly differing outline and indication of the ocellar mound. Natural size
- 13 A larger carapace and two tergites. The carapace is somewhat laterally compressed and therefore appears relatively too long.
- 14 Largest carapace preserved. Shows distinctly semi-circular form of eye nodes, and frontal margin and beveled border

**Dolichopterus latifrons**

Page 269

- 15 Carapace showing the marginal border and lateral eyes. Natural size
- 16 Carapace, apparently retaining the natural outline. Type x 2  
*Horizon and locality.* All originals are from the Lower Siluric Schenectady shale. Those of figures 1-6, 8-10, 15 and 16 are from the Dettbarn quarry at Schenectady, those of figures 7, 11, from Rotterdam Junction, of figures 12, 13, from Duaneburg and that of figure 14 from Delanson, all in Schenectady county. All originals are in the State Museum

# EURYPTERIDA



J. S. Parlin del.

J. B. Van C. C. Van Pelt sc.



PLATE 84

607

**Eusarcus longiceps** nov.

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- 1 Carapace of young specimen showing outline and position of lateral eyes. Natural size
- 2 Carapace of young specimen with traces of ornamentation
- 3 Well preserved specimen, showing marginal border and outline of ventral side (as darker rim). Probably somewhat compressed in posterior part. Natural size
- 4 Largest carapace observed. The lateral margin is partly folded under and the specimen appears therefore too narrow. The lateral eyes and ocelli are well preserved in the specimen; the former are somewhat displaced by the folding. Natural size
- 5 Carapace and preabdomen; the former apparently retaining the original outline. Type. The preabdomen is imperfect. Natural size
- 6 Large carapace with the marginal shield of the ventral side thrown outward in the posterior part. Natural size

**Eusarcus triangulatus** nov.

Page 258

- 7 Largest and most perfect carapace observed, apparently but little distorted and retaining the first tergite. Type. Natural size
- 8 Small carapace with fragment of first tergite. x 2
- 9 Carapace and preabdomen much distorted, but showing their great width. The swimming leg is too indistinct for accurate figuring. Natural size

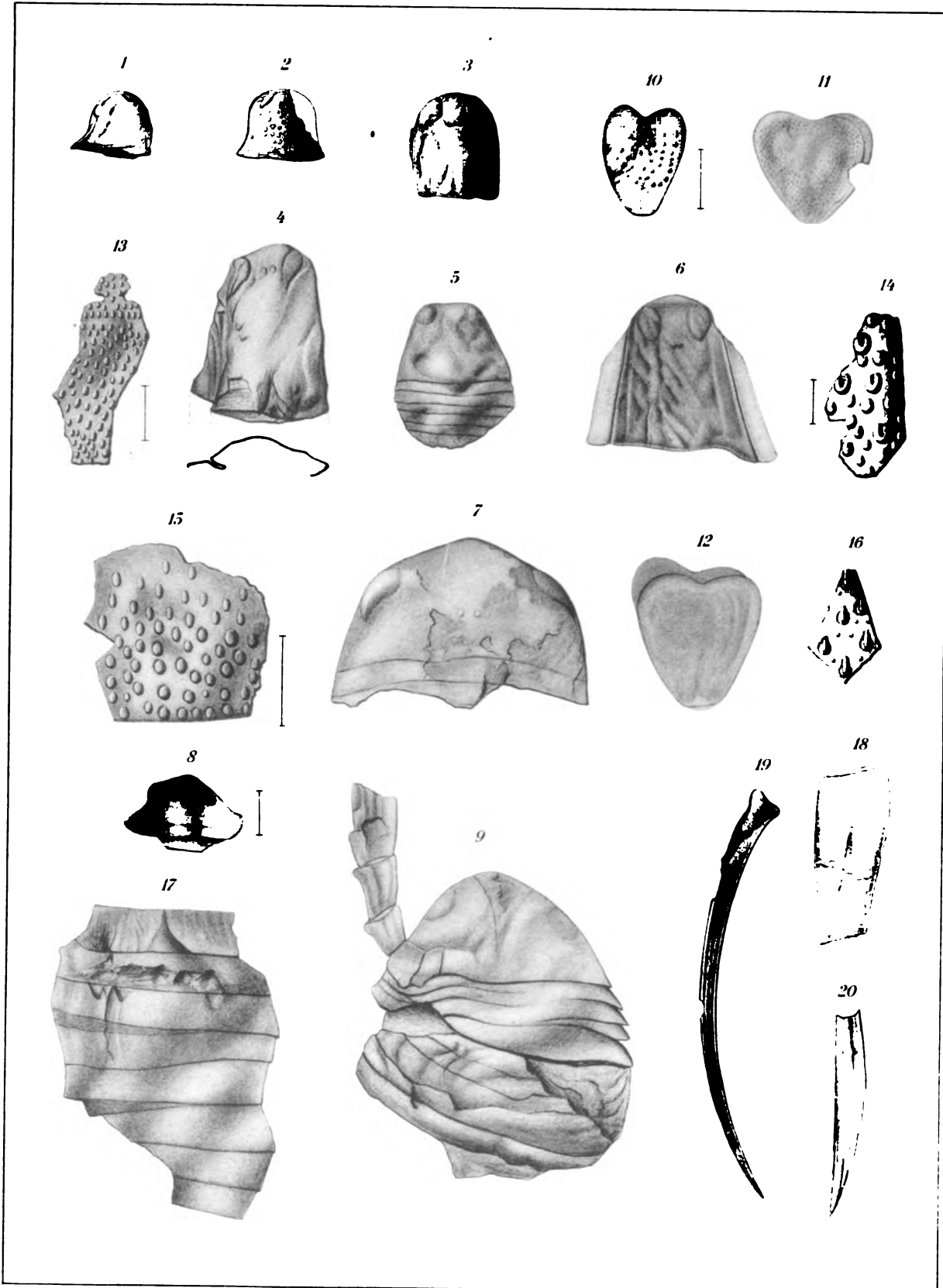
**Disjecta membra referable to Eusarcus**

- 10 Metastoma, possibly belonging to *Eusarcus longiceps*. x 2
- 11, 12 Metastomas, possibly belonging to *Eusarcus triangulatus*. Natural size
- 13-16 Patches of integument exquisitely retaining the ornamentation. The latter exhibits considerable variation, recalling the ornamentation of *Eusarcus* and *Echinognathus*. Figure 13, x 4; figure 14, x 5; figure 15, x 2; figure 16, x 5
- 17 Portion of abdomen, comparable in outline to that of a *Eusarcus*. Natural size
- 18 Postabdominal segment, recalling that of a *Eusarcus*. Natural size
- 19, 20 Spines of endognathites, belonging to this genus, or to *Echinognathus* or *Stylonurus*. Natural size

*Horizon and locality.* Lower Siluric: Schenectady shale. The originals of figures 1-7, 10, 11, 13-16, 18-20 are from the Dettbarn quarry at Schenectady, those of figures 8, 9 from Duaneburg, that of figure 12 from Rotterdam Junction and that of figure 17 from Aqueduct, all in Schenectady county. All originals are in the State Museum



# EURYPTERIDA



G. S. Barkentin del.

J. B. Lyon Co. Stone Printer



PLATE 85

609

### **Stylonurus? limbatus nov.**

Page 295

- 1 Specimen showing the visual surface, but no border. Natural size
- 2 Large carapace showing the eye nodes and visual surfaces and marginal border. Type of species. Natural size
- 3 Smaller carapace well exhibiting the concentric striation of the border and showing traces of ornamentation. Natural size
- 4 Small, broader carapace, referred with doubt to this species. x 2
- 5 Long carapace, apparently somewhat laterally compressed, showing triangular scales along posterior margin; probably belonging to a different species. Natural size

*Horizon and locality.* Lower Siluric: Schenectady shale. Originals of figures 1-4 from Dettbarn quarry, Schenectady, that of figure 5 from Duaneburg, Schenectady co.

### **Stylonurus, disjecta membra**

- 6 Fragment of abdomen, showing tergites with an elevated medio-transverse region bearing broad, flat nodes; possibly belonging to *Stylonurus limbatus*. Natural size
- 7 Patch of integument with slender spines, possibly belonging to a *Stylonurus*. x 5
- 8 Patch of integument with closely arranged mucros, possibly belonging to the carapace figure 5. x 5
- 9 Articulation with parts of two slender segments suggesting the walking leg of a *Stylonurus*. Natural size
- 10 Fragment of a leg with peculiar ornamentation consisting of a lattice work of sharply raised straight lines. x 5

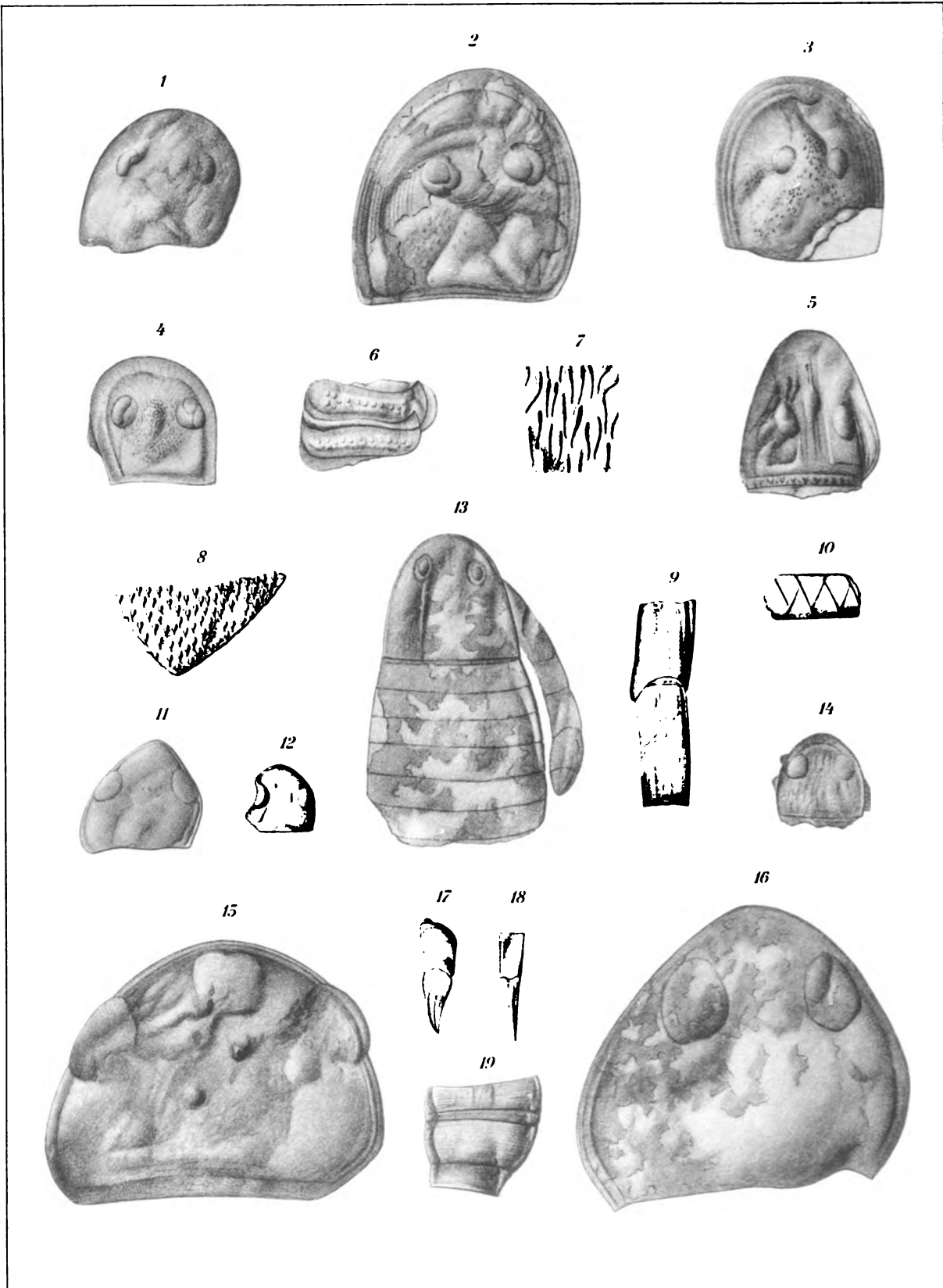
*Horizon and locality.* Lower Siluric: Schenectady shale, figures 6, 7, 8, 10 from Dettbarn quarry, figure 9 from Aqueduct, near Schenectady

### **Hughmilleria magna nov.**

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- 11 Small carapace, well retaining the probable original form and the lateral eyes. Type of species. Also showing traces of ocelli. Natural size
- 12 Carapace of very young (neanic) individual, showing the larger size of lateral eyes. x 2
- 13 Specimen retaining besides carapace portion of abdomen and swimming leg. The carapace shows faintly two lateral eyes well within the margin. The segments of the swimming leg are indistinct save the last two. Natural size
- 14 Small carapace which apparently has suffered but very little distortion and shows the intramarginal position of the larger lateral eyes. Natural size
- 15 Larger carapace in which the lateral eyes have been pressed outwards. Natural size

# EURYPTERIDA



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- 16 Another large carapace in which the lateral eyes appear more intramarginal. Natural size
- 17, 18 Chelicerae, probably according to their form and relative size those of a *Hughmilleria*. Natural size
- 19 Portion of abdomen, retaining traces of longitudinal ornamentation resembling that of *Hughmilleria shawangunk*. Natural size

*Horizon and localities.* Lower Siluric: Schenectady shale. The originals of figures 1-4, 6-8, 10-13, 15-18 are from the Dettbarn quarry at Schenectady, those of figures 5 and 19 from Duanesburg, that of figure 9 from Aqueduct, and that of figure 14 from Rotterdam Junction, Schenectady co.

All originals are in the State Museum

PLATE 86

**Pterygotus prolificus** nov.

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- 1 Very small, well preserved carapace with very prominent lateral eyes. x 3
- 2 Small carapace of more roundish outline and submarginal position of the eyes. Natural size
- 3 Large, well preserved carapace. Type. Natural size
- 4 Another large carapace showing the outline of the lateral eyes and the filiform border of the head shield. Natural size
- 5 A smaller, very roundish carapace, referred with some doubt to this species

**Pterygotus nasutus** nov.

Page 382

- 6 Type. Well preserved carapace; shows a faint ornamentation. x 2
- 7 Small carapace, showing relatively greater lateral eyes, somewhat laterally compressed
- 8 Large carapace, showing the subcircular outline of the lateral eyes. Natural size
- 9 Small, undistorted carapace, showing the original outline. Natural size
- 10 Incomplete carapace, showing the border. Natural size

**Disjecta membra of Pterygotus**

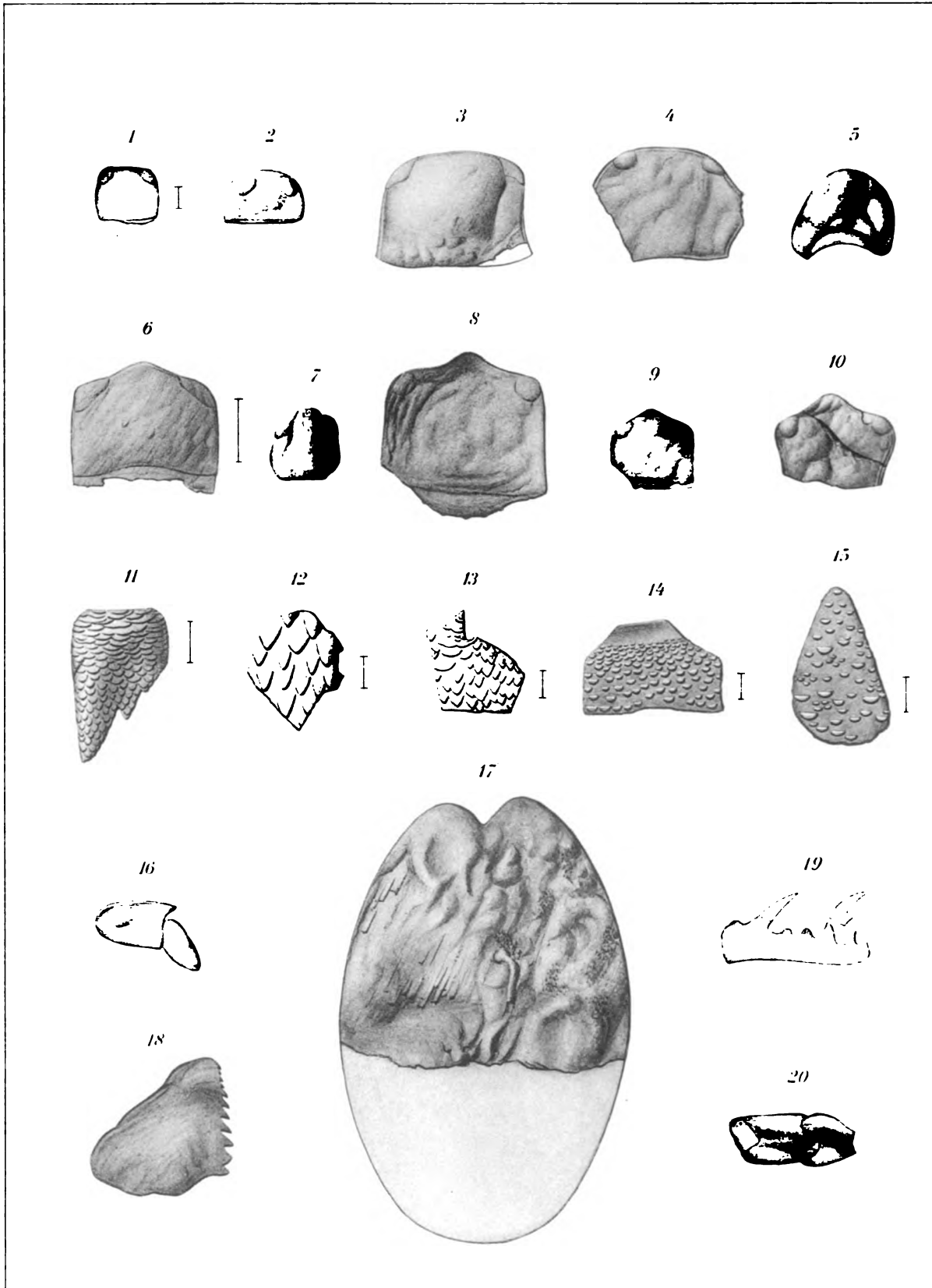
- 11-15 Patches of integument with beautifully preserved ornamentation, characteristic of Pterygotus and exhibiting considerable variation. Figures 11-13, x 4; figure 14, x 5
- 16 Paddle of swimming foot, resembling that of a Pterygotus. Natural size
- 17 Fragment of large metastoma, recalling in outline the metastoma of the Hughmilleria-Pterygotus group. Natural size
- 18 Gnathobase of coxa, probably of swimming leg. Natural size
- 19 Portion of chela of a Pterygotus. Natural size
- 20 Two segments of swimming leg. Natural size

*Horizon and locality.* Lower Siluric: Schenectady shale. The originals of figures 1, 5, 6, 11-16 are from the Dettbarn quarry at Schenectady, those of figures 2, 7-9 and 17 from Duanesburg, that of figure 3 from Rotterdam Junction, those of figures 4 and 10 from Rexford, that of figure 18 from Central Bridge, that of figure 19 from the Bozen Kill west of Altamont.

All the originals are in the State Museum



# EURYPTERIDA



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**PLATE 87**

**613**

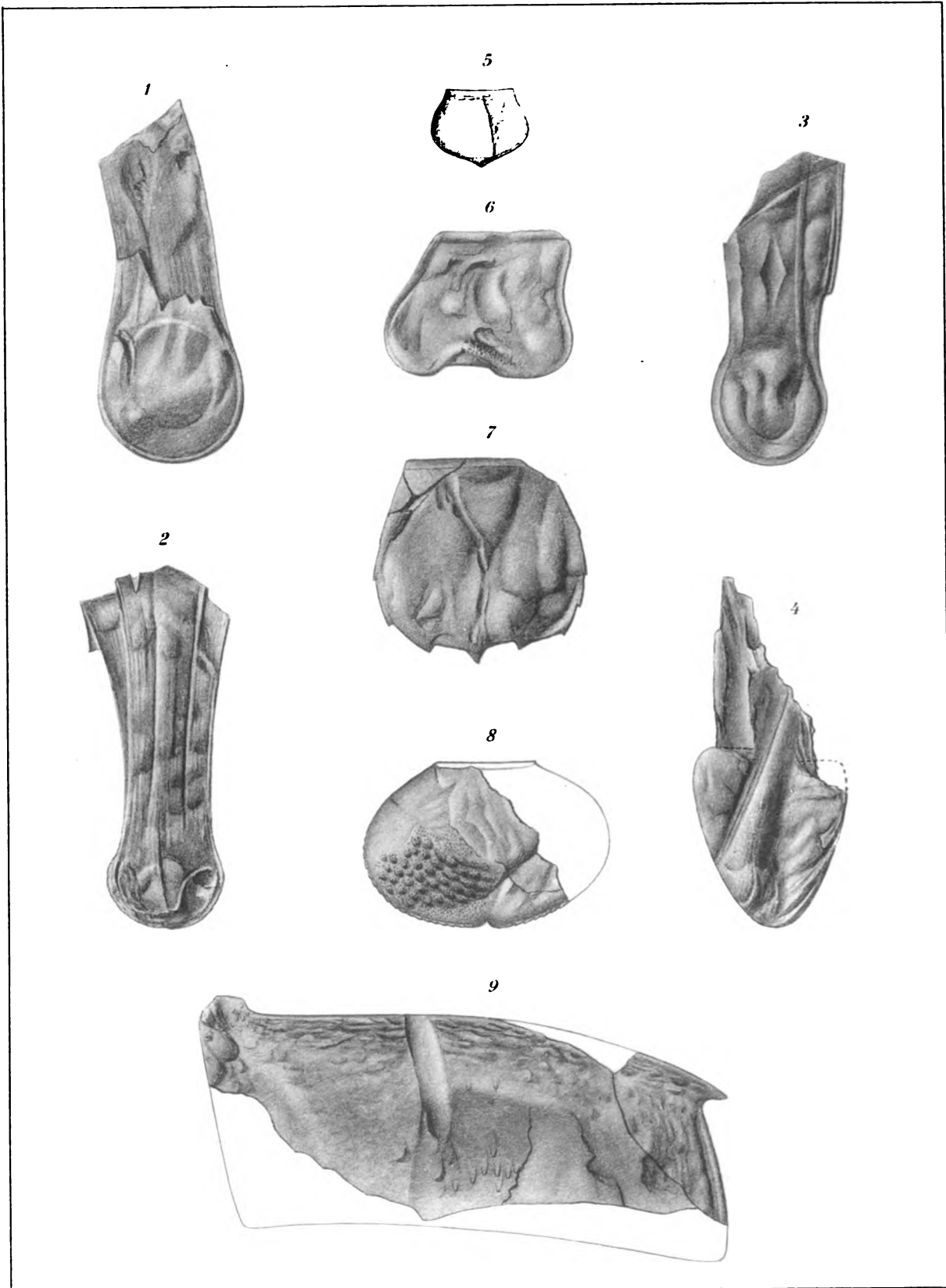
**Pterygotus** sp.

- 1-4 Apparently distal portion of the female opercular appendage of a Pterygotus. Natural size
- 5 Small, well preserved telson. Natural size
- 6 Ultimate postabdominal segment. Natural size
- 7 Telson with distinct coarse marginal serrations. Natural size
- 8 Fragment of appendage, apparently telson of an Erettopterus, with distinct marginal serrations and a peculiar ornamentation. Natural size
- 9 Fragment of segment with ornamentation suggestive of Pterygotus. Natural size

*Horizon and locality.* Lower Siluric: Schenectady shale. The originals of figures 1-4 are from the Crumby quarry, Aqueduct, that of figure 5 is from Duanesburg, those of figures 6-8 from the Dettbarn quarry, Schenectady and that of figure 9 from Rotterdam Junction.

All originals are in the State Museum

# EURYPTERIDA



G.S. Barkentin del.

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PLATE 88

615

**Proscorpius osborni** Whitfield

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- 1 The holotype refigured and enlarged 7 times, to show the appendages, the form of the cephalothorax and the position of the eyes. For an explanation of these organs *see* text figures 82 and 83  
*Horizon and locality.* Upper Siluric: Bertie waterlime, Waterville, N. Y.  
The original is in the American Museum of Natural History



# EURYPTERIDA

Memoir 14. N.Y. State Museum

Plate 88



R R et G S B del.

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